Luminant

Illinois Power Generating Company
1500 Eastport Plaza Dr.
Collinsville, IL 62234

April 1, 2025

Illinois Environmental Protection Agency
DWPC – Permits MC #15
Attn: Part 845 Coal Combustion Residual Rule Submittal
2520 W Iles Ave
P.O. Box 19276
Springfield, IL 62794-9276

Re: Newton Power Plant Primary Ash Pond; IEPA ID # W0798070001-01

Dear Mr. LeCrone:

In accordance with 35 I.A.C. § 845.200, Illinois Power Generating Company (IPGC) is submitting a supplement to the previously submitted operating permit application for the Newton Power Plant Primary Ash Pond (IEPA ID # W0798070001-01) to address the corrective action requirements of Part 845.

IPGC previously submitted an operating permit application for Newton Power Plant Primary Ash Pond on October 25, 2021. The enclosed supplemental information is being submitted in accordance with 35 I.A.C. § 845.200(a)(3) in order to "[modify] the facility's operating permit when the approved corrective action does not require the modification of the CCR surface impoundment." This amendment includes a corrective action plan containing corrective action alternatives analysis, groundwater modeling, and corrective action groundwater monitoring program. One hardcopy is provided with this submittal.

Sincerely,

Phil Morris
Sr. Director, Environmental

Enclosures

Visual Road Map for Corrective Action
Supplement to Operating Permit Application
Newton Power Plant, Primary Ash Pond
Newton, IL

CORRECTIVE ACTION PLAN

§845.670
Identifies the selected remedy based on the results of the Corrective Measures Assessment

Appendix A
CORRECTIVE ACTION ALTERNATIVE ANALYSIS (CAAA)

§845.670(e)
Evaluation of potential viable corrective actions identified in the Corrective Measures Assessment

Appendix B
CORRECTIVE ACTION GROUNDWATER MONITORING PLAN

§845.680(a)(1)
Plan that establishes how data will be collected, documented, and evaluated to assess remedy effectiveness

Appendix A
HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

§845.670(f)(4)
Evaluation of potential risks to human and ecological receptors

Appendix B
CAAA SUPPORTING INFORMATION REPORT

§845.670(e)
Information to support preparation of CAAA

Appendix C
CORRECTIVE MEASURES ASSESSMENT

§845.660
Assessment of potential corrective measure technologies to address GWPS exceedances at the CCR surface impoundment

Appendix D
NATURE AND EXTENT REPORT AND ADDENDUM

§845.650(d)(1)
Documents the nature and extent of constituents detected above the GWPS that are attributable to the CCR surface impoundment

Appendix E
GROUNDWATER POLISHING REPORT

§845.220(c)(2)
Presents results of geochemical modeling used to evaluate chemical mechanisms on groundwater polishing under current conditions and after implementation of the corrective measure

Appendix A
FEASIBILITY LEVEL DRAWINGS

Conceptual design drawings showing approximate extents and details of alternatives presented in the CAAA

Appendix B.1
GROUNDWATER MODELING TECHNICAL MEMORANDUM

§845.220(c)(2)
Presents additional groundwater modeling simulations and incorporates data collected since 2022 modeling (Appendix B.2) to support alternatives presented in the CAAA

Appendix B.2
GROUNDWATER MODELING REPORT VERSION 1

§845.220(c)(2)
Presents results of 2022 MODFLOW and MT3DMS groundwater flow and transport models to evaluate potential alternatives

Appendix C
LABOR/MILEAGE ESTIMATES

Detailed material quantity, labor and mileage estimates for alternatives presented in the CAAA

Legend

- New Submittal
- Updated Submittal from Previous Submittal
- Re-submitted from Previous Submittal (No Updates)

Ramboll

Road Map for Corrective Action
Supplement to Operating Permit Application
Newton Power Plant, Primary Ash Pond
Newton, IL

Section	Rule Text	Location of Information Demonstrating Compliance			Version History			Notes
		Document	Section or Appendix	PDF Page No. & Hyperlink	Submitted Previously	Updated Version	New Submittal	
Section 845.620 - Hydrogeologic Site Characterization								
845.620	Hydrogeologic Site Characterization	---	---	---	x			HCR was submitted on July 28, 2022 as Attachment B to CP application.
Section 845.660 - Assessment of Corrective Measures								
845.660	Assessment of Corrective Measures	CAAA	---	27	x			Submitted on April 3, 2024. Also attached as Appendix C in CAAA which is Appendix A of the CAP
Section 845.670 - Corrective Action Plan								
845.670(a)	The owner or operator must prepare a semi-annual report describing the progress in selecting a remedy and developing a CAP. The semi-annual report must be submitted to IEPA and placed in the operating record as required by 35 I.A.C. § 845.800(d)(17).							Submitted on October 3, 2024
845.670(b)	Within one year after completing the assessment of corrective measures as specified in 35 I.A.C. § 845.660, and after completion of the public meeting in 35 I.A.C. § 845.660(d), the owner or operator of the CCR surface impoundment must submit, in a CP application [or modification to the facility's operating permit] to IEPA, a CAP that identifies the selected remedy. This requirement applies in addition to, not in place of, any applicable standards under any other State or federal law.	Supplement to Operating Permit Application	---	1			x	A corrective action CP is not required when the proposed corrective action does not require modification of the CCR SI or the installation or modification of related treatment or mitigation facilities per 845.200(a)(3)
845.670(c)	The CAP must meet the following requirements:							
845.670(c)(1)	Be based on the results of the CMA conducted under 35 I.A.C. § 845.660;	CMA	---	353			x	
845.670(c)(2)	Identify a selected remedy that at a minimum, meets the standards listed in subsection (d);	CAAA	Section 2	52			x	
845.670(c)(3)	Contain the corrective action alternatives analysis specified in subsection (e); and	CAAA	Section 2	52			x	
845.670(c)(4)	Contain proposed schedules for implementation, including an analysis of the factors in subsection (f).	CAP	Table 1	25			x	
845.670(d)	The selected remedy in the CAP must:							
845.670(d)(1)	Be protective of human health and the environment;	CAAA	Section 2	52			x	
845.670(d)(2)	Attain the GWPS specified in 35 I.A.C. § 845.600;	Groundwater Modeling Technical Memorandum	Section 4	174			x	
845.670(d)(3)	Control the sources of releases to reduce or eliminate, to the maximum extent feasible, further releases of constituents listed in 35 I.A.C. § 845.600 into the environment;	CAAA	Section 2	52			x	
845.670(d)(4)	Remove from the environment as much of the contaminated material that was released from the CCR surface impoundment as is feasible, taking into account factors such as avoiding inappropriate disturbance of sensitive ecosystems; and	CAAA	Section 2.5	72			x	
845.670(d)(5)	Comply with standards for management of wastes as specified in 35 I.A.C. § 845.680(d).	CAAA	Section 2	52			x	
845.670(e)	CAAA. In selecting a remedy that meets the standards of subsection (d), the owner or operator of the CCR surface impoundment must consider the following evaluation factors:							
845.670(e)(1)	The long- and short-term effectiveness and protectiveness of each potential remedy, along with the degree of certainty that the remedy will prove successful based on consideration of the following:	CAAA	Section 2.2	57			x	
845.670(e)(1)(A)	Magnitude of reduction of existing risks;	CAAA	Section 2.2	57			x	
845.670(e)(1)(B)	Magnitude of residual risks in terms of likelihood of further releases due to CCR remaining following implementation of a remedy;	CAAA	Section 2.2	57			x	
845.670(e)(1)(C)	The type and degree of long-term management required, including monitoring, operation, and maintenance;	CAAA	Section 2.2	57			x	
845.670(e)(1)(D)	Short-term risks that might be posed to the community or the environment during implementation of a remedy, including potential threats to human health and the environment associated with excavation, transportation, and re-disposal of contaminants;	CAAA	Section 2.2	57			x	
845.670(e)(1)(E)	Time until GWPS in 35 I.A.C. § 845.600 are achieved;	CAAA	Section 2.2	57			x	
845.670(e)(1)(F)	The potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, re-disposal, containment, or changes in groundwater flow;	CAAA	Section 2.2	57			x	
845.670(e)(1)(G)	The long-term reliability of the engineering and institutional controls, including an analysis of any off-site, nearby destabilizing activities; and	CAAA	Section 2.2	57			x	
845.670(e)(1)(H)	Potential need for replacement of the remedy.	CAAA	Section 2.2	57			x	
845.670(e)(2)	The effectiveness of the remedy in controlling the source to reduce further releases based on consideration of each of the following potential factors:	CAAA	Section 2.2.2	58			x	
845.670(e)(2)(A)	The extent to which containment practices will reduce further releases; and	CAAA	Section 2.2.2	58			x	
845.670(e)(2)(B)	The extent to which treatment technologies may be used.	CAAA	Section 2.2.2	58			x	
845.670(e)(3)	The ease or difficulty of implementing each potential remedy based on consideration of the following types of factors:	CAAA	Section 2.3	68			x	

Road Map for Corrective Action
Supplement to Operating Permit Application
Newton Power Plant, Primary Ash Pond
Newton, IL

Section	Rule Text	Location of Information Demonstrating Compliance			Version History			Notes
		Document	Section or Appendix	PDF Page No. & Hyperlink	Submitted Previously	Updated Version	New Submittal	
845.670(e)(3)(A)	Degree of difficulty associated with constructing the technology;	CAAA	Section 2.3	68			x	
845.670(e)(3)(B)	Expected operational reliability of the technologies;	CAAA	Section 2.3	68			x	
845.670(e)(3)(C)	Need to coordinate with and obtain necessary approvals and permits from other agencies;	CAAA	Section 2.3	68			x	
845.670(e)(3)(D)	Availability of necessary equipment and specialists; and	CAAA	Section 2.3	68			x	
845.670(e)(3)(E)	Available capacity and location of needed treatment, storage, and disposal services.	CAAA	Section 2.3	68			x	
845.670(e)(4)	The degree to which community concerns are addressed by each potential remedy.	CAAA	Section 2.4	72			x	
845.670(f)	The owner or operator must specify, as part of the CAP, a schedule for implementing, of and completing, remedial activities. The schedule must require the completion of remedial activities within a reasonable time, taking into consideration the factors in this subsection (f). The owner or operator of the CCR surface impoundment must consider the following factors in determining the schedule of remedial activities:							
845.670(f)(1)	Extent and nature of contamination, as determined by the characterization required under 35 I.A.C. § 845.650(d);	CAP	Section 3.3	16			x	Details provided in N&E
845.670(f)(2)	Reasonable probabilities of remedial technologies achieving compliance with the GWPS established by 35 I.A.C. § 845.600 and other objectives of the remedy;	CAP	Section 3.3	16			x	
845.670(f)(3)	Availability of treatment or disposal capacity for CCR managed during implementation of the remedy;	CAP	Section 3.3	16			x	
845.670(f)(4)	Potential risks to human health and the environment from exposure to contamination before completion of the remedy;	CAP	Section 3.3	16			x	
845.670(f)(5)	Resource value of the aquifer, including:							
845.670(f)(5)(A)	Current and future uses, including potential residential, agricultural, commercial industrial and ecological uses;	CAP	Section 3.3	16			x	Details provided in HCR
845.670(f)(5)(B)	Proximity and withdrawal rate of users;	CAP	Section 3.3	16			x	Details provided in HCR
845.670(f)(5)(C)	Groundwater quantity and quality;	CAP	Section 3.3	16			x	Details provided in HCR
845.670(f)(5)(D)	The potential impact to the subsurface ecosystem, wildlife, other natural resources, crops, vegetation, and physical structures caused by exposure to CCR constituents;	CAP	Section 3.3	16			x	Details provided in HCR
845.670(f)(5)(E)	The hydrogeologic characteristic of the facility and surrounding land; and	CAP	Section 3.3	16			x	Details provided in HCR
845.670(f)(5)(F)	The availability of alternative water supplies; and	CAP	Section 3.3	16			x	Details provided in HCR
845.670(f)(6)	Other relevant factors.	CAP	Section 3.3	16			x	Details provided in HCR

Notes:
CAAA = Corrective Action Alternatives Analysis
CAP = corrective action plan
CCR = coal combustion residuals
CMA = Corrective Measures Assessment
CP = Construction Permit
GWPS = groundwater protection standards
HCR = Hydrogeologic Site Characterization Report
IEPA = Illinois Environmental Protection Agency
N&E = Nature and Extent Report and Addendum
SI = Surface Impoundment

Intended for
Illinois Power Generating Company
6725 North 500th Street
Newton, Illinois, 62448

Date
April 1, 2025

Project No.
1940110241-002

CORRECTIVE ACTION PLAN

NEWTON POWER PLANT, PRIMARY ASH POND, IEPA ID NO. W079807001-01

RAMBOLL Bright ideas. Sustainable change.

CORRECTIVE ACTION PLAN
NEWTON POWER PLANT, PRIMARY ASH POND, IEPA ID NO. W079807001-01

Project name	**Newton Power Plant Primary Ash Pond**
Project no.	**1940110241-002**
Recipient	**Illinois Power Generating Company**
Document type	**Corrective Action Plan**
Revision	**FINAL**
Date	**April 1, 2025**
Prepared by	**Sung-Woo Lee, PhD**
Checked by	**Melanie Conklin**
Approved by	**Brian Hennings, PG**
Description	**Corrective Action Plan for 35 I.A.C. § 845**

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Table 1	Proposed Milestone Schedule for Implementing Corrective Action Remedy (Source Control-Groundwater Polishing)

TABLES IN TEXT

Table A	Estimated Timeframes to Attain GWPS in Groundwater Monitoring Wells

APPENDICES

Appendix A	Corrective Action Alternatives Analysis (845.670(e)), including Corrective Measures Assessment (845.660)
Appendix B	Corrective Action Groundwater Monitoring Plan

ACRONYMS AND ABBREVIATIONS

35 I.A.C.	Title 35 of the Illinois Administrative Code
40 C.F.R.	Title 40 of the Code of Federal Regulations
ASD	alternative source demonstration
bgs	below ground surface
CAA	Closure Alternatives Analysis
CAAA	Corrective Action Alternatives Analysis
CAAA-SIR	Corrective Action Alternatives Analysis Supporting Information Report
CAP	Corrective Action Plan
CCR	coal combustion residuals
CIP	closure-in-place
CMA	Corrective Measures Assessment
COC	Constituent of Concern
COI	constituent of interest
CP	Construction Permit
CY	cubic yards
GMP	Groundwater Monitoring Plan
Gradient	Gradient Corporation
GWE	Groundwater Extraction
GWP	Groundwater Polishing
GWPS	groundwater protection standards
HCR	Hydrogeologic Site Characterization Report
ID	identification
IEPA	Illinois Environmental Protection Agency
IPCB	Illinois Pollution Control Board
IPGC	Illinois Power Generation Company
ISGS	Illinois State Geological Survey
ISWS	Illinois State Water Survey
LAU	lower aquifer unit
LCU	lower confining unit
NAVD88	North American Vertical Datum of 1988
NEW	Newton Power Plant
No.	number
NPDES	National Pollutant Discharge Elimination System
NPP	Newton Power Plant
OP	Operating Permit
PAP	Primary Ash Pond
PMP	Primary Migration Pathway
PWS	Public water system
Ramboll	Ramboll Americas Engineering Solutions, Inc.
UA	uppermost aquifer
UCU	upper confining unit
UD	Upper Drift
USEPA	United States Environmental Protection Agency

1. INTRODUCTION

1.1 Plant and Site Information

Illinois Power Generation Company (IPGC) is the owner of the active coal-fired Newton Power Plant (NPP), also referred to as the Newton Power Station (NEW), in Newton, Illinois. IPGC intends to complete groundwater corrective action for the Primary Ash Pond (PAP), coal combustion residuals (CCR) surface impoundment (SI), which is identified by Illinois Environmental Protection Agency (IEPA) identification (ID) number (No.) W0798070001-01, CCR Unit ID No. 501, and National Inventory of Dams (NID) No. IL50719. This Corrective Action Plan (CAP) has been prepared for the PAP at the NPP under the requirements of Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845, Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments [1] and requirements of the Title 40 Code of Federal Regulations (40 C.F.R.) § 257 Subpart D, herein referred to as the Federal CCR Rule [2].

1.2 Organization of the Corrective Action Plan

This CAP is organized in the following manner:

- **Section 1** includes an introduction to the PAP, lists the status of other 35 I.A.C. § 845 permit applications submitted to IEPA, identifies the selected remedy, and provides a narrative of remedy construction;
- **Section 2** includes an overview of the Corrective Action process, including the results of the Corrective Measures Assessment (CMA) and Corrective Action Alternatives Analysis (CAAA);
- **Section 3** provides the CAP requirements, the selected remedy, an evaluation of effectiveness and an implementation schedule, as required by 35 I.A.C. § 845.670; and
- **Section 4** includes reference documents used in the development of this CAP.

This CAP was prepared as a supplement to the submitted Operating Permit (OP) application for the PAP as required by 35 I.A.C. § 845.200(a)(3).

1.3 Permit Status

The following 35 I.A.C. § 845 permit applications have previously been submitted to IEPA by IPGC for the PAP:

- An OP application, as required by 35 I.A.C. § 845.200(a)(3), was submitted on October 25, 2021 [3].
- A Construction Permit (CP) application for final closure of the PAP, as required by 35 I.A.C. § 845.220 [4], including a CCR Surface Impoundment Final Closure Plan, as required by 35 I.A.C. § 845.720, was submitted on July 28, 2022 [5]; a revised Final Closure Plan [6] is being provided in an amended CP application that will be provided to IEPA on April 1, 2025.

The Final Closure Plan selected closure-in-place (CIP) with a consolidate-and-cap approach as the most appropriate closure method for the PAP.

As of the date of this CAP, IPGC's OP and final closure CP applications for the PAP are pending with IEPA.

1.4 Selected Corrective Action Remedy

Groundwater Polishing (GWP) following source control (*i.e.,* consolidate-and-cap) presented within the Final Closure Plan [5, 6], has been identified as the most appropriate remedy for the PAP, based on the CAAA provided in **Appendix A**. Potential remedies evaluated in the CAAA included Source Control with GWP and Source Control with Groundwater Extraction (GWE).

The CAAA, which was prepared by Gradient Corporation (Gradient), was based on a CAAA Supporting Information Report (CAAA-SIR) that was prepared by Ramboll Americas Engineering Solutions, Inc. (Ramboll) and is attached to the CAAA. The CAAA-SIR includes the results of groundwater modeling and feasibility-level design information for each remedy.

A Groundwater Polishing Evaluation Report is also attached to the CAAA. This report presents results from geochemical modeling of exceedance parameters addressed at PAP by the CAP. Geochemical modeling supports the assessment of groundwater polishing as a component of the proposed corrective action by evaluating the potential for chemical attenuation of constituents of concern (COCs) before and after source control as a means of contextualizing the times to meet GWPS estimated in the flow and transport model.

1.4.1 Narrative Description of Selected Corrective Action Remedy

Corrective action will consist of source control, as outlined in the Final Closure Plan for the PAP [5, 6]. The source control will be followed by GWP. The proposed closure exceeds the minimum Closure Performance Standards listed in 35 I.A.C. § 845.750. The closure will include removing free liquids in accordance with the performance standard in 35 I.A.C. § 845. The closure will control infiltration in accordance with the performance standard in 35 I.A.C. § 845, thus removing the hydraulic head that can force leachate into subsurface soils and is the mechanism that can drive risk (United States Environmental Protection Agency [7].

> *EPA's risk assessment shows that the highest risks are associated with CCR surface impoundments due to the hydraulic head imposed by impounded water. Dewatered CCR surface impoundments will no longer be subjected to hydraulic head so the risk of releases, including the risk that the unit will leach into the groundwater, would be no greater than those from CCR landfills.*

The PAP will be closed using a consolidate-and-cap approach consisting of excavating nearly 3.6 million cubic yards of CCR and placing it in a consolidated CCR footprint at an elevation greater than 12 feet above the uppermost aquifer (UA) and above the estimated post-closure water table [6]. The consolidated CCR will be covered with an alternate geomembrane final cover system having performance that exceeds the 35 I.A.C. § 845.750(c)(2) minimum final cover requirements. The proposed source control is predicted to reduce water flux into and out of the PAP by greater than 99 percent and allow the GWPS to be achieved within approximately 34 years [8]. These source control activities will serve as the primary groundwater corrective measure at the PAP.

1.4.1.1 Narrative Discussion of Remedy Design and Function

The USEPA has stated that source control is the most effective means of ensuring the timely attainment of remediation objectives [9]. Natural geochemical processes are appropriate as a "polishing step" for residual plume management after effective source control implementation

(*i.e.*, groundwater polishing) because there are no risks to receptors and the contaminant plume is not expanding. Groundwater polishing will achieve the GWPS by natural physical and chemical mechanisms within the groundwater which reduce the concentrations of COCs. Therefore, selection of a groundwater monitoring network, groundwater monitoring, and adaptive management are critical components of remedy design and function which are further described in **Section 1.4.2**.

1.4.2 Narrative Description of Proposed Groundwater Monitoring

Corrective action groundwater monitoring will be conducted during remedy operation to evaluate the effectiveness of the corrective action remedy and whether groundwater concentrations are achieving the GWPS as predicted by the groundwater model. Groundwater data collected as part of the monitoring program will be analyzed to determine if the remedy is on track to meet GWPS and to inform adaptive management decisions if performance metrics are not achieved. A Corrective Action Groundwater Monitoring Plan (GMP) with details on how the groundwater monitoring network will be monitored, how the data will be analyzed, and what will trigger adaptive site management directions is included as **Appendix B**. Information associated with these activities is described below.

- Regular groundwater monitoring will be conducted utilizing a corrective action groundwater monitoring network designed in accordance with 35 I.A.C. § 845.680(c).
- Laboratory parameters include major ions for evaluating groundwater chemistry and COCs (*i.e.*, reported exceedances in accordance with the Operating GMP) the corrective action is intended to address. Sampling to evaluate corrective action effectiveness will begin the quarter after the corrective action remedy is implemented and commissioned. Samples will be collected on a quarterly basis initially and potentially reduced to a semiannual basis once five years of monitoring have occurred, in accordance with 35 I.A.C. § 845.650(b)(4). Monitoring results will be submitted to IEPA for each monitoring event, in addition to an Annual Groundwater Monitoring and Corrective Action Report, in accordance with 35 I.A.C. § 845.610(e).
- Routine maintenance of the monitoring well network will include inspecting the wells, making repairs to the wells (as needed) and rehabilitating and/or replacing wells to improve performance (as needed).
- Adaptive site management strategies will be employed as an integral part of ongoing corrective action at the PAP. The adaptive site management approach will allow timely incorporation of new site information to ensure the achievement of the GWPS. The effectiveness of the remedy at each phase is evaluated using performance metrics designed to assess the goals of that phase. Performance metrics answer questions designed to evaluate multiple aspects of remedy effectiveness with the ultimate goal of holistically guiding management decisions [10]. The goals and performance metrics of each phase of remedy evaluation are presented in Section 3 of the Corrective Action GMP (**Appendix B**).
- Documentation of remedy progress metrics will be provided in the Annual Groundwater Monitoring and Corrective Action Report beginning after the second year of data collection: a minimum of eight data points is required to complete meaningful statistical analysis required for evaluation of the remedy progress metrics, which will be available after two years of quarterly sampling. Per USEPA guidance [10], a thorough review of corrective action progress and remedy effectiveness will be conducted every five years. A Five-Year Annual Groundwater

Monitoring and Corrective Action Report will evaluate the comprehensive data set and, if triggered by the results of the remedy progress evaluation metrics, evaluate whether adaptive management actions are needed. The five-year time frame allows adaptive management decisions to be based on a robust data sufficient to complete meaningful statistical analysis while remaining responsive to changing site conditions [10].

- Corrective Action Confirmation Monitoring and Completion
  - Per 35 I.A.C. § 845.680(c), corrective action is considered complete when compliance with the GWPS has been demonstrated "at all points within the plume of contamination that lies beyond the waste boundary […] for a period of three consecutive years". At that time, an attainment evaluation will be implemented. This will include monitoring each well for three additional years to confirm that GWPS have been achieved, in accordance 35 I.A.C. § 845.680(c).
  - After completion of the corrective action confirmation monitoring period, a Corrective Action Completion Report and Certification will be prepared and submitted to IEPA, in accordance with 35 I.A.C. § 845.680(e).

2. CORRECTIVE ACTION OVERVIEW

This CAP is based on the tiered assessment and analysis of alternative remedial technologies and remedies that were completed via the CMA and CAAA (**Appendix A**). The objective of these assessments was to determine the optimal alternative for the PAP that, when coupled with the source control proposed in the Final Closure Plan [4, 5, 6], would remediate groundwater and provide compliance with the GWPS specified under 35 I.A.C. § 845.600.

2.1 Integration of Corrective Action with Source Control (Final Closure)

All documents, assessments, and analyses performed as part of this CAP assume that the source control presented in the Final Closure Plan [5, 6] for the PAP will also be implemented. Source control is the primary corrective action for the PAP and will consist of removing free liquids from the CCR and completing CIP with a consolidate-and-cap approach. This is estimated to include moving a total of 3.6 million cubic yards of CCR within PAP and materials from the Newton Landfill 2 and coal pile may also be moved and utilized as subgrade fill in the PAP closure area. This will result in reducing the final footprint of the PAP from 404 to 252.3 acres. When source control is completed, the remaining CCR in the PAP will be fully encapsulated on all sides by underlying native soils, low-permeability embankment dikes, and a low-permeability final cover system.

Source control alone, without other supplemental corrective action, has been estimated via groundwater modeling to reduce the infiltration of liquids into the PAP by 99 percent (%) relative to pre-closure conditions. Groundwater modeling performed to support the Final Closure Plan estimates that source control activities are expected to result in GWPS being achieved approximately 34 years after closure completion, without implementing other forms of corrective action [8].

The remedy presented in this CAP is supplemental to the removal of free liquids, completion of source control via closure, and placing the CCR above the groundwater table and UA, which when combined, are the primary remedial action that will be performed at the site.

2.2 Corrective Measures Assessment

The CMA [11] was performed for the PAP and submitted to the IEPA on April 3, 2024, after the exceedances[1] of the GWPS were identified. The CMA considered a total of 4 corrective measures for the PAP, including:

- Source Control with Groundwater Polishing (GWP)
- Source Control with Groundwater Extraction (GWE)
- Source Control with Groundwater Cutoff Wall
- Source Control with In-Situ Chemical Treatment

Based on the CMA, three corrective measures, including Source Control-GWP, Source Control-GWE, and Source Control – cutoff wall were identified as potentially viable corrective measures

[1] Throughout this document, "exceedance" or "exceedances" is intended to refer only to potential exceedances of proposed applicable background statistics or GWPSs as described in the proposed groundwater monitoring program, which was submitted to the IEPA on October 25, 2021 as part of IPGC's operating permit application for the NPP PAP. That operating permit application, including the proposed groundwater monitoring program, remains under review by the IEPA and, therefore, IPGC has not identified any actual exceedances.

for the PAP and were included for further evaluation, design advancement, and comparative assessment within the CAAA for the PAP. The other corrective measures were determined by the CMA to unlikely be viable for the PAP and were not evaluated further within the CAAA.

2.3 Analysis of Corrective Action Alternatives

2.3.1 Corrective Action Alternatives Analysis Supporting Information Report

The CAAA for the PAP was prepared by Gradient based on a Corrective Action Alternatives Analysis Supporting Information Report (CAAA-SIR) prepared by Ramboll. The CAAA-SIR, which is included as Attachment B of the CAAA provided in **Appendix A**, included additional evaluation, design advancement, and comparative assessment of the Source Control-GWP, Source Control-GWE, and Source Control – cutoff wall corrective measures identified as potentially viable for the PAP by the CMA.

The CAAA-SIR evaluation included the completion of feasibility-level design activities for each alternative; this incorporated the following tasks:

- Performing predictive groundwater modeling to evaluate the scope (*i.e.,* location and extents) of each alternative and the corresponding estimated time to achieve GWPS. Following groundwater modeling, Source Control – cutoff wall did not provide any advantages over Source Control – GWP or Source Control – GWE and was not carried any further within the CAAA - SIR;
- Developing feasibility-level design drawings showing the extents in plan and elevation view of each engineered remedy;
- Estimating the time required to design, construct, and implement each remedy, in addition to ongoing operational and maintenance requirements;
- Developing conceptual plans for the storage, treatment, and discharge of extracted groundwater for applicable remedies;
- Identifying future tasks required to implement each alternative, including permitting, investigation, and design efforts; and
- Estimating relevant material quantities, labor hours, delivery miles, equipment miles, and daily commuting miles associated with constructing each remedy.

2.3.2 Corrective Action Alternatives Analysis

The CAAA (**Appendix A**) included a detailed analysis of each of the corrective action alternatives presented in the CAAA-SIR, including an evaluation of:

- Long and short-term effectiveness and protectiveness;
- Ease or difficulty of implementation;
- Degree to which community concerns are addressed; and,
- Relative amount of contamination removed from the environment.

Based on the CAAA, Source Control-GWP was identified as the most appropriate corrective action for the PAP and was selected for further design development as part of this CAP.

3. CORRECTIVE ACTION PLAN

The 35 I.A.C. § 845 requirements for the CAP and corresponding demonstrations that the proposed corrective measures meet these requirements are discussed individually in this section. Many of the CAP requirements are discussed within the CMA and CAAA documents that have been prepared to support the CAP. Therefore, the demonstrations will also refer to those documents.

3.1 General Requirements

35 I.A.C. § 845.670(c): The corrective action plan must meet the following requirements:

(1) Be based on the results of the corrective measures assessment conducted under 35 I.A.C. § 845.660;

(2) Identify a selected remedy that, at a minimum, meets the standards listed in subsection (d);

(3) Contain the corrective action alternatives analysis specified in subsection (e); and

(4) Contain proposed schedules for implementation, including an analysis of the factors in subsection (f).

This CAP is based on the results of the CMA and CAAA, which are included within **Appendix A**. The proposed schedule for implementing the selected Source Control-GWP remedy is provided in **Table 1**.

3.2 Remedy Selection

35 I.A.C. § 845.670(d): The selected remedy in the corrective action plan must:

(1) Be protective of human health and the environment;

Current conditions at the PAP pose no risk to human health or environment. There are also no unacceptable risks to human health and the environment under future conditions. Concentrations of CCR-derived constituents in groundwater are anticipated to decline over time once the PAP is closed and the GWP remedy is in place as presented in the CAAA (**Appendix A)** [12].

(2) Attain the groundwater protection standards specified in 35 I.A.C. § 845.600;

Groundwater modeling indicates Source Control-GWP remedy (Appendix B of the CAAA-SIR which is attached in **Appendix A**), which is selected as the remedy of this CAP, will result in attainment of the GWPS within the current monitoring system within 34 years of final closure completion.

(3) Control the sources of releases to reduce or eliminate, to the maximum extent feasible, further releases of constituents listed in 35 I.A.C. § 845.600 into the environment;

The PAP will be closed using a consolidate-and-cap approach which will act as the main control mechanism to prevent further releases of CCR-derived constituents. If the remedy is found to be unsuccessful in meeting remediation goals, adaptive site management actions will be taken as described within the Corrective Action GMP (**Appendix B**).

(4) Remove from the environment as much of the contaminated material that was released from the CCR surface impoundment as is feasible, taking into account factors such as avoiding inappropriate disturbance of sensitive ecosystems; and

No known releases of CCR due to a structural integrity issue have occurred at the PAP.

(5) Comply with standards for management of wastes as specified in 35 I.A.C. § 845.680(d).

The CCR managed as part of the closure will be done in accordance with all 35 I.A.C. § 845 requirements and the submitted closure plan [5, 6].

3.3 Schedule for Implementation

As presented in Section 4.1 of the CMA and in **Section 1.4.1.1** of this CAP, source control is the most effective means of ensuring the timely attainment of remediation objectives [9]. With groundwater from the PAP impoundment and potential groundwater contributions to surface water posing no unacceptable risks to human health or the environment [12], groundwater polishing is an appropriate "polishing step" provided the corrective action is managed within a reasonable timeframe.

The Source Control-GWP remedy will successfully attain GWPS in a reasonable time[2] as discussed in the following subsections. Timeframes to attain GWPS in the groundwater monitoring wells summarized in **Table A** indicate that 60% of progress is expected to occur within the first five years.

Table A. Estimated Timeframes to Attain GWPS in Groundwater Monitoring Wells

Scenario	Percentage of Wells Predicted to Attain the GWPS				
	1 year**	5 years**	10 years**	33 years**	34 years**
Baseline (CIP) Source Control – GWP	40 %	60 %	60 %	80 %	100 %

*: 5 wells were used to estimate time to reach GWPS in the 2025 Groundwater Modeling Technical Memorandum.
**: Years counted starting from completion of source control.

35 I.A.C. § 845.670(f): The owner or operator must specify, as part of the corrective action plan, a schedule for implementing, of and completing, remedial activities. The schedule must require the completion of remedial activities within a reasonable time, taking into consideration the factors in this subsection (f). The owner or operator of the CCR surface impoundment must consider the following factors in determining the schedule of remedial activities:

The schedule for implementing and completing the Source Control-GWP remedy at the PAP is included in **Table 1**.

The schedule was developed considering the factors required by 35 I.A.C. §§ 845.670(f)(1) through (5), as summarized below.

35 I.A.C. § 845.670(f)(1): Extent and nature of contamination, as determined by the characterization required under 35 I.A.C. § 845.650(d);

The Nature and Extent Report [13], which was submitted to the IEPA on April 3, 2024 and is included with relevant updates as Appendix D to the CAAA report (**Appendix A**). Groundwater

[2] Groundwater Modeling Technical Memorandum is an appendix to CAAA-SIR which is attached to CAAA, **Appendix A** of this CAP.

modeling and geochemical analysis were performed by Ramboll as part of the CAAA-SIR and the modeling considered the nature and extent of contamination.

35 I.A.C. § 845.670(f)(2): Reasonable probabilities of remedial technologies achieving compliance with the GWPS established by 35 I.A.C. § 845.600 and other objectives of the remedy;

Several remedies were evaluated in the CAAA (**Appendix A**) and it was determined that the selected remedy (Source Control–GWP) is expected to achieve compliance with 35 I.A.C. § 845.600 in a reasonable timeframe. The potential for remedial technologies to achieve compliance with the GWPS was evaluated using groundwater modeling [14]. For the selected remedy, the results indicate that groundwater will achieve compliance with the GWPS approximately 34 years after completion of source control, which is described in **Section 1.4.1**. Further, the groundwater modeling indicates flux into and out of the PAP will be reduced by approximately 99%, suggesting a high probability of successful source control [8].

As discussed in the CMA, source control via consolidate-and-cap approach is a proven method for addressing groundwater contamination [11]. The proposed consolidate-and-cap approach is consistent with the requirements of 40 CFR § 257 and 35 I.A.C. § 845. The proposed cover has been demonstrated to be compliant by equivalency in the Final Closure Plan [6] .

Groundwater polishing processes include both physical and chemical mechanisms within the groundwater which reduce the concentrations of COCs in the groundwater. Physical components of groundwater polishing are described by groundwater flow and transport modeling [14]. The contribution of chemical mechanisms to groundwater polishing under current conditions and after source control implementation are evaluated using a geochemical modeling-based approach [15]. When combined with source control, groundwater polishing processes will achieve the GWPS in a reasonable timeframe.

35 I.A.C. § 845.670(f)(3): Availability of treatment or disposal capacity for CCR managed during implementation of the remedy;

The selected remedy includes source control followed by GWP. The CCR will be managed within the footprint of the existing CCR Unit as proposed in the CP for final closure [4, 5, 6]. GWP is not expected to result in the management of an appreciable volume of CCR. Therefore, the treatment and disposal capacity of CCR is not an applicable consideration for the selected remedy.

35 I.A.C. § 845.670(f)(4): Potential risks to human health and the environment from exposure to contamination before completion of the remedy;

A Human Health and Ecological Risk Assessment was completed and included as an attachment to the CAAA (**Appendix A**) that considers the potential risks to human health and the environment before completion of the remedy. The Human Health and Ecological Risk Assessment concluded that groundwater from the PAP impoundment and potential groundwater contributions to surface water pose no unacceptable risks to human health or the environment. This conclusion was reached using methodology consistent with applicable USEPA risk assessment principles. The assessment relied on conservative assumptions meant to overestimate possible exposures and risks and provide an additional level of certainty in the conclusions [12].

35 I.A.C. § 845.670(f)(5): Resource value of the aquifer, including:

The resource value of the aquifer is discussed in the Hydrogeologic Site Characterization Report (HCR), which is included as Attachment B in the CP application for final closure. The uppermost aquifer includes saturated portions of the Mulberry Grove Member in the vicinity of the PAP. Per 35 I.A.C. § 620.210, groundwater within the uppermost aquifer at the PAP meets the definition of Class I – Potable Resource Groundwater. Discontinuous sand lenses of the Hagarstown Member present within the soils overlying the uppermost aquifer have been identified as a potential migration pathway between the PAP and the uppermost aquifer. This information was also considered in the CAAA as part of the Human Health and Ecological Risk Assessment which concluded that groundwater from the PAP impoundment and potential groundwater contributions to surface water pose no unacceptable risks to human health or the environment.

Source Control followed by GWP will result in decline of concentrations of CCR-derived constituents in the uppermost aquifer and potential migration pathways. Off-site migration of CCR-derived constituents is not expected to occur. Groundwater polishing and adaptive site management following Source Control will function until the GWPS is achieved in accordance with the corrective action GMP (**Appendix B**). Paragraphs (A) through (F) from 35 I.A.C. § 845.670(f)(5) are further addressed, as summarized below.

35 I.A.C. § 845.670(f)(5)(A): Current and future uses, including potential residential, agricultural, commercial industrial and ecological uses; and

Current uses and users of the groundwater are discussed in the HCR, Section 5.1 and attachments; and, were considered in the CAAA as part of the Human Health and Ecological Risk Assessment which concluded that groundwater from the PAP impoundment and potential groundwater contributions to surface water pose no unacceptable risks to human health or the environment. Exceedances of the GWPS will remain within the property boundary which is controlled by IPGC. No changes in future residential, commercial or ecological use of the aquifer are expected. In the absence of changes to current and future uses there is no applicable scheduling consideration.

35 I.A.C. § 845.670(f)(5)(B): Proximity and withdrawal rate of users;

A water well inventory was completed in 2021 utilizing federal and state databases to assess nearby pumping wells, drinking water receptors, and other uses of water in the vicinity of the PAP. A search of the Illinois State Geological Survey (ISGS) Illinois Water and Related Wells (ILWATER) Map identified two wells located within 1,000-meters of the PAP (Well Nos. 120790038600 and 120790043600). Both wells are located to the southeast, or side-gradient, of the PAP and are listed as dry and abandoned. The assessment concluded there are no existing off-site water wells, potable or non-potable, that could potentially be impacted by groundwater from the PAP. This information was also considered in the CAAA as part of the Human Health and Ecological Risk Assessment which concluded that groundwater from the PAP impoundment and potential groundwater contributions to surface water pose no unacceptable risks to human health or the environment. In the absence of changes in current and future aquifer uses, there is no applicable scheduling consideration for proximity and withdrawal rates of users.

35 I.A.C. § 845.670(f)(5)(C): Groundwater quantity and quality;

Per 35 I.A.C. § 620.210, groundwater within the uppermost aquifer at the PAP meets the definition of Class I – Potable Resource Groundwater [16]. The Human Health and Ecological Risk Assessment (Appendix A in CAAA) concluded that groundwater from the PAP impoundment and potential groundwater contributions to surface water pose no unacceptable risks to human health or the environment. The selected remedy includes source control followed by GWP. GWP does not include the management of any volume of groundwater. In the absence of groundwater management there is no applicable scheduling consideration pertaining to the quantity and quality of groundwater.

35 I.A.C. § 845.670(f)(5)(D): The potential impact to the subsurface ecosystem, wildlife, other natural resources, crops, vegetation, and physical structures caused by exposure to CCR constituents;

Potential surface receptors are discussed in the HCR Sections 5.2 and 5.3. A survey to identify surface water features, nature preserves, and historic sites was conducted for a 1,000-meter radius around the PAP. Section 3.5 of the Human Health and Ecological Risk Assessment included as Appendix A of the CAAA and CMA/CAAA Report discusses the ecological risk evaluation.

1. Ecological receptors exposed to surface water include aquatic and marsh plants, amphibians, reptiles, and fish. The risk evaluation showed that none of the Constituents of Interest (COIs) in surface water exceeded protective screening benchmarks.
2. Ecological receptors exposed to sediment include benthic invertebrates. The modeled sediment COIs did not exceed the conservative screening benchmarks, therefore, none of the COIs evaluated in sediment are expected to pose an unacceptable risk to ecological receptors.
3. Ecological receptors were also evaluated for exposure to bioaccumulative COIs. This evaluation considered higher trophic-level wildlife with direct exposure to surface water and sediment and secondary exposure through the consumption of dietary items (*e.g.,* plants, invertebrates, small mammals, fish). Mercury was the only ecological COI identified as having potential bioaccumulative effects. However, the modeled concentrations did not exceed benchmarks protective of bioaccumulative effects. Therefore, mercury is not considered to pose an ecological risk *via* bioaccumulation. Overall, this evaluation demonstrated that none of the COIs evaluated are expected to pose an unacceptable risk to ecological receptors.

Overall, this evaluation demonstrated that none of the COIs evaluated are expected to pose an unacceptable risk to ecological receptors. The selected remedy will reduce the concentrations of COI in groundwater. In the absence of unacceptable risks to ecological receptors there is no applicable scheduling consideration.

35 I.A.C. § 845.670(f)(5)(E): The hydrogeologic characteristic of the facility and surrounding land; and

In addition to the CCR present in the PAP, five hydrostratigraphic units have been identified at the PAP based on stratigraphic relationships, geologic composition, and common hydrogeologic properties. The units, listed from surface downward, are summarized as follows:

- **Upper Drift (UD)/Potential Migration Pathway (PMP):** The UD is composed of the low permeability silts and clays of the Peoria Silt and Sangamon Soil and the sandier soils of the Hagarstown Member (*i.e.,* PMP).

  - **Hagarstown Member/PMP:** The Hagarstown Member consists of discontinuous sandier deposits of the UD, where present, and overlies the Vandalia Till.
- **Upper Confining Unit (UCU):** This unit consists of the low permeability clay and silt of the Vandalia Till Member (Vandalia Till).
- **Uppermost Aquifer (UA):** This unit is composed of the Mulberry Grove Formation, which has been classified onsite as poorly graded sand, silty sand, clayey sand, and gravel.
- **Lower Confining Unit (LCU):** This unit is comprised of low permeability silt and clay of the Smithboro Till Member (Smithboro Till) and the Banner Formation.
- **Bedrock Unit:** Shale bedrock of the Pennsylvanian-age Mattoon Formation [17] was encountered at the NPP during recent and historical investigations. Based on boring logs, the bedrock surface elevation at the NPP ranges from 408 feet (B141) to 445 feet (APW13) [18]. The locations of these wells and measured bedrock elevations indicate the bedrock surface is highest in the southeast portion of the site and slopes downward to the west and north beneath the PAP.

The effects of these hydrostratigraphic units on schedule were considered by incorporating the geometry, hydraulic, and geochemical properties of these units into the groundwater modeling and groundwater polishing reports, attached to the CAAA-SIR and CAAA, respectively, included in **Appendix A**, which estimate the time to reach the GWPS for remedial alternatives.

35 I.A.C. § 845.670(f)(5)(F): The availability of alternative water supplies.

As discussed in subsection A, there are two potable water wells within 1,000 meters of the PAP [16]. There is currently no need for an alternative water supply well as there are no current unacceptable risks to human or ecological receptors at the site. There are no applicable schedule concerns regarding the availability of alternative water supplies.

3.3.1 Other Relevant Factors

35 I.A.C. § 845.670(f)(6): Other relevant factors.

No additional factors were identified for consideration.

3.4 Necessity of Interim Measures

Source control using the consolidate-and-cap approach is projected to be complete within four to six years after approval of the final closure CP application [4, 5, 6]. 35 I.A.C § 845.680(a)(3) states the owner or operator must take any interim measures necessary to reduce the contaminants leaching from the CCR surface impoundment, and/or potential exposures to human or ecological receptors. Upon completion of source control, the PAP will immediately transition to GWP, therefore no interim measures are required. Further, all subsections of this requirement are discussed as follows.

35 I.A.C. § 845.680(a)(3)(A): Time required to develop and implement a final remedy.

Source control and GWP will be completed in accordance with the schedule provided in **Table 1**. The GWPS will be achieved within a reasonable time frame.

35 I.A.C. § 845.680(a)(3)(B): Actual or potential exposure of nearby populations or environmental receptors to any of the constituents listed in 35 I.A.C. § 845.600.

There are no current unacceptable risks to human or ecological receptors at the site [12]. It was concluded that shallow groundwater and surface water are not a source of drinking water [12]. As there are no current conditions that present a risk to human health or the environment, there will also be no unacceptable risk to human health or the environment for future conditions [12].

35 I.A.C. § 845.680(a)(3)(C): Actual or potential contamination of sensitive ecosystems or current or potential drinking water supplies.

The nature and extent of exceedances have been evaluated in the Nature and Extent Report [13]. Although there are exceedances of GWPS, there are no impacts to current or potential drinking water supplies. As stated above, there are no current unacceptable risks to human or ecological receptors at the site. Additionally, an ecological risk assessment was completed and no unacceptable risks were identified for ecological receptors exposed to surface water and sediment [12]. No potential groundwater receptors are in the vicinity of the PAP [12] and therefore no benefits are anticipated from implementation of an interim measure.

35 I.A.C. § 845.680(a)(3)(D): Further degradation of the groundwater that may occur if remedial action is not initiated expeditiously.

The selected remedy of source control and GWP will achieve the GWPS in a reasonable time frame and no current unacceptable risks to human health or the environment have been identified. No interim measure is expected to prevent further degradation of the groundwater more expeditiously than implementation of the selected remedy.

35 I.A.C. § 845.680(a)(3)(E): Weather conditions that may cause any of the constituents listed in 35 I.A.C. § 845.600 to migrate or be released.

As stated above, the selected remedy of source control and GWP will achieve the GWPS in a reasonable timeframe and no current unacceptable risks to human health or the environment have been identified. No interim measure is expected to further prevent migration of constituents more expeditiously than implementation of the selected remedy.

35 I.A.C. § 845.680(a)(3)(F): Potential for exposure to any of the constituents listed in 35 I.A.C. § 845.600 as a result of accident or failure of a container or handling system.

As stated above, GWP will be implemented immediately after Source Control is completed. As PAP is closed-in-place within a consolidated footprint, no container or handling system will be in use.

35 I.A.C. § 845.680(a)(3)(G): *Other situations that may pose threats to human health and the environment.*

No other situations have been identified where PAP CCR leachate poses threats to human health and environment.

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TABLES

Table 1. Proposed Milestone Schedule for Implementing Corrective Action Remedy (Source Control-Groundwater Polishing)

Corrective Action Plan
Newton Power Plant
Primary Ash Pond
Newton, IL

Milestone		Timeframe (Preliminary Estimates)
Pre-Implementation	Corrective Action Plan Submittal	April 2025
	Revised Final Closure Plan Submittal	April 2025
Source Control Construction	Source Control (Closure) Construction • Complete implementation of Source Control	4 to 6 years (*after approval of Revised Final Closure Plan and All Other Closure-Related Permits*)
	Timeframe to Complete Source Control Construction[1]	**4 to 6 years** (*after receipt of all permits required for closure*)
Corrective Action Implementation	Corrective Action Operations and Maintenance • Perform groundwater monitoring and reporting per Corrective Action Groundwater Monitoring Plan	34 years (*after completion of Source Control*[2])
	Corrective Action Groundwater Confirmation Monitoring • Perform groundwater monitoring to demonstrate compliance with GWPS for 3 years, per 35 I.A.C. § 845.680(c)	3 years (*after Corrective Action Operations and Maintenance*)
	Corrective Action Completion • Prepare Corrective Action Completion Report, per 35 I.A.C. § 845.680(E)	3 to 6 months (*after Corrective Action Confirmation Monitoring*)
	Timeframe to Complete Corrective Action[1]	**38 years** (*after completion of Source Control*)

Notes:

[1]All timeframes are preliminary and may change as the project develops. Timeframes may also be affected by regulatory review and/or permit approval processes, for both 35 I.A.C. § 845 and non-35 I.A.C. § 845 permits.

[2] See Table A in Section 3.3 of the report, 50% of progress toward meeting the GWPS is expected to occur within the first two years

GWPS = Groundwater Protection Standard

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APPENDIX A
CORRECTIVE ACTION ALTERNATIVES ANALYSIS (845.670(E)), INCLUDING CORRECTIVE MEASURES ASSESSMENT (845.660)

Corrective Action Alternatives Analysis for the Newton Primary Ash Pond at Newton Power Plant Newton, Illinois

April 1, 2025

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Abbreviations

BCU	Bedrock Confining Unit
bgs	Below Ground Surface
BMP	Best Management Practice
CAA	Closure Alternatives Analysis
CAAA	Corrective Action Alternatives Analysis
CCR	Coal Combustion Residual
CIP	Closure-in-Place
CMA	Corrective Measures Assessment
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CY	Cubic Yard
GHG	Greenhouse Gas
GMP	Groundwater Monitoring Plan
GWET	Groundwater Extraction Trench
GWP	Groundwater Polishing
GWPS	Groundwater Protection Standard
HUC	Hydrologic Unit Code
IAC	Illinois Administrative Code
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
IPGC	Illinois Power Generating Company
LCU	Lower Confining Unit
LLDPE	Linear Low-Density Polyethylene
N_2O	Nitrous Oxide
NID	National Inventory of Dams
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NPP	Newton Power Plant
O&M	Operations and Maintenance
PAP	Primary Ash Pond
PM	Particulate Matter
PMP	Potential Migration Pathway
SFWA	State Fish and Wildlife Area
Source Control-GWET	Source Control with Groundwater Extraction Trench
Source Control-GWP	Source Control with Groundwater Polishing
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
UA	Uppermost Aquifer
UD	Upper Drift
UCU	Upper Confining Unit
US DOT	United States Department of Transportation
US EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

Summary of Findings

Title 35, Part 845 of the Illinois Administrative Code (IAC) (IEPA, 2021) requires that a Corrective Action Alternatives Analysis (CAAA) be performed as part of the remedy selection, prior to undertaking any corrective actions at certain coal combustion residual (CCR)-containing impoundments, where exceedances of groundwater protection standards (GWPSs) have been identified. This report presents a CAAA for the Primary Ash Pond (PAP) at the Newton Power Plant (NPP), pursuant to the requirements under IAC Section 845.670. The goal of performing a CAAA is to holistically evaluate the potentially viable corrective actions identified in the Corrective Measures Assessment (CMA) (Appendix C; Ramboll, 2024a) in order to remediate groundwater and achieve compliance with the GWPSs specified under IAC Section 845.600 (IEPA, 2021). These analyses assess potentially viable corrective action alternatives based on a wide range of factors, including the efficiency, reliability, and ease of implementation of a corrective action; its potential positive and negative short- and long-term impacts on human health and the environment; and its ability to address concerns raised by the community (IEPA, 2021).

It is important to note that many CCR sites are complex groundwater environments where remedial actions will inherently take many years to complete. While no formal definition of a complex groundwater environment exists, most would agree that there are a number of common characteristics at complex groundwater sites, including the following (National Research Council, 2013):

- Highly heterogeneous subsurface environments;
- Large source zones;
- Multiple, recalcitrant constituents; and
- Long timeframes over which releases occurred.

Each of these characteristics are common at CCR sites. Surface impoundments are often tens to hundreds of acres in size and many have operated for decades, leading to large source zones and prolonged releases. Furthermore, CCR impoundments are often located in alluvial geologic settings where sands are interbedded with silts and clays. This results in a heterogeneous environment where constituent mass may persist for many years in low-permeability deposits. Finally, the constituents that are most common at CCR sites include metals and inorganics that do not naturally biodegrade. The combination of these factors results in a complex groundwater environment where remediation, even under the best of circumstances, may take many years to achieve GWPSs. It is for these reasons that the United States Environmental Protection Agency (US EPA) refused to specify what is a reasonable *vs.* an unreasonable timeframe for groundwater corrective actions at CCR sites, stating that it "was truly unable to establish an outer limit on the necessary timeframes—including even a presumptive outer bound" (US EPA, 2015a).

In this CAAA, all corrective actions that have been evaluated consist of source control and residual plume management. Source control is generally considered to be one of the more effective remedial action approaches. Source control involves removing the hydraulic head from an impoundment (*i.e.*, unwatering and dewatering) and preventing further downward migration of constituents. US EPA has found that "releases from surface impoundments [to groundwater] drop dramatically after closure" (US EPA, 2014). US EPA has also stated that source control is the most effective means of ensuring the timely attainment of remediation objectives (US EPA, 2015b). As a result, the implementation of source control often has a substantial and immediate effect on groundwater quality improvements.

The specific source control method that is the central component of all the corrective active alternatives evaluated in this CAAA is closure-in-place (CIP) using a consolidation-and-cap approach. Specifically, this includes the removal of free liquids, excavation and consolidation of CCR from the south, central, and north-central portions of the PAP into the west and east portions, and installation of a low-permeability geomembrane final cover system. These activities are designed to control, minimize or eliminate, post closure infiltration of liquids into the impounded CCR. Excavation and consolidation would result in CCRs being separated vertically, by up to 12 feet (ft), from underlying groundwater during post-closure conditions. As an additional consideration, the PAP is located on a relatively thick layer of low-permeability clay, and the final cover system will tie into the surrounding grades; this closure will result in the isolation of the CCR remaining in the PAP from the surrounding environment, including stormwater, surface water, groundwater,[1] and the atmosphere (HDR, Inc., 2025). The final cover system consists of a 40-milliliter (mil) linear low-density polyethylene (LLDPE) geomembrane layer, a geocomposite drainage layer, and 24 inches (in) of protective soil cover. These measures (consolidation of CCR and installation of a geomembrane cover) will control to the maximum extent feasible, the migration of CCR constituents to groundwater, thus facilitating the achievement of the GWPSs in accordance with IAC Section 845.600. As demonstrated by the groundwater modeling in support of the Closure Alternatives Analysis (CAA) (Gradient, 2022a, 2025), this source control approach would result in a reduction of the migration of water into the PAP by 99% compared to pre-closure conditions. Additionally, source control would result in a reduction of hydraulic flux out of the PAP by 99% compared to pre-closure conditions (Ramboll, 2025a), demonstrating that source control will control, minimize or eliminate post-closure release of leachate.

Two potential corrective actions are evaluated in this CAAA: Source Control with Groundwater Polishing (Source Control-GWP) and Source Control with two Groundwater Extraction Trenches (Source Control-GWET). Both corrective actions consist of source control and residual plume management and both alternatives were identified as a viable approach in the CMA (Appendix C; Ramboll, 2024a). The residual plume management portions of the two corrective action alternatives include groundwater polishing (GWP) and groundwater extraction trenches (GWETs).

Under the Source Control-GWP alternative, constituent concentrations in groundwater would be actively monitored to ensure the improvement of downgradient groundwater quality resulting from physical and geochemical attenuation mechanisms. Site-specific evaluations demonstrated that groundwater polishing is appropriate at PAP because site conditions are suitable for the attenuation of constituents *via* adsorption. Under the Source Control-GWET alternative, two groundwater extraction trenches would be constructed along the northeast and southwest edges of the former PAP dike; the trenches would remove impacted groundwater and facilitate the achievement of GWPSs in downgradient groundwater. One extraction trench (*i.e.*, the East Trench) would be approximately 2,000 ft long, 3 ft wide, and extend to a depth of 30 ft below ground surface (bgs); the other trench (*i.e.*, the West Trench) would be approximately 2,500 ft long, 3 ft wide, and extend to a depth of approximately 25 to 35 ft bgs. Groundwater collection pipes would be installed at the bottom of the trenches. The trenches would be backfilled with clean granular fill and capped with compacted clay to reduce surface water infiltration. The collection pipes would drain to sumps spaced throughout the trenches to extract groundwater. Extracted groundwater would be collected and sent to a new on-Site lined settling pond and discharged through either a new or existing outfall managed under the National Pollutant Discharge Elimination System (NPDES) permit for the Site. As part of both corrective action alternatives, an adaptive site management plan would be implemented in order to optimize the selected remedy based on real-time data that are collected.

Table S.1 evaluates both corrective actions alternatives (Source Control-GWP and Source Control-GWET) with regard to each of the factors specified under IAC Section 845.670(d) and IAC Section 845.670(e)

[1] Even though the PAP lacks a base liner and leachate collection system, groundwater monitoring data supports that "leachate has not historically been migrating from the site" due to the presence of the clay beneath the PAP (HDR, Inc., 2025).

(IEPA, 2021). Based on this evaluation and the details provided in Section 2 of this report, the most appropriate corrective action for this Site is Source Control-GWP. While the time to achieve GWPSs as predicted by groundwater modeling (excluding corrective action confirmation monitoring and completion reporting) is similar under both alternatives (34 years under Source Control-GWP *vs*. 33 years under Source Control with-GWET), the expected impacts on workers and the environment under the Source Control-GWP alternative are lower than those under the Source Control-GWET. Thus, Source Control-GWP is the most appropriate corrective action alternative for the PAP.

Table S.1 Comparison of Proposed Corrective Action Alternatives with Respect to Factors Specified in IAC Section 845.670(d) and IAC Section 845.670(e)

Evaluation Factor (Report Section; Part 845 Section)	Source Control-GWP	Source Control-GWET
Magnitude of Reduction of Existing Risks (Section 2.2.1; IAC Section 845.670(e)(1)(A))	Because current conditions do not present a risk to human health or the environment at the Primary Ash Pond (PAP), there will be no unacceptable risk to human health or the environment for future conditions when the unit has been closed and source control/residual plume management has been implemented. Concentrations of CCR-related constituents will decline over time and, consequently, potential exposures to CCR-related constituents in the environment will also decline. The magnitude of the reduction of existing risks is the same for the two potential corrective action alternatives, and both corrective action alternatives are equally protective of human health and the environment.	Because current conditions do not present a risk to human health or the environment at the PAP, there will be no unacceptable risk to human health or the environment for future conditions when the unit has been closed and source control/residual plume management has been implemented. Concentrations of CCR-related constituents will decline over time and, consequently, potential exposures to CCR-related constituents in the environment will also decline. The magnitude of the reduction of existing risks is the same for the two potential corrective action alternatives, and both corrective action alternatives are equally protective of human health and the environment.
Effectiveness of the Remedy in Controlling the Source (Section 2.2.2; IAC Section 845.670(e)(2))		
Extent to Which Containment Practices Will Reduce Further Releases/Control the Sources of Releases to Reduce or Eliminate, to the Maximum Extent Feasible (IAC Section 845.670(e)(2)(A)/IAC Section 845.670(d)(3))	Both alternatives include source control using closure-in-place (CIP) with a consolidation-and-cap approach (which is the primary remedial measure) and residual plume management. Source control would remove residual water in the PAP and this approach would result in CCR within the unit being physically isolated from the surrounding environment (HDR, Inc., 2025). Modeling results (see the CAA; Gradient, 2022a, 2025) indicate that source control in the PAP would result in a reduction of hydraulic flux out of the PAP by 99% compared to pre-closure conditions. Source control is thus effective at controlling the source. Under Source Control-GWP, physical and geochemical attenuation mechanisms would mitigate impacts to downgradient groundwater quality and control the residual plume (Ramboll, 2024b). If necessary, remedy optimizations would be implemented	Both alternatives include source control using closure-in-place (CIP) with a consolidation-and-cap approach (which is the primary remedial measure) and residual plume management. Source control would remove residual water in the PAP and this approach would result in CCR within the unit being physically isolated from the surrounding environment (HDR, Inc., 2025). Modeling results (see the CAA; Gradient, 2022a, 2025) indicate that source control in the PAP would result in a reduction of hydraulic flux out of the PAP by 99% compared to pre-closure conditions. Source control is thus effective at controlling the source. Under the residual plume management for this alternative, groundwater extraction trenches would remove impacted groundwater and control downgradient migration of impacted groundwater. Physical and geochemical attenuation mechanisms would also

Evaluation Factor (Report Section; Part 845 Section)	Source Control-GWP	Source Control-GWET
	under the adaptive site management program.	help mitigate impacts to downgradient groundwater quality and control the residual plume (Ramboll, 2024b). If necessary, remedy optimizations would be implemented under the adaptive site management program.
Extent to Which Treatment Technologies May Be Used (IAC Section 845.670(e)(2)(B))	Source Control-GWP would rely on physical and geochemical attenuation processes. If necessary, remedy optimizations would be implemented under the adaptive site management program.	For the Source Control-GWET alternative, it would require construction of a new on-Site settling pond to settle solids from extracted groundwater from the extraction trench, prior to discharge *via* an NPDES permitted outfall. Other methods for treating extracted groundwater may be evaluated at later phases of the design. The remedy would also rely on physical and geochemical attenuation processes. If necessary, remedy optimizations would be implemented under the adaptive site management program.
Likelihood of Future Releases of CCR (Section 2.2.3; IAC Section 845.670(e)(1)(B))	Both corrective action alternatives include source control using CIP with a consolidation-and-cap approach. As part of this, a new geomembrane cover system would be installed, which would consist of a 40-mil LLDPE geomembrane layer, a geocomposite drainage layer, and 24 in of protective soil cover. Relative to current conditions, this cover system would increase protection against berm and surface erosion, precipitation infiltration, and other adverse effects (Appendix B; Ramboll, 2025b). There would be minimal risk of accidental CCR releases occurring post-closure under either alternative.	Both corrective action alternatives include source control using CIP with a consolidation-and-cap approach. As part of this, a new geomembrane cover system would be installed, which would consist of a 40-mil LLDPE geomembrane layer, a geocomposite drainage layer, and 24 in of protective soil cover. Relative to current conditions, this cover system would increase protection against berm and surface erosion, precipitation infiltration, and other adverse effects (Appendix B; Ramboll, 2025b). There would be minimal risk of accidental CCR releases occurring post-closure under either alternative.
Type and Degree of Long-Term Management, Including Monitoring, Operation, and Maintenance (Section 2.2.4; IAC Section 845.670(e)(1)(C))	Minimal long-term O&M efforts would be required under Source Control-GWP, because it would not require the installation, operation, or maintenance of any engineered systems or structures other than maintenance of the monitoring wells. Corrective action groundwater monitoring would continue until GWPSs have been achieved. Post-closure care groundwater monitoring would continue for a	Long-term O&M efforts required under Source Control-GWET would include the maintenance of the groundwater collection trench system and discharge of extracted groundwater. Extracted groundwater would be managed and treated by a newly-constructed on-Site settling pond before discharge *via* NPDES permitted Outfall. Corrective action groundwater sampling would continue until GWPSs have been achieved.

Evaluation Factor (Report Section; Part 845 Section)	Source Control-GWP	Source Control-GWET
	minimum of 30 years as required by IAC Section 845.780(c). Based on the adaptive site management approach, remedy optimizations (additional methods or techniques) might be implemented to ensure achievement of the GWPSs.	Post-closure care groundwater monitoring would continue for a minimum of 30 years as required by IAC Section. 845.780(c). Based on the adaptive site management approach, remedy optimizations (additional methods or techniques) might be implemented to ensure achievement of the GWPSs.
Short-Term Risks to the Community or the Environment During Implementation of Remedy (Section 2.2.5; IAC Section 845.670(e)(1)(D))		
Safety Impacts	Source control (*i.e.*, CIP using a consolidate-and-cap approach) would be implemented for both potential corrective action alternatives. While appropriate controls would be established to prevent accidents and injuries from occurring, the risks of accidents and injuries occurring during source control would be the same for both corrective action alternatives. These source control risks were evaluated in the closure alternatives analysis (CAA) (Gradient, 2022a, 2025). Overall, no worker accidents or injuries would be expected under the Source Control-GWP alternative because no installation, operation, and maintenance of engineered systems or structures would be required. Similarly, no off-Site impacts on nearby residents would be expected under the Source Control-GWP alternative.	Source control (*i.e.*, CIP using a consolidate-and-cap approach) would be implemented for both potential corrective action alternatives. While appropriate controls would be established to prevent accidents and injuries from occurring, the risks of accidents and injuries occurring during source control would be the same for both corrective action alternatives. These source control risks were evaluated in the CAA (Gradient, 2022a, 2025). Overall, considering worker accidents occurring during residual plume management both on- and off-Site, 0.97 worker injuries and 0.014 worker fatalities would be expected under the Source Control-GWET alternative, which is higher than the injuries and fatalities expected under the Source Control-GWP alternative. In total, an estimated 0.24 injuries and 3.6×10^{-3} fatalities would be expected to occur among community members due to off-Site activities under the Source Control-GWET alternative, which is higher than the injuries and fatalities expected under the Source Control-GWP alternative.

Evaluation Factor (Report Section; Part 845 Section)	Source Control-GWP	Source Control-GWET
Cross-Media Impacts to Air	Cross-media impacts to air can include air pollutants and GHG emissions, which are proportional to the potential impact of each alternative on other emissions from construction vehicles and equipment. Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both corrective action alternatives. Air impacts occurring during source control would be the same for both corrective action alternatives. Impacts associated with CIP using a consolidation-and-cap approach were evaluated in the CAA (Gradient, 2022a, 2025). Residual plume management for the Source Control-GWP alternative would be expected to have minimal air impacts because it would not require the construction of any engineered systems or structures other than activities required for the corrective action groundwater monitoring phase.	Cross-media impacts to air can include air pollutants and GHG emissions, which are proportional to the potential impact of each alternative on other emissions from construction vehicles and equipment. Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. Air impacts occurring during source control would be the same for both corrective action alternatives. Impacts associated with CIP using a consolidation-and-cap approach were evaluated in the CAA (Gradient, 2022a, 2025). Residual plume management for the Source Control-GWET alternative would have greater air impacts than the Source Control-GWP alternative, due to the construction and operation of the extraction trench system.
Cross-Media Impacts to Surface Water and Sediments	Updated groundwater modeling performed in support of the CAA (Gradient, 2022a, 2025) predicted that source control (*i.e.*, CIP using a consolidation-and-cap) would result in a reduction of hydraulic flux out of the PAP by 99% compared to pre-closure conditions (Ramboll, 2025a). The source control would minimize the amount of water retained within the impoundment and reduce hydraulic flux through the CCR. Due to the reduction in the hydraulic flux out of the PAP, the mass flux out of the PAP would also be controlled or minimized. Under residual plume management for the Source Control-GWP alternative, minimal surface water and sediment impacts would be expected, because it would not require the construction of any engineered systems or structures.	Updated groundwater modeling performed in support of the CAA (Gradient, 2022a, 2025) predicted that source control (*i.e.*, CIP using a consolidation-and-cap) would result in a reduction of hydraulic flux out of the PAP by 99% compared to pre-closure conditions (Ramboll, 2025a). The source control would minimize the amount of water retained within the impoundment and reduce hydraulic flux through the CCR. Due to the reduction in the hydraulic flux out of the PAP, the mass flux out of the PAP would also be controlled or minimized. Under residual plume management for the Source Control-GWET alternative, groundwater collected by the extraction trench would be treated through the on-Site settling pond and discharged to the Newton Lake *via* an NPDES-permitted outfall. Surface water and sediment

Evaluation Factor (Report Section; Part 845 Section)	Source Control-GWP	Source Control-GWET
		impacts under this alternative would be higher than the Source Control-GWP alternative due to the construction of the extraction trench system. Erosion and sediment runoff may occur due to the close proximity to the wetlands and surface water bodies during construction activities.
Control of Exposure to Any Residual Contamination During Implementation of the Remedy	Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. While appropriate controls would be established to prevent exposures of CCR during source control, the risks of CCR exposure during source control would be the same for both corrective action alternatives. Risks to workers arising from potential contact with residual contamination during construction, operation, and maintenance activities associated with residual plume management would be minimal under the Source Control-GWP alternative, which would not involve exposure to any soil or groundwater waste streams.	Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. While appropriate controls would be established to prevent exposures of CCR during source control, the risks of CCR exposure during source control would be the same for both corrective action alternatives. Risks to workers arising from potential contact with residual contamination during construction, operation, and maintenance activities associated with residual plume management would be higher for the Source Control-GWET alternative than for the Source Control-GWP alternative, because Source Control-GWET would involve the production, management, and treatment of extracted groundwater, as well as on-Site disposal of excavated spoils generated during extraction trench construction.
Other Identified Impacts	Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. Thus, impacts during source control would be the same for both of the corrective action alternatives (see the CAA; Gradient, 2022a, 2025). The energy demands of construction equipment and vehicles associated with residual plume management would be greater under the Source Control-GWET alternative, while the energy demands under the Source Control-GWP would lower be because this alternative would	Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. Thus, impacts during source control would be the same for both of the corrective action alternatives (see the CAA; Gradient, 2022a, 2025). The energy demands of construction equipment and vehicles associated with residual plume management would be greater under the Source Control-GWET alternative because this alternative would involve construction of the GWET system.

Evaluation Factor (Report Section; Part 845 Section)	Source Control-GWP	Source Control-GWET
	not require any significant construction activity. Similarly, traffic and noise impacts associated with residual plume management are expected to be minimal because no installation, operation, and maintenance of engineered systems or structures would be required. There would be no impacts to natural resources and habitat under the Source Control-GWP alternative because no additional construction activities would occur after implementation of source.	Similarly, traffic and noise impacts associated with residual plume management would also be expected to be higher under the Source Control-GWET alternative than the Source Control-GWP alternative, due to the construction activities required to construct the extraction trench and settling pond. Under the Source Control-GWET alternative, there would be some negative impacts to natural resources and habitat, including disturbance of some habitat in the immediate vicinity of these locations by causing alarm and escape behavior in nearby wildlife (*e.g.*, due to noise disturbances), and interruption to sensitive aquatic and wetland species in the Newton Lake and other wetlands due to potential sediment runoff during construction. Construction activities would also generate limited negative impacts on the scenic, or recreational value due noise, obstructions of the view, or restricted access during the construction phase.
Time Until Groundwater Protection Standards Are Achieved (Section 2.2.6; IAC Section 845.670(e)(1)(E))	Updated groundwater modeling performed in support of the CAA (Gradient, 2022a, 2025) concluded that source control (*i.e.*, CIP using a consolidation-and-cap approach) alone would result in a 99% reduction in mass flux from the PAP into the underlying groundwater (Ramboll, 2025a). Additional modeling was conducted to evaluate future groundwater quality in the vicinity of the PAP under each of the proposed source control corrective action alternatives. The results indicate that groundwater would attain the GWPSs for all constituents identified as having potential exceedances in the existing PAP monitoring well system within 34 years under the Source Control-GWP alternative after the completion of the source control	Groundwater modeling performed in support of the CAA (Gradient, 2022a, 2025) concluded that source control (*i.e.*, CIP using a consolidation-and-cap approach) alone would result in a 99% reduction in mass flux from the PAP into the underlying groundwater (Ramboll, 2025a). Additional modeling was conducted to evaluate future groundwater quality in the vicinity of the PAP under each of the proposed source control corrective action alternatives. The results indicate that groundwater would attain the GWPSs for all constituents identified as having potential exceedances in the existing PAP monitoring well system within 33 years under the Source Control-GWET alternative after the completion of the source control

Evaluation Factor (Report Section; Part 845 Section)	Source Control-GWP	Source Control-GWET
	remedy (Appendix B; Ramboll, 2025c). In addition, there would be at least 3 years of corrective action confirmation monitoring, and 6 months of post-closure reporting. So, the overall corrective action implementation duration for the Source Control-GWP alternative is approximately 37.5 years after closure (Appendix B, Section 2.2.6).	remedy (Appendix B; Ramboll, 2025c). In addition, there would be at least 3 years of corrective action confirmation monitoring, and 6 months of post-closure reporting. So, the overall corrective action implementation duration for the Source Control-GWET alternative is approximately 36.5 years after closure (Appendix B, Section 2.2.6).
Potential for Exposure of Humans and Environmental Receptors to Remaining Wastes, Considering the Potential Threat to Human Health and the Environment Associated with Excavation, Transportation, Re-disposal, Containment, or Changes in Groundwater Flow (Section 2.2.7; IAC Section 845.670(e)(1)(F))	Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives, thus, potential exposures to CCR remaining in the PAP would be the same under both alternatives. Once source control activities have been completed, this corrective action alternative is expected to limit exposure of humans and environmental receptors to CCR remaining in the PAP. Furthermore, as a result of the source control, there would be minimal risks of CCR releases post closure.	Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives, thus, potential exposures to CCR remaining in the PAP would be the same under both alternatives. Once source control activities have been completed, this corrective action alternative is expected to limit exposure of humans and environmental receptors to CCR remaining in the PAP. Furthermore, as a result of the source control, there would be minimal risks of CCR releases post closure. Potential risks to workers that come in contact with residual contamination of CCR-related constituents during groundwater extraction and treatment would be managed through the use of rigorous safety protocols and personal protective equipment. Hydrogeological changes would also be expected under the Source Control-GWET alternative, such as lowering the groundwater table in the vicinity of the extraction trench, altering flow patterns in the uppermost aquifer (UA), and causing changes in hydraulic gradients. However, changes to groundwater flow would not be expected to have an effect on the potential for the exposure of humans and environmental receptors to remaining wastes.

Evaluation Factor (Report Section; Part 845 Section)	Source Control-GWP	Source Control-GWET
Long-Term Reliability of the Engineering and Institutional Controls (Section 2.2.8; IAC Section 845.670(e)(1)(G))	Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. Thus, long-term reliability during source control would be the same for both corrective action alternatives (see the CAA; Gradient, 2022a, 2025). Residual plume management under the Source Control-GWP alternative would be reliable because it is a proven process that relies on physical and geochemical attenuation processes and active monitoring. If necessary, remedy optimizations would be implemented under the adaptive site management program.	Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. Thus, long-term reliability during source control would be the same for both corrective action alternatives (see the CAA; Gradient, 2022a, 2025). Residual plume management under the Source Control-GWET alternative would be reliable, as long as the extraction trenches and pumps are maintained and operated appropriately, because it is a proven remedy that has been implemented at many sites. If necessary, remedy optimizations would be implemented under the adaptive site management program.
Potential Need for Replacement of the Remedy (Section 2.2.9; IAC Section 845.670(e)(1)(H))	Replacement of the residual plume management remedy under the Source Control-GWP alternative would likely be unnecessary, because this alternative would not require the installation, operation, and maintenance of engineered systems or structures. Adaptive site management strategies would be used to implement remedy optimizations, if necessary, to ensure that remedial goals are achieved.	Replacement of the residual plume management remedy under the Source Control-GWET alternative would likely be unnecessary as long as the extraction trench and treatment system are maintained and serviced appropriately. Adaptive site management strategies would be used to implement remedy optimizations, if necessary, to ensure that remedial goals are achieved.
Degree of Difficulty Associated with Constructing the Remedy (Section 2.3.1; IAC Section 845.670 (e)(3)(A))	Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. Thus, construction difficulties would be the same for both corrective action alternatives. Difficulties associated with implementing CIP using a consolidate-and-cap approach were evaluated in the CAA (see the CAA; Gradient, 2022a, 2025). Residual plume management under the Source Control-GWP alternative would rely on physical and geochemical attenuation processes and therefore would not pose any significant construction challenges.	Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. Thus, construction difficulties would be the same for both corrective action alternatives. Difficulties associated with implementing CIP using a consolidate-and-cap approach were evaluated in the CAA (see the CAA; Gradient, 2022a, 2025). Residual plume management under the Source Control-GWET alternative would rely on the extraction trench and settling pond to extraction and treat impacted groundwater, as well as physical and geochemical attenuation processes. Some challenges may occur

Evaluation Factor (Report Section; Part 845 Section)	Source Control-GWP	Source Control-GWET
		during the construction phase, including: ▪ The implementation of the remedy would require specialized contractors and equipment, specifically a one-pass trenching contractor and associated machinery, for trench installation. Additionally, general construction equipment, including excavation and grading machinery, would be required. ▪ Modifications to the PAP dike to establish an earthen work pad would require a detailed geotechnical design. Furthermore, geotechnical monitoring of the embankment would be essential to identify any signs of distress during construction. If distress is observed, construction activities may need to be temporarily halted to assess the cause and implement appropriate mitigation measures. ▪ Quality control (QC) monitoring would be required throughout the construction phase as part of the overall construction QC and quality assurance (QA) program, to ensure the effectiveness of the GWET system. ▪ Additional pre-design investigations may be necessary to confirm the existing hydrogeologic conditions along the proposed trench locations, to ensure the performance of the GWET. ▪ Groundwater monitoring would be conducted using a groundwater monitoring network designed in accordance with IAC Section 845.680(c).
Expected Operational Reliability of the Remedy (Section 2.3.2; IAC Section 845.670 (e)(3)(B))	Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. Thus, the operational reliability of the remedy would be the same for both corrective	Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. Thus, the operational reliability of the remedy would be the same for both corrective

Evaluation Factor (Report Section; Part 845 Section)	Source Control-GWP	Source Control-GWET
	action alternatives. The reliability associated with implementing CIP using a consolidation-and-cap approach was evaluated in the CAA (see the CAA; Gradient, 2022a, 2025). Residual plume management under the Source Control-GWP alternative would have high operational reliability because this alternative would rely on natural processes and active monitoring. Geochemical modeling results suggest that as groundwater returns to background conditions, solid sorbing phases are expected to be stable (Appendix E; Ramboll, 2024b). Adaptive site management strategies would be used to implement remedy optimizations, if necessary.	action alternatives. The reliability associated with implementing CIP using a consolidation-and-cap approach was evaluated in the CAA (see the CAA; Gradient, 2022a, 2025). Residual plume management under the Source Control-GWET alternative would have high operational reliability because it is an established technology, as long as the extraction trench system is maintained and operated appropriately. Adaptive site management strategies would be used to implement remedy optimizations, if necessary.
Need to Coordinate with and Obtain Necessary Approvals and Permits from Other Agencies (Section 2.3.3; IAC Section 845.670 (e)(3)(C))	Required coordination, approvals, and permits associated with implementing CIP using a consolidation-and-cap approach was evaluated in the CAA (Gradient, 2022a, 2025). Residual plume management for the Source Control-GWP alternative would require regulatory approval, but no additional permits would be needed.	Required coordination, approvals, and permits associated with implementing CIP using a consolidation-and-cap approach was evaluated in the CAA (Gradient, 2022a, 2025). Residual plume management for the Source Control-GWET alternative would require regulatory approvals. Groundwater extracted from the extraction trenches would require a modified NPDES permit, which would likely require renewals depending on the timeline of corrective action implementation. In addition, permits from IEPA for construction of stormwater controls and BMPs, placement of excavated spoils beneath the PAP final cover system *via* an amendment to the PAP Closure Plan and Construction Permit Application, would be required. A dam safety modification permit for modification of the embankment may be potentially necessary.
Availability of Necessary Equipment and Specialists (Section 2.3.4; IAC Section 845.670 (e)(3)(D))	Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. Thus, equipment and specialist needs would	Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. Thus, equipment and specialist needs would

Evaluation Factor (Report Section; Part 845 Section)	Source Control-GWP	Source Control-GWET
	be the same for source control activities associated with both corrective action alternatives. An assessment of necessary equipment and specialists associated with implementing CIP using a consolidation-and-cap approach was evaluated in the CAA (see the CAA; Gradient, 2022a, 2025). Residual plume management under the Source Control-GWP alternative would require standard environmental monitoring equipment and groundwater professionals. Specialists such as geologists, hydrogeologists, statisticians (*i.e.*, statistical analysis), and geochemists would be available to collect and evaluate the data.	be the same for source control activities associated with both corrective action alternatives. An assessment of necessary equipment and specialists associated with implementing CIP using a consolidation-and-cap approach was evaluated in the CAA (see the CAA; Gradient, 2022a, 2025). Residual plume management under the Source Control-GWET alternative would require specialists throughout its construction and operational period: ▪ Construction of the groundwater extraction system (*i.e.*, the trench and settling pond) would require a specialized contractor, who would most likely need specialized and often custom-built equipment including one-pass construction equipment. Relatively few construction contractors with experience using one-pass equipment are available. Specialists including design engineers, construction managers and contractor staff experienced in trench construction and similar geologic environments will be required as well. Geotechnical specialists would be required to design the earthen work pad and oversee the PAP embankment for signs of distress during the one-pass trench installation. In addition, specialists and equipment may have backlogs from other projects in the area. ▪ Specialists would be needed to maintain the operation of the GWET system. System components such as totalizers, instrumentation, and the extraction and transfer pumps would require routine maintenance. Non-routine maintenance would also necessitate the use of specialists. Specialists and replacement equipment are typically available within 100 to 300 miles of the Site,

Evaluation Factor (Report Section; Part 845 Section)	Source Control-GWP	Source Control-GWET
		but complex equipment like transfer pumps and controllers may have longer lead times for replacement or servicing. ▪ This alternative would necessitate the use of equipment and the expertise of specialists for tasks such as field data collection, groundwater sampling, analysis, and periodic corrective action groundwater monitoring and reporting. Similar to those in the GWP alternative, these activities are already being conducted as part of routine groundwater monitoring in accordance with IAC Section 845.220(c)(4).
Available Capacity and Location of Needed Treatment, Storage, and Disposal Services (Section 2.3.5; IAC Section 845.670 (e)(3)(D))	No treatment, storage, or disposal services would be required under the residual plume management for the Source Control-GWP alternative, as GWP would not generate any significant volume of waste or wastewater.	Residual plume management for the Source Control-GWET alternative would require the construction of the extraction trench system, which would generate spoils during the construction phase, and the waste materials would be used as subgrade fill beneath the PAP final cover system. Extracted groundwater would be treated at an on-Site settling pond, which would need to be sited, designed, constructed, and maintained properly. Discharge from the settling pond would be conveyed to an NPDES permitted outfall.
The Degree to Which Community Concerns Are Addressed by the Remedy (Section 2.4; IAC Section 845.670(e)(4))	The combination of source control (*i.e.*, CIP using a consolidation-and-cap approach) with residual plume management would cause groundwater concentrations to decline over time under all of the corrective action alternatives, as suggested by the groundwater modeling (Ramboll, 2025c), thus addressing community concerns. A public meeting was held on February 26, 2025, pursuant to requirements under IAC Section 845.660(d). Questions raised by attendees were addressed at the meeting; a written	The combination of source control (*i.e.*, CIP using a consolidation-and-cap approach) with residual plume management would cause groundwater concentrations to decline over time under all of the corrective action alternatives, as suggested by the groundwater modeling (Ramboll, 2025c), thus addressing community concerns. A public meeting was held on February 26, 2025, pursuant to requirements under IAC Section 845.660(d). Questions raised by attendees were answered at the meeting; a written

Evaluation Factor (Report Section; Part 845 Section)	Source Control-GWP	Source Control-GWET
	summary of the questions and responses was prepared.	summary of the questions and responses was prepared.
Remove from the Environment as Much of the Contaminated Material That Was Released from the CCR Surface Impoundment as Is Feasible, Taking into Account Factors Such as Avoiding Inappropriate Disturbance of Sensitive Ecosystems (Section 2.5; IAC Section 845.670(d)(4))	There have been no documented releases of CCR from the unit. Both potential corrective action alternatives would have primary source control and residual plume management efforts. The source control would include a consolidation-and-cap approach to limit the infiltration of precipitation into the impounded CCR. Additionally, residual plume management under the Source Control-GWP alternative would address impacted groundwater by relying on natural physical and geochemical attenuation processes to reduce the residual concentrations of CCR-related constituents in groundwater. Site-specific evaluations demonstrated that the groundwater polishing is appropriate at the PAP because site conditions are suitable for the attenuation of constituents *via* adsorption, although sorption of lithium is more pronounced compared to sulfate. Geochemical modeling results suggest that as groundwater returns to background conditions, solid sorbing phases are expected to be stable (Appendix E; Ramboll, 2024b). No ecosystems would be disturbed because no construction activities are expected under the Source Control-GWP alternative.	There have been no documented releases of CCR from the unit. Both potential corrective action alternatives would have primary source control and residual plume management efforts. The source control would include a consolidation-and-cap approach to limit the infiltration of precipitation into the impounded CCR. Additionally, residual plume management under the Source Control-GWET alternative would require a GWET system and rely on natural physical and geochemical attenuation processes to reduce the residual concentrations of CCR constituents in groundwater. The construction activities would likely result in some negative impacts to the ecosystem, including disturbance of some existing habitat atop and near the construction areas. Short-term impacts could also occur to sensitive aquatic and wetland species in Newton Lake and other wetlands or surface water bodies (see Section 1.1.3) due to sediment runoff during construction activities.

Notes:
BMP = Best Management Practice; CAA = Closure Alternatives Analysis; CCR = Coal Combustion Residual; GHG = Greenhouse Gas; GWET = Groundwater Extraction Trench; GWPS = Groundwater Protection Standard; IAC = Illinois Administrative Code; IEPA = Illinois Environmental Protection Agency; LLDPE = Linear Low-Density Polyethylene; NPDES = National Pollutant Discharge Elimination System; O&M = Operations and Maintenance; Source Control-GWET = Source Control with Groundwater Extraction Trench; Source Control-GWP = Source Control with Groundwater Polishing.

1 Introduction

1.1 Site Description and History

1.1.1 Site Location and History

Illinois Power Generating Company's (IPGC) Newton Power Plant (NPP) is an electric power generating facility with coal-fired units located approximately seven miles southwest of the City of Newton, Illinois. The facility began operating in approximately 1977 and is currently scheduled to cease coal operations by the end of 2027 (Meeker, 2020; Ramboll, 2021).

1.1.2 CCR Impoundment

The NPP stores and produces coal combustion residuals (CCRs) as part of its operations. The Primary Ash Pond (PAP; Vistra ID No. CCR Unit 501, Illinois Environmental Protection Agency [IEPA] ID No. W0798070001-01, and National Inventory of Dams [NID] ID No. IL50719), which is the only CCR-containing impoundment at this Site, is the subject of this report.

The PAP (shown in Figure 1.1) is a 404-acre unlined surface impoundment constructed in 1977 for the management of bottom ash, fly ash, and other non-CCR waste generated by the facility (Ramboll, 2021). Decanted water from the PAP discharges into the Secondary Pond, a 9.3-acre non-CCR impoundment located immediately south of the PAP (Ramboll, 2021). The Secondary Pond has a capacity of 83.6 acre-ft, which is used to clarify process water, discharges to Newton Lake *via* National Pollutant Discharge Elimination System (NPDES)-permit (No. IL0049191) outfall 001 located at the Secondary Pond (AECOM, 2016; Ramboll, 2021). Currently, the PAP receives bottom ash, fly ash and low volume wastewater from the plant's two coal-fired boilers. The PAP will no longer receive sluiced ash after coal operations cease at the Newton Power Plant. Final closure of the PAP is expected to be completed by 2028 (Appendix B; Ramboll, 2025b; HDR, Inc., 2025).

Figure 1.1 Site Location Map. Adapted from Ramboll (2021).

1.1.3 Surface Water Hydrology

Newton Lake is an approximately 1,650-acre water body that surrounds the PAP to the east, south, and west. It is located within the Weather Creek and Newton Lake Watersheds (Hydrologic Unit Codes [HUCs] 051201140504 and 051201140503, respectively), which lie within the larger Little Wabash River watershed (HUCs 05120114 and 05120115; Tetra Tech, 2008; US EPA, 2018). The southern boundary of the PAP is approximately 250 to 700 ft from the northern shore of Newton Lake (Ramboll, 2021). The Secondary Pond, which receives decanted water from the PAP, is permitted under NPDES permit No. IL0049191 to discharge to Newton Lake (Figure 1.1, Ramboll, 2021). Newton Lake's surface water elevations are stable, as a result of the lake elevation being controlled by a dam to provide cooling water for the NPP (Ramboll, 2021).

Newton Lake (Assessment Unit ID IL_RCR) is listed on the 2018 Illinois Section 303(d) List as being impaired for fish consumption due to mercury. In addition, it is listed as being impaired for aesthetic quality due to Total Suspended Solids (IEPA, 2019; US EPA, 2018). As of 2008, there is a Total Maximum Daily Load (TMDL) in place to address aesthetic quality impairments in Newton Lake due to an excess of Total Phosphorus (Tetra Tech, 2008).

In addition to Newton Lake, another unnamed 13.7-acre lake is located within 1,000 meters (m) (3,281 ft) of the PAP. There are also several unnamed freshwater ponds located within 1,000 m of the PAP that range in size from 0.3 acres to 6.2 acres (Ramboll, 2021).

1.1.4 Hydrogeology

The geology underlying the Site in the vicinity of the PAP consists of several distinct layers (Ramboll, 2021).

- **Upper Drift (UD)/Potential Migration Pathway (PMP):** The UD is composed of the low permeability silts and clays of the Peoria Silt and Sangamon Soil and the sandier soils of the Hagarstown Member (*i.e.*, PMP). The Peoria Silt and Sangamon Soil range in thickness from 3 to 46 ft. The Hagarstown Member ranges from 2-6.9 ft thick and consists of the discontinuous, sandier deposits of the UD, where present, and overlies the Vandalia Till.
- **Upper Confining Unit (UCU):** The UCU consists of a thick package of the low permeability clay and silt of the Vandalia Till. This unit is a laterally continuous layer between the base of the CCR unit and the top of the uppermost aquifer.
- **Uppermost Aquifer (UA):** The UA is composed of a 3-17 ft thick Mulberry Grove Member, which has been classified as poorly graded sand, silty sand, clayey sand, and gravel.
- **Lower Confining Unit (LCU):** The LCU is comprised of low permeability silt and clay of the Smithboro Till Member and the Banner Formation.
- **Bedrock Confining Unit (BCU)**: Bedrock was classified as shale of the Mattoon Formation at the Site.

Groundwater migrates downward through the UD/PMP and UCU into the UA. Groundwater in the UA flows from north to south/southwest and converges near a former drainage feature located west of the PAP (Ramboll, 2025a). Groundwater elevations vary seasonally, although generally less than one foot per year (Ramboll, 2021).

Groundwater within the UA in the northern/upgradient area of the PAP has the potential to interact with surface water in Newton Lake, as evidenced by relatively higher groundwater head elevations compared to the Newton Lake water level. Groundwater within the UD/PMP may also interact with surface water in Newton Lake (Ramboll, 2021). In 2021, 28 surface water samples were collected to characterize the water quality in Newton Lake. Surface water samples were analyzed for IAC Section 845.600 parameters (total and dissolved), ferrous and ferric iron, major ions, and monitored natural attenuation parameters (Appendix B, Ramboll, 2025b; Appendix D, Ramboll, 2024c). The Human Health and Ecological Risk Assessment (Appendix A; Gradient, 2022b) concluded that groundwater from the PAP impoundment and potential groundwater contributions to surface water pose no unacceptable risks to human health or the environment.

During groundwater interaction with surface water, CCR-related constituents may partition between sediments and the surface water column. It should be noted that many CCR-related constituents occur naturally in sediments and surface water (and can also arise from other industrial sources). As a result, their

presence in the sediments and/or surface water of Newton Lake does not necessarily signify contributions from the PAP.

1.1.5 Site Vicinity

The NPP Site is located in a predominantly agricultural area. The PAP is located south of the power plant and is bordered by Newton Lake to the south, east and west (Ramboll, 2021). Scenic and recreational areas within a few miles of the Site include the Newton Lake State Fish and Wildlife Area (SFWA) and the Prairie Ridge State Natural Area/Jasper County Prairie Chicken Sanctuary (Ramboll, 2021). The Newton Lake SFWA, which includes Newton Lake and an additional 5,800 surrounding acres of timber, cropland, and open/non-cultivated land, is preserved by Illinois Department of Natural Resources (IDNR) for fishing, hunting, and wildlife management. Approximately 540 acres of the western shoreline are also used for picnicking, hiking, biking, and horseback riding. The northeastern portion of the Newton Lake SFWA is dedicated to the preservation of the Prairie Chicken, a state-endangered species (IDNR, 2022a). The Prairie Ridge State Natural Area/Jasper County Prairie Chicken Sanctuary, which is located east of Newton Lake, consists of several discontinuous tracts of land that are similarly dedicated to the preservation of the prairie chicken (IDNR, 2022b).

Based on a review of the Illinois Department of Natural Resources (IDNR) Historic Preservation Division database and the Illinois State Archaeological Survey database, there are no historic sites located within 1,000 m of the PAP (Ramboll, 2021).

1.2 Part 845 Regulatory Review and Requirements

Title 35, Part 845 of the Illinois Administrative Code (IAC) (IEPA, 2021) requires that a Corrective Action Alternatives Analysis (CAAA) be performed as part of the remedy selection, prior to undertaking any corrective actions at certain CCR-containing impoundments where exceedances of GWPSs have been identified. Because exceedances of GWPSs in groundwater associated with the PAP have been identified for lithium, sulfate and total dissolved solids (TDS)[2] (Appendix D; Ramboll, 2024c), this report presents a CAAA for the PAP pursuant to the requirements under IAC Section 845.670. The goal of a CAAA is to holistically evaluate a range of factors for the various corrective actions being considered at an impoundment, including the efficiency, reliability, and ease of implementation of the corrective action; its potential positive and negative short- and long-term impacts on human health and the environment; and its ability to address concerns raised by the community (IEPA, 2021). A CAAA is a decision-making tool that is designed to aid in the selection of a corrective action alternative.

[2] Throughout this document, "exceedance" or "exceedances" is intended to refer only to potential exceedances of proposed applicable background statistics or Groundwater Protection Standards (GWPS) as described in the proposed groundwater monitoring program which was submitted to IEPA on October 25, 2021 as part of the Illinois Power Generating Company's operating permit application for the PAP (Burns & McDonnell, 2021). That operating permit application, including the proposed groundwater monitoring program, remains under review by IEPA and therefore Illinois Power Generating Company has not identified any actual exceedances.

2 Corrective Action Alternatives Analysis

This section presents the CAAA pursuant to requirements under IAC Section 845.670 (IEPA, 2021). The goal of a CAAA is to fully evaluate proposed viable corrective measures that were identified in the CMA. The CAAA evaluates potential corrective actions with respect to a wide range of factors, including the performance, reliability, and ease of implementation of the corrective action; its potential impacts on human health and the environment; and its ability to address concerns raised by the community (IEPA, 2021).

Per IAC Section 845.670(d) (IEPA, 2021), any corrective actions selected under a Corrective Action Plan must:

1. Be protective of human health and the environment;
2. Attain the groundwater protection standards specified in Section 845.600;
3. Control the sources of releases to reduce or eliminate, to the maximum extent feasible, further releases of constituents listed in Section 845.600 into the environment;
4. Remove from the environment as much of the contaminated material that was released from the CCR surface impoundment as is feasible, considering factors such as avoiding inappropriate disturbance of sensitive ecosystems; and
5. Comply with standards for management of wastes as specified in Section 845.680(d).

At the PAP, a CAAA is required because groundwater monitoring associated with the PAP identified exceedances of the GWPSs. Groundwater monitoring was conducted between 2015 and 2024 (Appendix D; Ramboll, 2024c,d). The groundwater samples collected from groundwater compliance monitoring wells were used to monitor groundwater quality and evaluate compliance with the groundwater quality standards listed in IAC Section 845.600(a). As of the date of this report lithium, sulfate and TDS were identified as constituents/parameters detected in groundwater at a concentration in excess of its GWPS (Appendix D; Ramboll, 2024d).

Two potentially viable corrective actions for the PAP were selected in the CMA for further consideration in this CAAA. The corrective actions alternatives that are considered in this CAAA are Source Control with Groundwater Polishing (Source Control-GWP) and Source Control with two Groundwater Extraction Trenches (Source Control-GWET). Both of these corrective action alternatives are described below in Section 2.1.

2.1 Corrective Action Alternatives Descriptions

For both corrective actions evaluated in this CAAA, source control is the primary remedy. US EPA has stated that source control is the most effective means of ensuring the timely attainment of remediation objectives (US EPA, 2015b). The source control for the PAP consists of CIP using a consolidation-and-cap approach. Specific elements of this approach include (HDR, 2025; Gradient, 2022a, 2025):

- Unwatering and dewatering of the impoundment *via* pumping and the construction of drilled sumps, engineered trenches, and/or horizontal wells. If needed, perimeter drains would be used to pump and lower groundwater level beneath the PAP. Pumped water would be sent to the Secondary

Pond which discharges to Newton Lake *via* an NPDES permitted outfall and is managed in accordance with the NPDES permit for the facility;

- Excavation and consolidation of approximately 1,920,000 cubic yards (CY) of CCR and approximately 1 foot of soil beneath the CCR from the south, central, and north-central portions of the PAP; and relocation of excavated materials into the west and east portions of the PAP. The consolidation will result in reducing the final footprint of the PAP from 404 acres to 261 acres. Existing outflow structures connecting the PAP to the Secondary Pond will also be removed;
- Removal of the berm between the PAP and the Secondary Pond, followed by removal of the Secondary Pond. Post-closure, an area in the southern portion of the PAP would be used as a stormwater management pond;
- Construction of an alternative cover system consisting of a 40-mil LLDPE geomembrane layer, a geocomposite drainage layer, and 24 in of protective soil cover for supporting vegetative growth;
- Installation of stormwater control structures, including: (i) stormwater channels designed to convey stormwater into the new stormwater pond post-closure, and (ii) drainage pipes, channels, and downchutes designed to reduce erosion in places where channels flow from the PAP final cover and lead into the stormwater pond;
- An existing, 12-acre on-Site landfill would also be closed *via* capping.

These source control activities include the removal of free liquids, excavation, and consolidation of CCR, and the installation of a low-permeability geomembrane final cover system. These activities are designed to control, minimize, or eliminate, post closure infiltration of liquids into the impounded CCR. Excavation and consolidation would result in CCRs being separated vertically, by up to 12 ft, from underlying groundwater during the simulated post-closure conditions. As an additional consideration, the PAP is located on a relatively thick layer of low-permeability clay, and the final cover system will tie into the surrounding grades; this closure will result in CCR remaining in the PAP being physically isolated from the surrounding environment, including stormwater, surface water, groundwater[3], and the atmosphere (HDR, Inc., 2025). The final cover system consists of a 40-mil LLDPE geomembrane layer, a geocomposite drainage layer, and 24 in of protective soil cover. These measures (consolidation of CCR and installation of a geomembrane cover) will control to the maximum extent feasible, the migration of CCR constituents to groundwater, thus facilitating the achievement of the GWPSs in accordance with IAC Section 845.600. As demonstrated by the groundwater modeling in support of the Closure Alternatives Analysis (CAA) (Gradient, 2022a, 2025), this source control approach will result in a reduction of the migration of water into the PAP by 99% compared to pre-closure conditions. Additionally, source control will result in a reduction of hydraulic flux out of the PAP by 99% compared to pre-closure conditions (Ramboll, 2025a), demonstrating that source control will control, minimize, or eliminate post-closure releases of leachate.

In addition to source control, the corrective actions evaluated in this CAAA include residual plume management. Two potential corrective actions, identified as viable in the CMA, are evaluated in this CAAA for the PAP:

- **Alternative 1:** Source Control with Groundwater Polishing (Source Control-GWP)
- **Alternative 2:** Source Control with Groundwater Extraction Trenches (Source Control-GWET)

[3] Even though the PAP lacks a base liner and leachate collection system, groundwater monitoring data supports that "leachate has not historically been migrating from the site" due to the presence of the clay beneath the PAP (HDR, Inc., 2025).

For both potential corrective action alternatives, adaptive site management strategies would be integrated into residual plume management. This approach ensures the timely incorporation of new Site information throughout the corrective action process in order to optimize the remediation and expedite achievement of the GWPSs. As part of the adaptive site management approach, system performance and residual plume conditions would be monitored throughout the implementation of the selected corrective action. If groundwater concentrations do not respond as expected to the corrective action, the adaptive site management approach would enable prompt adjustments, optimizations, or replacement of the remedy to ensure overall effectiveness.

2.1.1 Alternative 1: Source Control-GWP

The first corrective action alternative is Source Control-GWP. This remedy includes source control (*i.e.*, CIP using a consolidation-and-cap approach) combined with residual plume management based on natural physical and geochemical processes that would reduce groundwater concentrations downgradient of the PAP. Groundwater polishing mechanisms were evaluated using geochemical speciation and reaction models. The primary objective of the geochemical model was to support the evaluation of groundwater polishing as a potential remedy for the Site. The model focused on evaluating the dominant geochemical reactions that may occur at time scales relevant to groundwater flow, including adsorption and mineral dissolution/precipitation reactions *(i.e.*, iron and aluminum hydroxides, carbonates, and some sulfates) (Appendix E; Ramboll 2024b). Model inputs included geochemically reactive solid mineral phases, downgradient groundwater composition, and background groundwater composition derived from site-specific data. Speciation models analyzed the distribution of chemical constituents between solid and aqueous phases, while reaction models assessed how these distributions may shift in response to changing site conditions (US EPA, 2015).

Components of residual plume management for the Source Control-GWP alternative include:

- Groundwater concentrations would be reduced in the downgradient plume as a result of physical and geochemical attenuation processes. Site-specific evaluation demonstrated that the Site conditions are suitable for physical and geochemical processes of inorganic contaminants *via* adsorption, although sorption of lithium is more pronounced compared to sulfate (Ramboll, 2024b). Specifically, chemical attenuation of contaminants is feasible *via* sorption to aquifer solids, such as iron and aluminum hydroxides, as well as kaolinite under current conditions. Geochemical modeling results suggest that as groundwater returns to background conditions, solid sorbing phases are expected to be stable. However, it should be noted that some remobilization of lithium was expected as groundwater returns to background conditions, although the model may over-estimate the mobility of lithium in the dissolved phase, as suggested by the laboratory batch experiments (Ramboll, 2024b).
- Corrective action groundwater monitoring using a groundwater monitoring system designed in accordance with IAC Section 845.680(c), which would be installed within the plume that lies beyond the waste boundary.
- Adaptive site management strategies for this alternative would include geochemical modeling. Groundwater monitoring results would be evaluated and compared to the model-predicted concentrations. In situations in which observed groundwater concentrations deviate significantly from modeled conditions, alternative methods or techniques would be evaluated, and if viable, incorporated as per IAC Section 845.680(b).
- Corrective action confirmation groundwater sampling would be performed for 3 years after GWPSs have been achieved.

- Following the completion of the corrective action confirmation monitoring period, a report and certification for Corrective Action Completion would be prepared and submitted to IEPA as per IAC Section 845.680(e).

The overall corrective action implementation duration for this alternative is approximately 37.5 years (450 months) after source control has been completed (Appendix B; Ramboll, 2025b), including:

- 34 years (408 months) of corrective action monitoring (*i.e.*, time to meet GWPSs),
- At least 3 years (36 months) of corrective action confirmation monitoring,[4] and
- 6 months associated with post-closure reporting.

Although source control (*i.e.*, control-in-place [CIP]) is a primary component of the corrective action, the labor time, equipment usage, and mileage linked to source control were previously estimated in the Closure Alternative Analysis (CAA) and updated in 2025 based on new CIP plan (Gradient, 2022a, 2025) and are not repeated in this analysis. There is no labor and mileage incurred with the residual plume management under the Source Control and GWP alternative, because no construction would be required under this alternative. Mileage and labor associated with corrective action monitoring was not included in this analysis (Appendix B; Ramboll, 2025b).

2.1.2 Alternative 2: Source Control-GWET

The second corrective action alternative is Source Control-GWET. This remedy includes source control (*i.e.*, CIP using a consolidation-and-cap approach) with groundwater extraction trenches (GWET) as the residual plume management approach. The residual plume management would include the construction of two extraction trenches, the East and the West Trenches, by excavating the trenches to capture impacted groundwater from the UA and PMP. The East Trench would be located along the northeastern perimeter of the CIP portion of the PAP along the exterior toe of the former perimeter dike. It would be about 2,000 ft long, 3 ft wide, and would extend to an elevation of about 503 ft or about 30 ft below ground surface (bgs). The West Trench would be located along the southwestern toe of the former perimeter dike of the excavation portion of the PAP. It would be about 2,500 ft long, 3 ft wide, and extend to an elevation of about 510 ft or about 25-35 ft bgs. Collection pipes would be installed at the bottom of the trenches. The trenches would be backfilled with clean granular fill and capped with compacted clay to reduce surface water infiltration. Groundwater that is captured would be pumped to a new on-Site lined settling pond and discharged through either a new or existing outfall and would be managed in accordance with the NPDES permits for the Site.

Implementation of residual plume management for the Source Control-GWET is expected to include various tasks across three major phases: pre-construction activities (Phase 1), corrective action construction (Phase 2), and corrective action operations, maintenance, and closeout (Phase 3). The activities associated with each of these phases are summarized below:

- **Phase 1:** Pre-construction activities including obtaining permits from agencies and completing Site investigations and engineering designs.
- **Phase 2:** Construction of the extraction trenches, settling pond, and minor Site restoration of disturbed areas;

[4] It should be noted that post-closure care groundwater monitoring would continue for a minimum of 30 years as required by IAC Section. 845.780(c).

- Mobilization of equipment and materials to the Site, and preparation for Site construction;
- The GWETs would be constructed using one-pass trenching methods by excavating subgrade soils, placing collection piping and pumps, and backfilling the trench with clean granular fill;
- Excavated soils would be placed in the PAP as subgrade fill beneath the final cover system;
- The 1-acre, geomembrane-lined settling pond would be constructed to manage extracted groundwater using conventional construction equipment; and
- Site restoration would be completed following the construction of the GWETs and settling pond.

- **Phase 3:** Operations, Maintenance, and Closeout of the GWET system. Details pertaining to each of these activities are outlined below.
  - Operation of the GWET system;
  - Corrective Action O&M would involve routine and non-routine maintenance of extraction pumps, air compressor, and other system components;
  - Monitoring of extracted groundwater under the appropriate modified NPDES permit;
  - Groundwater concentrations would also be reduced in the downgradient plume as a result of physical and geochemical attenuation processes;
  - Adaptive site management strategies would be employed to track remediation progress and incorporate new Site information to assure the achievement of the GWPSs;
  - Corrective action monitoring would be performed using a corrective action groundwater monitoring network designed in accordance with IAC Section 845.680(c), which would be installed within the plume that lies beyond the waste facility boundary;
  - Corrective action confirmation monitoring would be performed for 3 years after GWPSs have been achieved; and
  - Following the completion of the corrective action confirmation monitoring period, a report and certification for Corrective Action Completion would be prepared and submitted to IEPA as per IAC Section 845.680(e).

The overall corrective action implementation duration is approximately 41 to 43 years (489 to 516 months) (Appendix B), including:

- Approximately 3.5 to 5 years (42 to 60 months) of pre-construction activities (Phase 1; assumed to occur concurrently with source control);
- Approximately 9 to 18 months of corrective action construction (Phase 2; assumed to occur concurrently with source control);
- Approximately 36.5 years (438 months) of corrective action operation, maintenance, and closeout (Phase 3) after source control is completed.
  - The duration of Phase 3 is estimated to include 33 years (396 months) of corrective action operations and maintenance (O&M) (*i.e.*, time to meet GWPSs), at least 3 years (36 months) of corrective action confirmation monitoring,[5] and 6 months associated with post-closure reporting.

[5] It should be noted that post-closure care groundwater monitoring would continue for a minimum of 30 years or until such time as GWPSs are achieved, whichever is longer, as required by IAC Section 845.780(c).

Key parameters for the Source Control-GWET corrective action alternative are shown in Table 2.2, below.

Table 2.1 Key Parameters for the Source Control-GWET Corrective Action Alternative[a]

Parameter[b]	Value[c]
Labor Hours	
Total On-Site Labor	41,000 hours
Total Off-Site Labor	0 hours
40% Contingency	16,400 hours
Total Labor Hours:	57,500 hours
Vehicle and Equipment Travel Miles	
Vehicles On-Site	90,000 miles
On-Site Haul Trucks (Unloaded + Loaded)	1,410 miles
Labor Mobilization	875,000 miles
Equipment Mobilization (Unloaded + Loaded)	20,300 miles
Off-Site Haul Trucks (Unloaded + Loaded)	62,500 miles
Material Deliveries (Unloaded + Loaded)	21,600 miles
Total On-Site Vehicle and Equipment Travel Miles:	91,400 miles
Total Off-Site Vehicle and Equipment Travel Miles:	979,000 miles
Total Vehicle and Equipment Travel Miles:	1,070,000 miles

Notes:
Source Control-GWET = Source Control with Groundwater Extraction Trench.
(a) Although source control (*i.e.*, closure-in-place [CIP]) is a primary component of the corrective action, the labor time, equipment usage, and mileage linked to source control were previously estimated in the Closure Alternative Analysis (CAA) and are not repeated in this analysis.
(b) Mileage and labor related to sampling and monitoring is not included for either alternative.
(c) Values reported in this table were rounded to reflect 3 significant figures.
Source: Appendix B.

2.2 Long- and Short-Term Effectiveness and Protectiveness of Corrective Action Alternative (IAC Section 845.670(e)(1))

2.2.1 Magnitude of Reduction of Existing Risks (IAC Section 845.670(e)(1)(A))

There are no current unacceptable risks to human or ecological receptors at this Site associated with the PAP, based on a Human Health and Ecological Risk Assessment performed for the Site (Appendix A; Gradient, 2022b). Because current conditions do not present a risk to human health or the environment at the PAP, there will be no unacceptable risk to human health or the environment for future conditions when the unit has been closed and source control/residual plume management has been implemented. Concentrations of CCR-related constituents will decline over time and, consequently, potential exposures to CCR-related constituents in the environment will also decline. As a result of this, the magnitude of the reduction of existing risks is the same for both potential corrective action alternatives (IAC Section 845.670(e)(1)(A)), and both corrective action alternatives are equally protective of human health and the environment (IAC Section 84.670(d)(1)).

2.2.2 Effectiveness of the Remedy in Controlling the Source (IAC Section 845.670(e)(2)/IAC Section 845.670(d)(3))

Extent to Which Containment Practices Will Reduce Further Releases/Control the Sources of Releases to Reduce or Eliminate, to the Maximum Extent Feasible (IAC Section 845.670(e)(2)(A)/IAC Section 845.670(d)(3))

Source control would be implemented for both corrective action alternatives, which includes removal of free liquids, consolidation of CCR into the northern and eastern portion of the impoundment and the installation of a low-permeability geomembrane cover system designed to limit the infiltration of precipitation into the impounded CCR. This approach would remove water currently retained within the impoundment, which further reduces the hydraulic flux through the CCR (Ramboll, 2025a). Updated groundwater modeling performed in support of the CAA (Gradient, 2022a) and updated CAA (Gradient, 2025) concluded that source control alone would result in a 99% reduction in mass flux from the PAP into the underlying groundwater (Ramboll, 2025a). Because source control would be undertaken at the Site prior to the implementation of any residual plume management, both corrective action alternatives would remove the potential for CCR within the impoundment to impact groundwater. Both corrective action alternatives would therefore be equally and fully protective with regard to source control. The effectiveness of the corrective action alternatives with respect to residual source control are summarized as follows:

- Under the Source Control-GWP alternative, the attenuation of dissolved constituent concentrations remaining after source control would be achieved through natural physical and geochemical processes. Site-specific evaluation demonstrated that Site conditions are suitable for physical and geochemical processes of inorganic contaminants. Specifically, chemical attenuation of contaminants is feasible *via* sorption to aquifer solids, such as iron and aluminum hydroxides, as well as kaolinite under current conditions. The sorption of sulfate was predicted to be stable as groundwater returns to background conditions, while some remobilization of lithium was expected as groundwater returns to background conditions. In cases in which observed groundwater concentrations deviate significantly from modeled conditions, alternative methods or techniques would be evaluated under the adaptive site management, and if viable, incorporated as per IAC Section 845.680(b).
- Under the Source Control-GWET alternative, residual contamination control would be achieved by extracting impacted groundwater and preventing downgradient migration through installation of two extraction trenches at the east and west portions of the PAP. GWET is a widely used corrective measure that has been effectively implemented at many sites to contain and capture dissolved-phase groundwater plumes. In cases in which observed groundwater concentrations deviate significantly from modeled conditions, alternative methods or techniques to achieve the GWPSs would be evaluated under the adaptive site management plan, and if viable, incorporated as per IAC Section 845.680(b).

Because both corrective action alternatives include source control and residual plume management, both potential corrective action alternatives would be equally effective at reducing, to the maximum extent feasible, releases from both primary and residual sources (IAC Section 845.670(e)(2)(A)/IAC Section 845.670(d)(3)).

Extent to Which Treatment Technologies May Be Used (IAC Section 845.670(e)(2)(B))

Because Source Control-GWP would rely on physical and geochemical processes, no additional treatment technologies would be required. For the Source Control-GWET alternative, in addition to physical and geochemical processes, a new on-Site settling pond would be constructed to remove solids from extracted groundwater, prior to discharge *via* an NPDES permitted outfall. Other methods for treating extracted groundwater may be evaluated at later phases of the design (Appendix B). For both corrective action alternatives, remedy optimizations would be implemented, if necessary, under the adaptive site management program.

2.2.3 Likelihood of Future Releases of CCR (IAC Section 845.670(e)(1)(B))

Both corrective action alternatives include source control using CIP with a consolidation-and-cap approach. As part of this, a new cover system would be installed over the PAP, which consists of a 40-mil LLDPE geomembrane layer, a geocomposite drainage layer, and 24 in of protective soil cover. Stormwater control features such as stormwater channels, drainage pipes, and downchutes would be installed to route the flow to the stormwater pond. Relative to current conditions, this cover system would provide increased protection against berm and surface erosion, precipitation infiltration, and other adverse effects that could potentially trigger a release of CCR. There would be minimal risk of accidental CCR releases occurring post-closure under both corrective action alternatives.

2.2.4 Type and Degree of Long-Term Management, Including Monitoring, Operation, and Maintenance (IAC Section 845.670(e)(1)(C))

The type and degree of long-term residual groundwater plume management associated with both corrective action alternatives are summarized as follows:

- Residual plume management for the Source Control-GWP alternative would not require the installation, operation, or maintenance of any engineered systems or structures, other than maintenance of the monitoring well network. The only long-term management activity required under this alternative would be corrective action monitoring and routine maintenance of the monitoring wells, which would continue at least 3 years after GWPSs have been achieved for all wells, in accordance with IAC Section 845.680(c)(2). Post-closure care groundwater monitoring would continue for a minimum of 30 years as required by IAC Section 845.780(c). Based on the adaptive site management approach, remedy optimization (additional methods or techniques) may be implemented to ensure the achievement of the GWPSs.
- Residual plume management for the Source Control-GWET would require multiple tasks to be completed over three phases: pre-construction activities (Phase 1), corrective action construction (Phase 2), and corrective action O&M and closeout (Phase 3). Once pre-construction activities are completed, construction of the extraction trench would occur during the latter stages of the PAP closure. This approach allows for the spoils generated from the extraction trench construction to be disposed beneath the final cover system of the PAP. Corrective action O&M would require regular inspection and maintenance of the extraction trench system. Extracted groundwater would be managed and treated by a newly-constructed on-Site settling pond before discharge *via* a new or existing NPDES outfall to Newton Lake. Additionally, corrective action groundwater sampling and routine maintenance of the monitoring well network would continue for at least 3 years after GWPSs have been achieved at all wells, in accordance with IAC Section 845.680(c)(2). Post-closure care groundwater monitoring would continue for a minimum of 30 years as required by

IAC Section 845.780(c). Based on the adaptive site management approach, remedy optimization (additional methods or techniques) may be implemented to ensure the achievement of the GWPSs.

2.2.5 Short-Term Risks to the Community or the Environment During Implementation of Remedy (IAC Section 845.670(e)(1)(D))

2.2.5.1 Safety Impacts

Best practices would be employed during construction in order to ensure worker safety and comply with all relevant regulations, permit requirements, and safety plans. However, it is impossible to completely eliminate risks to workers during construction and/or other corrective action activities. For example, injuries and fatalities can occur due to truck accidents or equipment malfunctions. Truck accidents that occur off-Site can also result in injuries or fatalities to community members. The safety impacts associated with source control (*i.e.*, CIP using a consolidation-and-cap approach), which were evaluated in the CAA (Gradient, 2022a, 2025), are the same for both corrective action alternatives. The safety impacts associated with residual plume management (*i.e.*, construction, and O&M) for each corrective action alternative are described below.

- The Source Control-GWP alternative would not require the construction of any engineered systems or structures, and therefore no safety impacts are expected.
- The Source Control-GWET alternative would include the construction of groundwater extraction trenches and a settling pond to collect, extract, and treat CCR-impacted groundwater. Potential safety concerns would be related to the construction and O&M of the GWET extraction trench and settling pond.

Worker Risks

On-Site accidents include injuries and deaths arising from the use of heavy equipment and/or earthmoving operations during Site activities. Off-Site accidents include injuries and deaths due to vehicle accidents during labor and equipment mobilization/demobilization, as well as materials/supplies hauling and deliveries.

As discussed in section 2.1.1, there are no construction activities or operational requirements associated with residual plume management for the Source Control-GWP alternative. Ramboll estimates that residual plume management for the Source Control-GWET corrective action alternative would require 41,100 on-Site labor hours associated with construction and operation of the system (Appendix B). The US Bureau of Labor Statistics (US DOL, 2020a,b) provides an estimate of the hourly fatality and injury rates for construction workers. Based on the accident rates reported by the US Bureau of Labor Statistics and the on-Site labor hours reported in Appendix B, we estimate that approximately 0.43 worker injuries and 3.7×10^{-3} worker fatalities would occur on-Site under the Source Control-GWET corrective action alternative (Table 2.2). The number of on-Site worker accidents is therefore expected to be higher under the Source Control-GWET alternative and no worker accidents would be expected under the Source Control-GWP alternative.

Table 2.2 Expected Number of On-Site Worker Accidents Under Each Corrective Action Alternative[a]

Corrective Action Alternative	Injuries	Fatalities
Source Control-GWP	0	0
Source Control-GWET	0.43	3.7×10^{-3}

Notes:
Source Control-GWET = Source Control with Groundwater Extraction Trench; Source Control-GWP = Source Control with Groundwater Polishing.
(a) Although source control (*i.e.*, closure-in-place [CIP]) is a primary component of the corrective action, the worker accidents associated with source control were previously estimated in the Closure Alternative Analysis (CAA) and are not repeated in this analysis.

The Source Control-GWET alternative would result in off-Site hauling, labor and equipment mobilization/demobilization, and material deliveries (Table 2.1). For residual plume management under the Source Control-GWET corrective action alternative, 979,000 total off-Site vehicle and equipment travel miles would be required. In contrast, for residual plume management under the Source Control-GWP alternative, no vehicle and equipment travel miles would be required (Appendix B; Section 2.1.1). The United States Department of Transportation (US DOT) provides estimates of the expected number of fatalities and injuries "per vehicle mile driven" for drivers and passengers of large trucks and passenger vehicles (US DOT, 2023). Table 2.3 shows the expected number of off-Site accidents under each corrective action alternative due to all categories of off-Site vehicle usage. For these calculations, it was assumed that labor mobilization/demobilization would rely upon passenger vehicles (cars or light trucks, including pickups, vans, and sport utility vehicles) and that hauling, equipment mobilization/demobilization, and material deliveries would rely upon large trucks. Based on US DOT's accident statistics and the mileage estimates in Appendix B, 0.54 worker injuries and 0.01 worker fatalities would be expected to occur due to off-Site activities under the Source Control-GWET alternative, while there are no off-Site accidents expected under the Source Control-GWP alternative.

Table 2.3 Expected Number of Off-Site Worker Accidents Related to Off-Site Car and Truck Use Under Each Corrective Action Alternative[a]

Off-Site Vehicle Use Category	Source Control-GWP		Source Control-GWET	
	Injuries	Fatalities	Injuries	Fatalities
Hauling	0	0	0.013	9.9×10^{-4}
Labor Mobilization/Demobilization	0	0	0.52	8.3×10^{-3}
Equipment Mobilization/Demobilization	0	0	4.3×10^{-3}	3.2×10^{-4}
Material Deliveries	0	0	4.6×10^{-3}	3.4×10^{-4}
Total:	0	0	0.54	0.01^{0}

Notes:
Source Control-GWET = Source Control with Groundwater Extraction Trench; Source Control-GWP = Source Control with Groundwater Polishing.
(a) Although source control (*i.e.*, closure-in-place [CIP]) is a primary component of the corrective action, the worker accidents associated with source control were previously estimated in the Closure Alternative Analysis (CAA) and are not repeated in this analysis.

Overall, considering accidents occurring both on- and off-Site, no worker injuries and worker fatalities would be expected to occur for residual plume management under the Source Control-GWP alternative; and 0.97 worker injuries and 0.014 worker fatalities would be expected to occur for residual plume management under the Source Control-GWET alternative. Thus, overall risks to workers would be higher under the Source Control-GWET alternative.

Community Risks

Vehicle accidents that occur off-Site can result in injuries or fatalities among community members as well as workers. Based on the accident statistics reported by US DOT (2023) and the off-Site travel mileages reported in Appendix B (and summarized in Tables 2.1), off-Site vehicle accidents could result in an estimated 0.24 injuries and 3.6×10^{-3} fatalities among community members (*e.g.*, people involved in haul truck accidents that are neither haul truck drivers nor passengers, including pedestrians, drivers of other vehicles, *etc*.) for residual plume management under the Source Control-GWET alternative (Table 2.4). No off-Site risks are expected under the Source Control-GWP alternative. Therefore, off-Site impacts on nearby residents, including injuries or fatalities, would be higher under the Source Control-GWET alternative.

Table 2.4 Expected Number of Community Accidents Under Each Corrective Action Alternative[a]

Off-Site Vehicle Use Category	Source Control-GWP		Source Control-GWET	
	Injuries	Fatalities	Injuries	Fatalities
Hauling	0	0	0.016	1.2×10^{-4}
Labor Mobilization/Demobilization	0	0	0.21	3.4×10^{-3}
Equipment Mobilization/Demobilization	0	0	5.3×10^{-3}	3.9×10^{-5}
Material Deliveries	0	0	5.7×10^{-3}	4.2×10^{-5}
Total:	0	0	0.24	3.6×10^{-3}

Notes:
Source Control-GWET = Source Control with Groundwater Extraction Trench; Source Control-GWP = Source Control with Groundwater Polishing.
(a) Although source control (*i.e.*, closure-in-place [CIP]) is a primary component of the corrective action, the community accidents associated with source control were previously estimated in the Closure Alternative Analysis (CAA) and are not repeated in this analysis.

2.2.5.2 Cross-Media Impacts to Air

Air pollution can occur both on-Site (*e.g.*, construction activities) and off-Site (*e.g.*, along transportation routes), potentially impacting workers as well as community members. Diesel emissions are a major source of air pollutants and GHG emissions at construction sites. Diesel exhaust contains air pollutants, including nitrogen oxides (NO_x), particulate matter (PM), carbon monoxide (CO), and volatile organic compounds (VOCs) (Hesterberg *et al*., 2009; Mauderly and Garshick, 2009). Construction equipment also emits greenhouse gases (GHGs), including carbon dioxide (CO_2) and possibly nitrous oxide (N_2O). The potential impact of each corrective action alternative on GHG emissions is proportional to the potential impact of each alternative on other emissions from construction vehicles and equipment.

Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. Air impacts occurring during source control would be the same for both corrective action alternatives. Impacts associated with CIP using a consolidation-and-cap approach were evaluated in the CAA (Gradient, 2022a, 2025). On-Site emissions would be higher for residual plume management under the Source Control-GWET alternative due to the greater amount of on-Site vehicle travel miles required under this corrective action alternative (91,400 total on-Site travel miles under the Source Control-GWET alternative while no on-Site travel miles under the Source Control-GWP alternative; Section 2.1.1 and Tables 2.1). Off-Site emissions would similarly be higher for residual plume management under the Source Control-GWET alternative due to the greater amount of off-Site vehicle and equipment travel miles required under this alternative (979,000 total off-Site travel miles under the Source Control-GWET alternative while no off-Site travel miles under the Source Control-GWP alternative). In summary, air impacts would be higher for the Source Control-GWET alternative than the Source Control-GWP alternative.

2.2.5.3 Cross-Media Impacts to Surface Water and Sediments

Under both action alternatives, the constituent mass flux from groundwater into surface water would decline over time after source control has been completed (Ramboll, 2025a). Source control would include removal of free liquids, consolidation of CCR in the PAP into the northern and eastern portion of the impoundment and the installation of a low-permeability final cover system to limit the precipitation infiltration into the impounded CCR. This approach would minimize the amount of water retained within the impoundment, which further reduces the hydraulic flux through the CCR. As demonstrated by the updated groundwater modeling in support of the Closure Alternatives Analysis (CAA) (Gradient, 2022a, 2025), this source control approach would result in a reduction of the migration of water into the PAP by 99% compared to pre-closure conditions. Additionally, source control would result in a reduction of hydraulic flux out of the PAP by 99% compared to pre-closure conditions (Ramboll, 2025a). Due to the reduction in the hydraulic flux out of the PAP, the mass flux out of the PAP would also be controlled or minimized.

Under the Source Control-GWP alternative, minimal surface water and sediment impacts would be expected associated with residual plume management because it would not require the construction of any engineered systems or structures (other than utilizing existing monitoring wells).

Under the Source Control-GWET alternative, surface water and sediment impacts would be higher than the Source Control-GWP alternative due to the construction of the extraction trench system. Construction can have short-term negative impacts on surface water and sediment quality immediately adjacent to a site due to erosion and sediment runoff. Any associated impacts would be addressed through best management practice (BMPs) in accordance with Site land disturbance permits.

2.2.5.4 Control of Exposure to Any Residual Contamination During Implementation of the Remedy

Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. While appropriate controls would be established to prevent exposures of CCR during source control, the risks of CCR exposure during source control activities would be the same for both corrective action alternatives. For each of the corrective action components for the two potential alternatives, no residual CCR exposures would be expected to occur. However, impacted soils and groundwater can be a source of CCR-related constituent exposure for workers. Risks to workers arising from potential contact with residual contamination during construction, operation, and maintenance activities associated with residual plume management would be higher for the Source Control-GWET than for the Source Control-GWP alternative; the Source Control-GWET would involve the production, management, and treatment of extracted groundwater, as well as on-Site disposal of excavated spoils generated during extraction trench construction. The Source Control-GWP alternative would not involve exposure to either of these soil or groundwater waste streams. Any potential CCR-exposures during the Source Control-GWET alternative would be managed through the use of rigorous safety protocols and personal protective equipment.

2.2.5.5 Other Identified Impacts

Source control (*i.e.*, CIP using a consolidation-and-cap approach) would be implemented for both potential corrective action alternatives. Thus, impacts during source control would be the same for both of the corrective action alternatives (see the CAA; Gradient, 2022a, 2025).

In addition to safety impacts, cross-media impacts, and the potential for workers to be exposed to residual contamination, construction activities and remedial operations can have significant energy demands and can cause nuisance impacts such as traffic and noise. Energy consumption at a construction site is synonymous with fossil fuel consumption because the energy to power construction vehicles and equipment comes from the burning of fossil fuels. Fossil fuel demands considered here include the burning of diesel fuel during construction equipment and vehicle travel miles. Because GHG emission impacts and energy consumption impacts both arise from the same sources at construction sites, the trends discussed in Section 2.2.5.2 with respect to GHG emissions also apply to the evaluation of energy demands. Specifically, the energy demands of construction equipment and vehicles associated with residual plume management would be greater under the Source Control-GWET, while the energy demands under the Source Control-GWP alternative associated with residual plume management are expected to be lower, because the latter alternative would not require any significant construction activity. In addition, energy would be required for the operation of the extraction trench system under the Source Control-GWET alternative; there is no operational energy required under the Source Control-GWP alternative because it would rely on natural attenuation processes.

Similarly, traffic and noise impacts associated with residual plume management are also expected to be higher under the Source Control-GWET alternative than the Source Control-GWP alternative, due to the construction activities required to construct the extraction trench system. Traffic may increase temporarily around the Site under the Source Control-GWET alternative due to the daily arrival and departure of the workforce, equipment mobilization/demobilization, and material deliveries. However, these impacts would be expected to largely occur at the beginning or end of each work day (for the arrival/departure of the work force), at the beginning or end of the construction period (for equipment mobilization/demobilization), and at specific times throughout the construction period (for material deliveries). Traffic and noise impacts associated with residual plume management from the Source Control-GWP alternative is expected to be significantly less than those associated with the Source Control-GWET alternative.

Construction activities can negatively impact natural resources and habitat near the Site, as well as scenic, historical, and recreational value. Based on a review of the Illinois Department of Natural Resources (IDNR) Historic Preservation Division database and the Illinois State Archaeological Survey database, there are no historic sites located within 1,000 m of the PAP (Ramboll, 2021). There would be no impacts under the Source Control-GWP alternative because no additional construction activities would occur after implementation of source control. However, the Source Control-GWET alternative would require construction of extraction trenches and a 1-acre on-Site settling pond, which would occur during the latter phase of the PAP closure construction, and specialty equipment such as one-pass trenching equipment and other supporting equipment would be used. These impacts would include disturbance of some existing habitats in the immediate vicinity of these locations by causing alarm and escape behavior in nearby wildlife (*e.g.*, due to noise disturbances). It is also possible that limited negative short-term impacts could occur to sensitive aquatic and wetland species in Newton Lake and other surface water bodies near PAP (see Section 1.1.3) due to sediment runoff during construction. Construction activities related to the Source Control-GWET alternative would cause some limited negative impacts on the scenic, or recreational value of the areas immediately surrounding the Site due to, *e.g.*, noise, obstructions of the view, or restricted access; however, these impacts are expected to diminish once the construction is completed.

2.2.6 Time Until Groundwater Protection Standards Are Achieved/Attain the Groundwater Protection Standards Specified in Section 845.600 (IAC Section 845.670(e)(1)(E)/IAC Section 845.680(d)(2))

This section of the report evaluates the time required to achieve GWPSs, pursuant to requirements under IAC Section 845.670(e)(1)(E) (IEPA, 2021) and under IAC Section 845.680(d)(2).

Groundwater and dissolved constituents move downward through the UD/PMP and UCU into the UA in the vicinity of the PAP. Groundwater within the UA flows generally from the north towards the south and southwest and converges near a former drainage feature located west of the PAP (Ramboll, 2021). Groundwater elevations in the UA at downgradient of the PAP has been observed approximately 15 ft lower than the Newton Lake elevation, which suggest that groundwater in the UA does not flow into the Lake. However, in the northern/upgradient area of the PAP, groundwater from the UA may interact with surface water in Newton Lake, as evidenced by relatively higher groundwater head elevations compared to the Newton Lake water level. Groundwater within the UD/PMP may also interact with surface water in Newton Lake (Ramboll, 2021).

Groundwater modeling was performed in support of the CAA (Gradient, 2022a, 2025). The modeling predicted that source control (*i.e.*, CIP using a consolidation-and-cap approach) would result in a reduction of the migration of water into the PAP by 99% compared to pre-closure conditions. Additionally, source control would result in a reduction of hydraulic flux out of the PAP by 99% compared to pre-closure conditions (Ramboll, 2025a). Additional modeling was conducted for each of the corrective action alternatives to evaluate future groundwater quality in the vicinity of the PAP as a result of residual plume management (Ramboll, 2025c), and the results of the modeling indicate that groundwater would attain the GWPSs for all of the constituents[6] identified as having potential groundwater exceedances in the existing PAP monitoring well system within approximately 34 and 33 years, under the Source Control-GWP and Source Control-GWET alternatives after the completion of the source control, respectively (Appendix B; Ramboll, 2025c), and thus satisfy the GWPSs criteria in IAC Section 845.670(e)(1)(E) and IAC Section 845.680(d)(2). Table 2.5 summarizes and compares timeline and overall implementation schedule for both alternatives (also discussed in Sections 2.1.1 and 2.1.2).

[6] Sulfate was selected as a surrogate for the contaminant fate and transport simulations to evaluate the effectiveness of each of the corrective action alternative. Sulfate was detected in the PAP groundwater at the highest concentrations relative to its GWPS and it is expected to take the longest time to achieve GWPS. Modeling all constituents that exceed GWPS or have been detected at lower concentrations relative to their GWPSs is unnecessary, as these constituents will likely achieve their GWPSs more quickly (Gradient, 2024; Ramboll, 2025c).

Table 2.5 Estimated Timeline and Implementation Schedule for Source Control-GWP *vs.* Source Control-GWET

Implementation Phase	Implementation Task	Timeframe	
		Source Control-GWP	Source Control-GWET
1: Pre-Construction Activities[a] (Concurrent with Source Control)	Agency Coordination, Approvals, and Permitting	NA	18 to 24 months
	Final Design and Bid Process		24 to 36 months
	Timeframe to Complete Corrective		42 to 60 months after CAP Approval (3.5 to 5 years)
	Pre-Construction Activities		
2: Corrective Action Construction[a] (Concurrent with Source Control)	Corrective Action Construction	NA	9 to 18 months
	Timeframe to Complete Corrective Action Construction		9 to 18 months
3: Corrective Action O&M and Closeout[b] (After Completion of Source Control)	Corrective Action Monitoring (Time to Meet GWPS)	408 months (34 years)	396 months (33 years)
	Corrective Action Confirmation Monitoring	36 months	36 months
	Corrective Action Completion Reporting	6 months	6 months
	Timeframe to Complete Corrective Action O&M and Closeout	450 months (37.5 years)	438 months (36.5 years)
Total Timeline to Complete Corrective Action (All Phases)		450 months (37.5 years)	489 to 516 months (41 to 43 years)

Notes:
CAP = Corrective Action Plan; GWPS = Groundwater Protection Standard; NA = Non-applicable; O&M = Operations and Management; Source Control-GWET = Source Control with Groundwater Extraction Trench; Source Control-GWP = Source Control with Groundwater Polishing.
(a) Pre-construction Activities (Phase 1) and Corrective Action Construction (Phase 2) are assumed to occur concurrently with the source control (*i.e.*, closure-in-place or CIP) activities, to allow waste materials to be placed underneath the Primary Ash Pond (PAP) final cover system.
(b) Corrective Action O&M and Closeout (Phase 3) is assumed to start after the source control (*i.e.*, closure-in-place or CIP) is complete and approval of the corrective action construction permit application has been issued by Illinois Environmental Protection Agency (IEPA), whichever is longer.
Source: Appendix B; Ramboll, 2025b.

2.2.7 Potential for Exposure of Humans and Environmental Receptors to Remaining Wastes, Considering the Potential Threat to Human Health and the Environment Associated with Excavation, Transportation, Re-disposal, Containment, or Changes in Groundwater Flow (IAC Section 845.670(e)(1)(F))

Section 2.2.1 describes the magnitude of reduction of existing risks under each corrective action alternative. Section 2.2.2 describes the effectiveness of the remedy in controlling the source, including the extent to which containment practices would reduce further releases. Section 2.2.3 describes the likelihood of future releases of CCR occurring under each corrective action alternative, and Section 2.2.5 describes the short-term risks to workers, the community, and the environment during implementation of the remedy, including safety impacts and control of exposure to any residual contamination. In summary, source control measures (*i.e.*, CIP using a consolidate-and-cap approach) would be undertaken at the Site. Thus, both corrective action alternatives would completely eliminate the potential for a sudden CCR release to occur post-closure

(*e.g.*, due to flooding or a dike failure event). Similarly, due to the source control common to both of the corrective action alternatives, the two alternatives would both involve installing a new geomembrane cover system over the PAP, and no residual CCR exposures would be expected to occur during the implementation of any of the alternatives. Both corrective action alternatives would therefore be equally and fully protective with regard to exposure to residual CCR. There are no current or future risks to any human or ecological receptors at the Site, and there would be no risk of CCR releases post-closure.

For construction workers, risks arising from potential contact with residual contamination during construction, operation, and maintenance activities associated with residual plume management would be higher for the Source Control-GWET alternative than for the Source Control-GWP alternative because the Source Control-GWET would involve the production, management, and potential treatment of extracted groundwater, in addition to the disposal of excavated spoils underneath the final PAP cover system. The Source Control-GWP alternative would not involve exposure to either of these soil or groundwater waste streams. Any potential CCR exposures occurring under Source Control-GWET during groundwater extraction and treatment would be managed through the use of rigorous safety protocols, personal protective equipment, and appropriate disposal practice.

Some changes in groundwater flow (*i.e.*, controlled discharge into Newton Lake) may occur under the Source Control-GWET alternative, due to the operation of the GWET system. Hydrogeological changes would be expected under the Source Control-GWET alternative, such as lowering groundwater table in the vicinity of the extraction trench, altering flow patterns in the UA, and causing changes in hydraulic gradients. However, changes to groundwater flow would not be expected to have an effect on the potential for the exposure of humans and environmental receptors to remaining wastes.

2.2.8 Long-Term Reliability of the Engineering and Institutional Controls (IAC Section 845.670(e)(1)(G))

Source control (*i.e.*, CIP using a consolidate-and-cap approach) would be implemented for both potential corrective action alternatives. Thus, the long-term reliability during source control would be the same for both corrective action alternatives (CAA) (Gradient, 2022a, 2025). The long-term reliability of the engineering and institutional controls associated with residual plume management of both corrective alternatives are summarized below.

- Residual plume management under the Source Control-GWP alternative would be reliable, because it would rely on natural physical and geochemical processes, rather than the installation, operation, and maintenance of engineered systems or structures. Under this alternative, engineering failure would not occur, and no O&M activities would be required to ensure the success of the alternative (other than those required for groundwater monitoring). Active groundwater monitoring would be in place to track the remediation progress. Should the predicted decrease in groundwater concentrations not occur, the adaptive site management approach would enable prompt adjustments or enhancements to the corrective action in accordance with IAC Section 845.680(b). This strategy would allow continuous improvement of the PAP groundwater remediation in response to new Site information and/or the performance of the corrective action alternative.
- GWET is a proven remedy that has been implemented at many sites. Thus, residual plume management under the Source Control-GWET alternative would be expected to be reliable provided it is constructed in accordance with standard design and specifications. Under this alternative, the extraction trench system and settling pond would require engineering design and installation for groundwater extraction and treatment. Routine maintenance of the GWET is required to ensure reliable operation of the extraction trench and pumps, as well as other system

components. Active groundwater monitoring would be in place, similar to those required under the Source Control-GWP alternative.

- For both corrective action alternatives, remedy optimizations would be implemented if necessary.

2.2.9 Potential Need for Replacement of the Remedy (IAC Section 845.670(e)(1)(H))

The potential need for the eventual replacement of the residual plume management remedy under each corrective action alternative is summarized as follows:

- Source Control-GWP would rely on natural physical geochemical processes to achieve reductions in groundwater concentrations to below the GWPSs. Because no installation, operation, and maintenance of engineered systems or structures would be required, it would be unlikely that the residual plume management remedy under the Source Control-GWP alternative would need to be replaced. Adaptive site management strategies would be used to implement remedy optimizations or replacement, as necessary based on data that are collected, to ensure that remedial goals are achieved.
- Source Control-GWET would utilize two extraction trenches and a new settling pond to extract and treat contaminated groundwater to achieve reductions in groundwater concentrations to below GWPSs. While the GWET system would need ongoing maintenance and potential replacement of system components over time, it is unlikely that the residual plume management remedy under the Source Control-GWET alternative would need to be replaced. Adaptive site management strategies would be used to implement remedy optimizations or replacement, as necessary based on data that are collected, to ensure that remedial goals are achieved.

2.3 The Ease or Difficulty of Implementing a Remedy (IAC Section 845.670 (e)(3))

2.3.1 Degree of Difficulty Associated with Constructing the Remedy (IAC Section 845.670(e)(3)(A))

Source control (*i.e.*, CIP using a consolidate-and-cap approach) would be implemented for both potential corrective action alternatives. Thus, construction difficulties regarding source control would be the same for both corrective action alternatives. Difficulties associated with implementing CIP using a consolidate-and-cap approach were evaluated in the CAA (Gradient, 2022a, 2025). The expected degree of difficulty associated with residual plume management for each of the corrective action alternatives is summarized below.

- Residual plume management under the Source Control-GWP alternative would rely on physical and geochemical attenuation processes and therefore would not pose any significant construction challenges. This alternative would only require the use of monitoring wells, which are already installed. Therefore, there would be minimal difficulty in constructing the Source Control-GWP remedy.
- Residual plume management under the Source Control-GWET would involve the construction of an extraction trench, settling pond and conveyance system to extract and treat impacted groundwater and rely on physical and geochemical attenuation processes to address downgradient groundwater quality impacts. However, it may have the challenges, as described below, during construction of the extraction trenches (Appendix B; Ramboll, 2025b):

- The implementation of the remedy would require specialized contractors and equipment, specifically a one-pass trenching contractor and associated machinery, for trench installation. Additionally, general construction equipment, including excavation and grading machinery, would be required.
- Modifications to the PAP dike to establish an earthen work pad would require a detailed geotechnical design. Furthermore, geotechnical monitoring of the embankment would be essential to identify any signs of distress during construction. If distress is observed, construction activities may need to be temporarily halted to assess the cause and implement appropriate mitigation measures.
- Quality control (QC) monitoring would be required throughout the construction phase as part of the overall construction QC and quality assurance (QA) program, to ensure the effectiveness of the GWET system.
- Additional pre-design investigations may be necessary to confirm the existing hydrogeologic conditions along the proposed trench locations, to ensure the performance of the GWET.
- Groundwater monitoring would be conducted using a groundwater monitoring network designed in accordance with IAC Section 845.680(c).

2.3.2 Expected Operational Reliability of the Remedy (IAC Section 845.670(e)(3)(B))

Source control (*i.e.*, CIP using a consolidate-and-cap approach) would be implemented for both potential corrective action alternatives. Thus, the operational reliability of the remedy would be the same for both corrective action alternatives. The reliability associated with implementing CIP using a consolidate-and-cap approach was evaluated in the CAA (Gradient, 2022a, 2025). Both corrective action alternatives would likely be highly reliable with respect to operational controls associated with residual plume management; specific details for each corrective action alternative are discussed below.

- Residual plume management under the Source Control-GWP alternative would have high operational reliability because it would rely on natural processes and active monitoring, rather than the installation, operation, and maintenance of engineered systems or structures (other than monitoring wells). Under the Source Control-GWP alternative, engineering failure would not occur and no O&M activities would be required to ensure the success of the alternative. Geochemical modeling results suggest that as groundwater returns to background conditions, solid sorbing phases are expected to be stable (Appendix E; Ramboll, 2024b).
- Residual plume management under the Source Control-GWET alternative would also have high operational reliability because it is an established and commonly used remedial technique, as long as the extraction trench system is constructed in accordance with the design and specifications. In addition, the mechanical system in this remedy would require routine and non-routine maintenance to ensure reliable operation.

2.3.3 Need to Coordinate with and Obtain Necessary Approvals and Permits from Other Agencies (IAC Section 845.670(e)(3)(C))

Both corrective action alternatives would require regulatory approvals. Specific permits and approvals associated with source control (*i.e.*, CIP using a consolidate-and-cap-approach) are the same for both corrective action alternatives and are discussed in the CAA (Gradient, 2022a, 2025). The specific approvals

and permits associated with residual plume management for both corrective action alternatives are discussed below.

- The Source Control-GWP alternative would not need additional permits from other agencies, other than the permits issued by IEPA for source control (*i.e.*, Closure Plan and Construction Permit Application) and approval of the eventual Corrective Action Plan.
- The Source Control-GWET alternative would require approvals and permits. Groundwater extracted from the GWET system would require a modified NPDES permit. The NPDES permits would likely require renewals depending on the timeline of corrective action implementation. In addition, permits from the IEPA for construction of stormwater controls and BMPs, placement of excavated spoils beneath the PAP final cover system *via* an amendment to the PAP Closure Plan and potentially an INDR Dam Safety modification permit would be required. These permits and plans typically take 18-24 months to obtain, although some may already be obtained during the PAP final closure (Appendix B; Ramboll, 2025b).

2.3.4 Availability of Necessary Equipment and Specialists (IAC Sections 845.670(e)(3)(D) and 845.660(c)(1), "Ease of Implementation")

Source control (*i.e.*, CIP using a consolidate-and-cap approach) would be implemented for both potential corrective action alternatives. Thus, equipment and specialist needs would be the same for source control activities associated with both corrective action alternatives. An assessment of necessary equipment and specialists associated with implementing CIP using a consolidate-and-cap approach was evaluated in the CAA (see the CAA; Gradient, 2022a, 2025). Specialized equipment and personnel are essential for field data collection and groundwater sampling for residual plume management under both potential corrective action alternatives. Additionally, the assessment of groundwater concentrations for Site constituents would necessitate laboratory equipment and specialists for both alternatives. The availability of equipment and specialists associated with residual plume management for each corrective action alternative is summarized below.

- Residual plume management under the Source Control-GWP alternative would require groundwater professionals, such as geologists, hydrogeologists, statisticians (for statistical analysis), and geochemists to evaluate all monitoring data, ensuring that physical and geochemical processes function as anticipated for this alternative. The equipment and specialists needed for Site groundwater monitoring and analysis are currently engaged in these tasks as part of the routine groundwater monitoring program outlined in accordance with IAC Section 845.220(c)(4).
- Residual plume management under the Source Control-GWET alternative would require specialists to manage the GWET system throughout its construction and operational period.
    - Construction of the groundwater extraction system (*i.e.*, the trench and settling pond) on the Site would require a specialized contractor, who would most likely need specialized and often custom-built equipment including one-pass construction equipment. Relatively few construction contractors with experience using one-pass equipment are available. Specialists including design engineers, construction managers and contractor staff experienced in trench construction and similar geologic environments will be required as well. Geotechnical specialist would be required to design the earthen work pad and oversee the PAP embankment for signs of distress during the one-pass trench installation. In addition, specialists and equipment may have backlogs from similar specialty ground improvement projects in the area.

- Specialist would be needed to maintain the operation of the GWET extraction system. System components such as totalizers, instrumentation, and the extraction and transfer pumps would require routine maintenance. Non-routine maintenance such as flushing or jetting of the conveyance lines, replacement of faulty system components, replacement of pumps system instrumentation, would also necessitate the use of specialist. Specialists and replacement equipment are typically available within 100 to 300 miles of the Site, but complex equipment like transfer pumps and controllers may have longer lead times for replacement or servicing.
- This alternative would necessitate the use of equipment and the expertise of specialists for tasks such as field data collection, groundwater sampling, analysis, and periodic corrective action groundwater monitoring and reporting. Similar to those in the GWP alternative, these activities are already being conducted as part of routine groundwater monitoring in accordance with IAC Section 845.220(c)(4).

2.3.5 Available Capacity and Location of Needed Treatment, Storage, and Disposal Services (IAC Section 845.670(e)(3)(D))

The available capacity and location of needed treatment, storage, and disposal services associated with residual plume management under each corrective action alternative are summarized below. All the practices employed in both alternatives would comply with standards for the management of wastes as specified in IAC Section 845.670(e)(3)(D) and IAC Section 845.680(d)(5).

- Residual plume management for the Source Control-GWP remedy would not require any treatment, storage, or disposal services, because GWP is not anticipated to produce a substantial amount of waste or wastewater, aside from minor purge water volumes generated during routine groundwater sampling activities for residual plume management. This could be managed by a standard waste management contractor.
- Residual plume management for the Source Control-GWET alternative would require the construction of the extraction trench system and a new settling pond on-Site:
  - The construction of the extraction trench would generate spoils, and the waste materials would be used as subgrade fill beneath the PAP final cover system during the closure construction. Finishing the extraction trench construction at the same time as the AP closure would provide sufficient on-Site capacity for the disposal of generated spoils
  - The extraction trench system would send extracted groundwater to an on-Site settling pond, which collects solids removed during groundwater recovery *via* the pneumatic extraction pumps and transfer piping. The settling pond would need to be sited, designed, constructed, and maintained properly. The siting of the settling pond would need to consider limiting impacts to existing Site infrastructure, wetlands, floodplains, and planned solar redevelopment for the Site.
  - Discharge from the settling pond would be conveyed to an NPDES permitted outfall. Renewal of the NPDES permits may be necessary to continue operations, depending on the timeline of the corrective action implementation in relation to the source control completion.

2.4 The Degree to Which Community Concerns Are Addressed by the Remedy (IAC Section 845.670(e)(4))

Several nonprofits raised concerns regarding the potential impacts of the PAP on groundwater and surface water quality including Earthjustice, the Prairie Rivers Network, and the Sierra Club (Earthjustice *et al*., 2018; Lydersen, 2017; Sierra Club and CIHCA, 2014). The combination of source control (*i.e*., CIP using a consolidate-and-cap approach) and residual plume management would cause groundwater concentrations to decline over time under all of the corrective action alternatives, as suggested by the groundwater modeling (Ramboll, 2025c), thus addressing these concerns.

A public meeting was held on February 26, 2025, pursuant to requirements under IAC Section 845.660(d). Questions raised by attendees were addressed at the meeting; a written summary of the questions and responses was prepared.

2.5 Remove from the Environment as Much of the Contaminated Material that Was Released from the CCR Surface Impoundment as Is Feasible, Taking into Account Factors such as Avoiding Inappropriate Disturbance of Sensitive Ecosystems (IAC Section 845.670(d)(4))

There have been no documented releases of CCR from the unit (Ramboll, 2025d). Both potential corrective action alternatives would have source control (*i.e*., CIP using a consolidate-and-cap approach) and residual plume management efforts. The source control would include the consolidation of CCR in the PAP into the northern and eastern portion of the impoundment and the installation of a low-permeability geomembrane final cover system designed to limit the infiltration of precipitation into the impounded CCR and tie into the surrounding grades. Updated groundwater modeling performed in support of the CAA (Gradient, 2022a, 2025) concluded that source control alone would result in a 99% reduction in mass flux from the PAP into the underlying groundwater (Ramboll, 2025c).

Moreover, residual plume management under each corrective action alternative will further result in the removal of contaminated material from the environment and/or the improvement of downgradient groundwater quality. Groundwater modeling has predicted GWPSs to be met in all monitoring wells in the existing PAP monitoring system within approximately 34 and 33 years, respectively, after source control has been implemented for the Source Control-GWP and the Source Control-GWET alternatives (Ramboll, 2025c).

- Residual plume management under the Source Control-GWP alternative would address impacted groundwater by relying on natural physical and geochemical attenuation processes to reduce the residual concentrations of CCR. Site-specific evaluation demonstrated that groundwater polishing is appropriate at PAP because Site conditions are suitable for physical and geochemical processes of inorganic contaminants *via* adsorption, although sorption of lithium is more pronounced compared to sulfate. Geochemical modeling results suggest that as groundwater returns to background conditions, solid sorbing phases are expected to be stable (Appendix E; Ramboll, 2024b). In cases in which observed groundwater concentrations deviate significantly from modeled conditions, alternative methods or techniques would be evaluated under the adaptive site management, and if viable, incorporated as per IAC Section 845.680(b). No ecosystems would be disturbed, because no construction activities would be expected under the Source Control-GWP alternative.

- Residual plume management under the Source Control-GWET alternative would utilize an engineered extraction system to remove constituent mass from the environment. Residual concentrations of CCR constituents in groundwater would also be reduced as a result of physical and geochemical attenuation processes. The construction activities would likely to result some negative impacts to the ecosystem, including disturbance of some existing habitats atop portions of the construction areas and habitats in the immediate vicinity of the Site by causing alarm and escape behavior in nearby wildlife (*e.g.*, due to noise disturbances). Short-term impacts could also occur to sensitive aquatic and wetland species in Newton Lake and other wetlands or surface water bodies located near PAP (see Section 1.1.3) due to sediment runoff during construction located near PAP.

2.6 Summary

This CAAA evaluates both corrective action alternatives identified as potentially viable in the CMA with regard to each of the factors specified in IAC Section 845.670(d) and 845.670(e) (IEPA, 2021). Based on this evaluation, the most appropriate corrective action for this Site is Source Control-GWP. While the time to achieve GWPS as predicted by groundwater modeling (excluding corrective action confirmation monitoring and completion reporting) is similar under both alternatives (34 years under Source Control-GWP *vs.* 33 years under Source Control with GWET), the expected impacts on workers, nearby communities, and the environment under the Source Control-GWP alternative are lower than the Source Control-GWET alternative. Thus, Source Control-GWP is the most appropriate corrective action alternative for the PAP.

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Appendix A

Human Health and Ecological Risk Assessment

Human Health and Ecological Risk Assessment
Primary Ash Pond
Newton Power Plant
Newton, Illinois

July 28, 2022

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Abbreviations

ADI	Acceptable Daily Intake
BCF	Bioconcentration Factor
BCG	Biota Concentration Guide
BCU	Bedrock Confining Unit
CAA	Closure Alternatives Assessment
CCR	Coal Combustion Residual
CEM	Conceptual Exposure Model
COI	Constituent of Interest
COPC	Constituent of Potential Concern
CSF	Cancer Slope Factor
CSM	Conceptual Site Model
ESV	Ecological Screening Value
GWPS	Groundwater Protection Standard
GWQS	Groundwater Quality Standards
HTC	Human Threshold Criteria
IAC	Illinois Administrative Code
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
ILWATER	Illinois Water and Related Wells
IPGC	Illinois Power Generating Company
ISGS	Illinois State Geological Survey
LCU	Lower Confining Unit
LF 1	Phase 1 Landfill
LF 2	Phase 2 Landfill
MCL	Maximum Contaminant Level
NPDES	National Pollutant Discharge Elimination System
NPP	Newton Power Plant
NRWQC	National Recommended Water Quality Criteria
ORNL RAIS	Oak Ridge National Laboratory's Risk Assessment Information System
PAP	Primary Ash Pond
PMP	Potential Migration Pathway
PRG	Preliminary Remediation Goal
RfD	Reference Dose
RME	Reasonable Maximum Exposure
RSL	Regional Screening Level
SWQS	Surface Water Quality Standards
TEC	Threshold Effect Concentration
TSS	Total Suspended Solids
UA	Uppermost Aquifer
UCU	Upper Confining Unit
UD	Upper Drift
US DOE	United States Department of Energy
US EPA	United States Environmental Protection Agency

1 Introduction

Illinois Power Generating Company's (IPGC) Newton Power Plant (NPP, or "the Site") is an electric power generating facility with coal-fired units located approximately seven miles southwest of the city of Newton, Illinois. The facility began operating in approximately 1977 and will be retired by the end of 2027 (Meeker, 2020; Ramboll, 2021). The NPP has one surface impoundment for storage of coal combustion residuals (CCR), known as the Primary Ash Pond (PAP), that was constructed in 1977 and covers approximately 404 acres (Ramboll, 2021). Closure of the PAP (Illinois Environmental Protection Agency [IEPA] ID No. W0798070001-01), which is the subject of this report, is planned to commence by the end of 2022.

This report presents the results of an evaluation that characterizes potential risk to human and ecological receptors that may be exposed to CCR constituents in environmental media originating from the PAP. This risk evaluation was performed to support the Closure Alternatives Assessment (CAA) for the PAP in accordance with requirements in Title 35 Part 845 of the Illinois Administrative Code (IAC) (IEPA, 2021). Human and ecological risks were evaluated for Site-specific constituents of interest (COIs). The conceptual site model (CSM) assumed that Site-related COIs in groundwater may migrate to the adjacent Newton Lake and affect surface water and sediment in the vicinity of the Site.

Consistent with United States Environmental Protection Agency (US EPA) guidance (US EPA, 1989), this report used a tiered approach to evaluate potential risks, which included the following steps:

1. Identify complete exposure pathways and develop a conceptual exposure model (CEM).
2. Identify Site-related COIs: Constituents detected in groundwater were considered COIs if their maximum detected concentration over the period from 2015 to 2021 exceeded a groundwater protection standard (GWPS) identified in Part 845.600 (IEPA, 2021), or a relevant surface water quality standard (IEPA, 2019; US EPA Region IV, 2018).
3. Perform screening-level risk analysis: Compare maximum measured or modeled COI concentrations in surface water and sediment to conservative, health-protective benchmarks in order to determine constituents of potential concern (COPCs).
4. Perform refined risk analysis: If COPCs are identified, perform a refined analysis to evaluate potential risks associated with the COPCs.
5. Formulate risk conclusions and discuss any associated uncertainties.

This assessment relies on a conservative (*i.e.*, health-protective) approach and is consistent with the risk approaches outlined in US EPA guidance. Specifically, we considered evaluation criteria detailed in IEPA guidance documents (*e.g.*, IEPA, 2013, 2019), incorporating principles and assumptions consistent with the Federal CCR Rule (US EPA, 2015a) and US EPA's "Human and Ecological Risk Assessment of Coal Combustion Residuals" (US EPA, 2014).

US EPA has established acceptable risk metrics. Risks above these US EPA-defined metrics are termed potentially "unacceptable risks". Based on the evaluation presented in this report, no unacceptable risks to human or ecological receptors resulting from CCR exposures associated with the PAP were identified. This means that the risks from the Site are likely indistinguishable from normal background risks. Specific risk assessment results include the following:

- No unacceptable risks were identified for recreators boating in Newton Lake adjacent to the Site.
- No unacceptable risks were identified for recreators exposed to sediment in Newton Lake adjacent to the Site.
- No unacceptable risks were identified for anglers consuming locally caught fish.
- No unacceptable risks were identified for ecological receptors exposed to surface water or sediment.
- No bioaccumulative ecological risks were identified.

It should be noted that this evaluation incorporates a number of conservative assumptions that tend to overestimate exposure and risk. Moreover, it should be noted that because current conditions do not present a risk to human health or the environment, there will also be no unacceptable risk to human health or the environment for future conditions when the PAP is closed. For all future closure scenarios, potential releases of CCR-related constituents will decline over time and consequently potential exposures to CCR-related constituents in the environment will also decline.

2 Site Overview

2.1 Site Description

The NPP is located in Jasper County Illinois, approximately seven miles southwest of the city of Newton. The PAP is located south of the power plant in a predominantly agricultural area. The PAP is surrounded by Newton Lake on the west, south, and east (Figure 2.1) (Ramboll, 2021). Three CCR units are present on the NPP property, including the PAP and two landfills; the Phase 1 Landfill (LF 1) is located northwest and west of the PAP, and the Phase 2 Landfill (LF 2) is located west of the PAP. The PAP is the subject of this report (Ramboll, 2021). The PAP discharges into a secondary pond located immediately south of the PAP, which then discharges to Newton Lake under a National Pollutant Discharge Elimination System (NPDES) permit (No. IL0049191) (Ramboll, 2021).

Newton Lake was formed by the construction of a dam in 1975 (US National Dams, 2022), and is used as a cooling water supply for the NPP (IDNR, 2019). Water is drawn from the eastern arm near the power plant and thermal effluent is released at two locations in the western arm via NPDES permitted outfalls (IEPA, 2016).

Figure 2.1 Site Location Map. Source: Ramboll, 2021.

2.2 Geology/Hydrogeology

The geology underlying the Site in the vicinity of the PAP primarily consists of unlithified deposits overlying a shale bedrock unit. The principal types of unlithified materials include the Peoria Silt /Sangman Soil, the Hagarstown Member, the Vandalia Till, the Mulberry Grove Member, and the Smithboro Till/Banner Formation (Ramboll, 2021). These unlithified deposits are underlain by a Pennsylvanian Age shale bedrock of the Mattoon Formation (Ramboll, 2021). Five distinct hydrostratigraphic units in the area are (listed from ground surface down): the Upper Drift (UD)/Potential Migration Pathway (PMP), the Upper Confining Unit (UCU), the Uppermost Aquifer (UA), the Lower Confining Unit (LCU), and the Bedrock Confining Unit (BCU) (Ramboll, 2021).

The UD is composed of low permeability silts and clays of the Peoria Silt and Sangamon Soil and the sandier soils of the Hagarstown Member (*i.e.*, PMP). The Hagarstown Member is generally 2 feet (ft) thick but is encountered at thicknesses up to about 6.9 ft in the vicinity of the Ash Pond (Ramboll, 2021). The UD/PMP has a geometric mean horizontal hydraulic conductivity of 3.1×10^{-3} cm/s (Ramboll, 2021). The UA is composed of a 3 to 17 ft thick Mulberry Grove Member, which consists of sand, silty- and clayey-sand, and gravel. The UA has a geometric mean horizontal hydraulic conductivity of 6.8×10^{-3} cm/s (Ramboll, 2021). The UA is sandwiched between two low-permeability confining units: (i) the UCU on

top consisting of clay and silt of the Vandalia Till and (ii) the LCU on bottom consisting of silt and clay of the Smithboro Till Member and the Banner Formation (Ramboll, 2021). No wells are screened within the UCU, the LCU, or the underlying shale BCU. Field hydraulic conductivity tests were not performed in any of these confining units (Ramboll, 2021).

Groundwater within the UA flows generally from the north towards the south and southwest. In the southern area of the PAP, groundwater flows toward a former drainage feature located west of the PAP (Ramboll, 2021). In the northern area of the PAP, groundwater from the UA may interact with surface water in Newton Lake, as evidenced by relatively higher groundwater head elevations compared to the Newton Lake water level. Groundwater velocities in the UA range from 0.04 to 1.9 ft/day. Horizontal hydraulic gradients calculated for the UA range from 0.0025 to 0.0071 ft/ft (Ramboll, 2021). Groundwater within the UD/PMP may also flow into Newton Lake; however, flow velocity or hydraulic gradient have not been calculated or measured within the PMP (Ramboll, 2021).

2.3 Conceptual Site Model

A CSM describes sources of contamination, the hydrogeological units, and the physical processes that control the transport of water and solutes. In this case, the CSM describes how groundwater underlying the PAP migrates and interacts with surface water and sediment in the adjacent Newton Lake. The CSM was developed using available hydrogeologic data specific to the PAP (Ramboll, 2021), including information on groundwater flow and surface water characteristics.

CCR-related constituents may migrate vertically downward beneath the PAP and into groundwater; these constituents may subsequently migrate with groundwater in the UA and the PMP and flow into the eastern arm of Newton Lake. CCR-related constituents from the PAP may migrate vertically downward through the UD/PMP and the UCU into the UA (Ramboll, 2021). The north to south groundwater flow within the UA is mostly in the horizontal direction because the UA is underlain by two low-permeability confining units (*i.e.*, LCU and BCU) that inhibit vertical flow (Ramboll, 2021). A component of the CCR-related constituents from the PMP may also flow into Newton Lake, particularly on the eastern portion of the PAP where groundwater and surface water interact. After groundwater flows into the lake, dissolved constituents in groundwater may partition between sediments and surface water.

2.4 Groundwater Monitoring

A total of 29 wells have been used to monitor the groundwater quality near and downgradient of the PAP. Of these, 23 wells are screened in the UA, and 6 wells are screened in the UD (Table 2.1). The analyses presented in this report relied on all available data from the 29 wells collected between 2015 and 2021, which is the period subsequent to the promulgation of the Federal CCR Rule. Groundwater samples were analyzed for a suite of total metals, specified in Illinois CCR Rule Part 845.600 (IEPA, 2021).[1] A summary of the groundwater data used in this risk evaluation is presented in Table 2.2. The PAP well locations are shown in Figure 2.2. Note that there are additional wells in the vicinity of the PAP (shown in Figure 2.1) that were not used in this risk analysis, because they were screened in the CCR and are not reflective of groundwater conditions. The use of groundwater data in this risk evaluation does not imply that detected constituents are associated with the PAP or that they have been identified as potential groundwater exceedances.

[1] Samples were analyzed for a longer list of inorganic constituents and general water quality parameters (chloride, fluoride, sulfate, and total dissolved solids), but these constituents were not evaluated in the risk evaluation.

Figure 2.2 Monitoring Well Locations. Source: Ramboll, 2021, Figure 3-1.

Table 2.1 Groundwater Monitoring Wells Related to Newton Primary Ash Pond

Well	Hydrogeologic Unit	Date Constructed	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Well Depth (ft bgs)
APW02	UD	06/19/2010	9.70	19.70	20.00
APW03	UD	06/18/2010	9.70	19.70	20.00
APW04	UD	06/19/2010	7.70	17.70	18.00
APW05	UA	10/22/2015	62.64	67.44	67.84
APW05S	UD	01/19/2021	10.00	20.00	20.00
APW06	UA	10/21/2015	67.67	72.48	72.88
APW07	UA	11/05/2015	77.89	82.70	83.10
APW08	UA	10/28/2015	71.40	81.06	81.53
APW09	UA	11/03/2015	56.66	61.46	61.85
APW10	UA	11/06/2015	40.74	45.54	45.94
APW11	UA	01/23/2021	60.00	65.00	65.00
APW12	UD	02/21/2021	20.00	30.00	30.00
APW13	UA	01/22/2021	58.50	63.50	63.50
APW14	UA	01/23/2021	50.00	55.00	55.00
APW15	UA	01/22/2021	98.00	103.00	103.00
APW16	UA	01/20/2021	80.50	85.50	85.50
APW17	UA	01/22/2021	87.00	92.00	92.00
APW18	UA	01/21/2021	75.00	80.00	80.00
G48MG	UA	10/20/2015	71.80	76.65	77.06
G202	UA	10/16/1996	64.00	74.00	74.00
G203	UA	11/15/1996	62.50	72.50	72.50
G208	UA	10/13/2011	74.93	94.71	94.80
G217S	UD	08/26/1997	9.00	19.00	19.00
G217D	UA	12/09/2014	--	--	69.30
G222	UA	10/25/2011	64.57	79.24	79.30
G223	UA	10/11/2011	79.09	88.75	89.10
G224	UA	10/05/2011	63.51	73.17	73.50
R202	UA	--	--	--	--
R217D	UA	09/26/2017	60.10	65.03	65.24

Notes:
-- = Data Unavailable.
bgs = Below Ground Surface; ft = Feet; UA = Uppermost Aquifer; UD = Upper Drift.
Source: Ramboll, 2021.

Table 2.2 Groundwater Data Summary

Constituent	Samples with Constituent Detected	Samples Analyzed	Minimum Detected Value	Maximum Detected Value	Maximum Laboratory Detection Limit
Total Metals (mg/L)					
Antimony	2	225	0.0035	0.0036	0.003
Arsenic	204	225	0.001	0.13	0.001
Barium	225	225	0.0075	1.5	0.001
Beryllium	3	225	0.0025	0.0033	0.001
Boron	358	358	0.023	0.66	0.02
Cadmium	4	225	0.0012	0.0034	0.001
Chromium	39	225	0.004	0.09	0.004
Cobalt	37	225	0.002	0.036	0.002
Lead	59	225	0.001	0.065	0.001
Lithium	106	225	0.01	0.3	0.02
Mercury	14	225	0.0002	0.002	0.0002
Molybdenum	195	225	0.0011	0.045	0.001
Selenium	9	225	0.001	0.006	0.001
Thallium	5	225	0.0011	0.0036	0.001
Radionuclides (pCi/L)					
Radium-226+228	225	225	0.0127	15.2	1.85
Other (mg/L, unless otherwise noted)					
Chloride	372	372	8	550	500
Fluoride	316	360	0.258	8.16	6.25
Sulfate	331	370	1	3200	500
Total Dissolved Solids	482	482	300	5500	34

Notes:
pCi/L = PicoCuries Per Liter.

2.5 Surface Water Monitoring

Golder collected a total of 28 surface water samples from Newton Lake in the vicinity of the PAP in April and May, 2021 (Golder Associates Inc., 2021). The sample locations are shown in Figure 2.3, and the sampling results are summarized in Table 2.3.

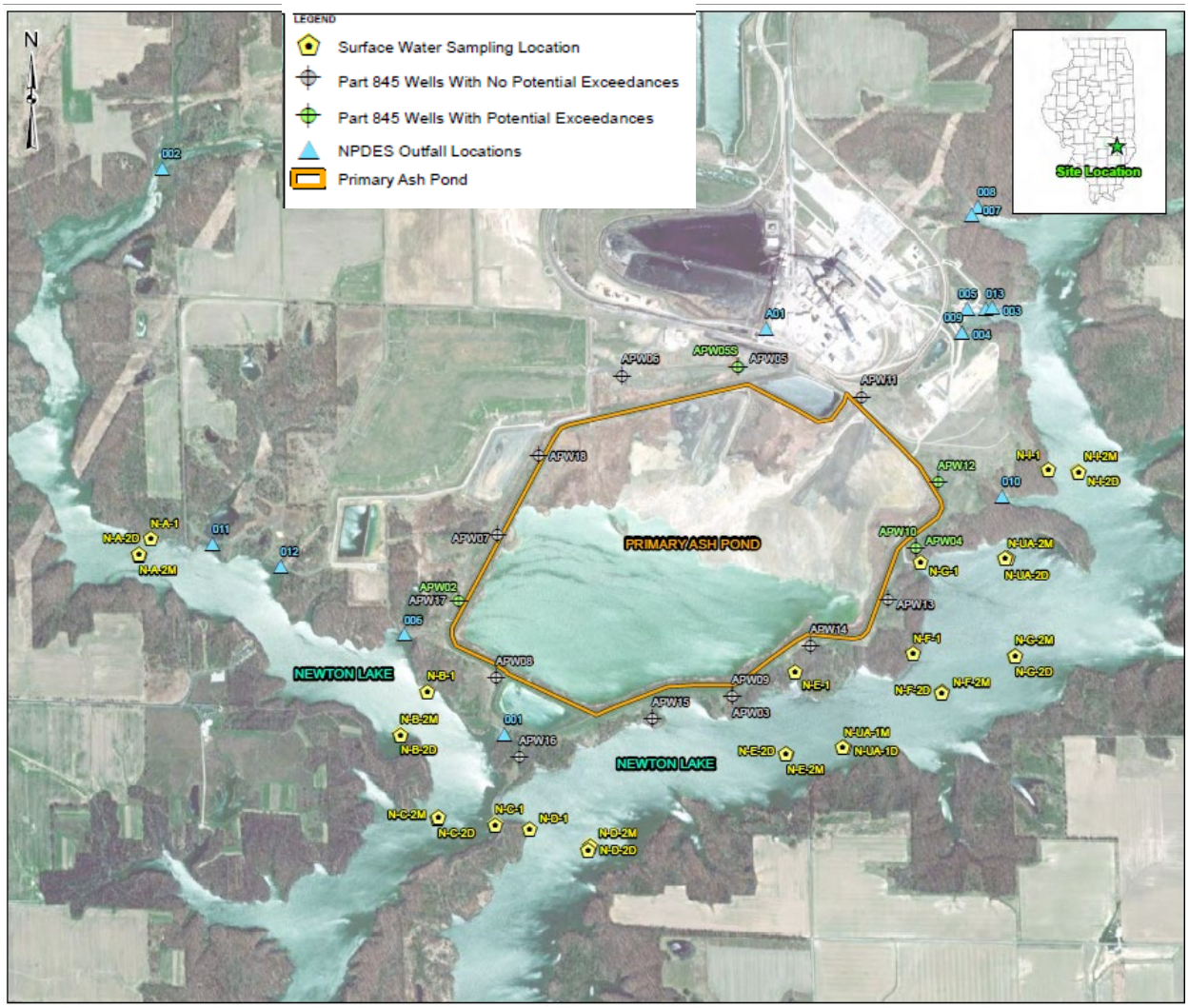

Figure 2.3 Surface Water Sampling Locations. Source: Golder Associates Inc., 2021.

Table 2.3 Surface Water Data Summary

Constituent	Samples with Constituent Detected	Samples Analyzed	Minimum Detected Value	Maximum Detected Value	Maximum Laboratory Detection Limit
Total Metals (mg/L)					
Antimony	0	28			0.003
Arsenic	28	28	0.0018	0.0042	0.001
Barium	28	28	0.052	0.64	0.001
Beryllium	0	28			0.001
Boron	28	28	0.11	0.14	0.01
Cadmium	0	28			0.001
Calcium	28	28	19	22	0.2
Chromium	1	28	0.0067	0.0067	0.004
Cobalt	0	28			0.002
Iron	28	28	0.027	1.2	0.01
Lead	0	28			0.001
Lithium	0	28			0.02
Magnesium	28	28	5.0	5.8	0.1
Manganese	28	28	0.044	0.69	0.001
Mercury	0	28			0.0002
Molybdenum	28	28	0.0046	0.0062	0.001
Potassium	28	28	5.6	10	0.1
Selenium	0	28			0.001
Sodium	28	28	19	22	0.1
Thallium	0	28			0.001
Radionuclides (pCi/L)					
Radium-226+228	28	28	0.012	2.1	1.09
Other (mg/L)					
Chloride	28	28	8.5	9.6	1
Fluoride	28	28	0.35	0.51	0.25
Sulfate	28	28	35	95	25
Total Dissolved Solids	28	28	170	240	34

Notes:

COI = Constituent of Interest; pCi/L = PicoCuries Per Liter.

Surface water was analyzed for both total and dissolved metals; only total metals are reported here because they generally have higher concentrations than dissolved metals. However, the maximum dissolved concentrations for boron, manganese, and molybdenum are slightly higher (up to a factor of two) than the maximum total concentrations, but boron, manganese, and molybdenum have not been identified as COIs.

3 Risk Evaluation

3.1 Risk Evaluation Process

A risk evaluation was conducted to determine whether constituents present in groundwater underlying and downgradient of the PAP have the potential to pose adverse health effects to human and ecological receptors. The risk evaluation is consistent with the principles of risk assessment established by US EPA and has considered evaluation criteria detailed in Illinois guidance documents (*e.g.*, IEPA, 2013, 2019).

The general risk evaluation approach is summarized in Figure 3.1 and discussed below.

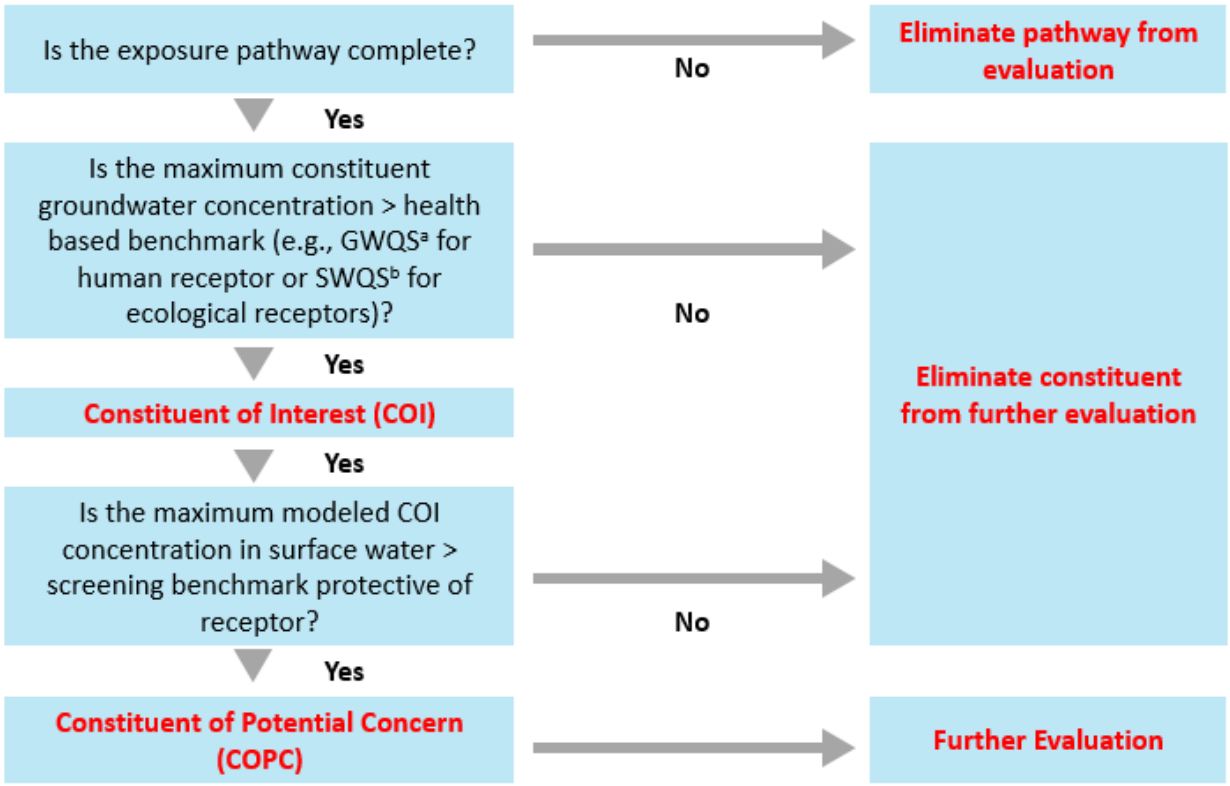

Figure 3.1 Overview of Risk Evaluation Methodology. IEPA = Illinois Environmental Protection Agency; GWQS = IEPA Groundwater Quality Standards; SWQS = IEPA Surface Water Quality Standards. (a) The IEPA Part 845 Groundwater Protection Standards (GWPS) were used to identify COIs. (b) IEPA SWQS protective of chronic exposures to aquatic organisms were used to identify ecological COIs. In the absence of an SWQS, US EPA Region IV Ecological Screening Values (ESVs) were used.

The first step in the risk evaluation was to develop the CEMs and identify complete exposure pathways. All potential receptors and exposure pathways based on groundwater use and surface water use in the vicinity of the Site were considered. Exposure pathways that are incomplete were excluded from the evaluation.

Groundwater data were used to identify COIs. COIs were identified as constituents with maximum concentrations in groundwater in excess of groundwater quality standards (GWQS)[2] for human receptors and surface water quality standards (SWQS) for ecological receptors. Based on the CSM (Section 2.2), some groundwater underlying the PAP has the potential to interact with surface water in Newton Lake. Therefore, potential PAP-related constituents in groundwater may potentially flow toward and into surface water in Newton Lake.

Surface water samples have been collected from Newton Lake adjacent to the Site; however, sediment samples have not been collected from the lake. Gradient modeled the potential migration of COIs from groundwater to surface water and sediment to evaluate potential risks to receptors (see Section 3.3.3).

Gradient modeled the COI concentrations in surface water and sediment based on the groundwater data from the PAP-related wells. The measured and modeled COI concentrations in surface water and sediment were compared to conservative, generic risk-based screening benchmarks for human health and ecological receptors. These generic screening benchmarks rely on default assumptions with limited consideration of site-specific characteristics. Human health benchmarks are receptor-specific values calculated for each pathway and environmental medium that are designed to be protective of human health. Ecological benchmarks are medium-specific values designed to be protective of all potential ecological receptors exposed to surface water. Ecological and human health screening benchmarks are inherently conservative because they are intended to screen out chemicals that are of no concern with a high level of confidence. Therefore, a measured or modeled COI concentration exceeding a screening benchmark does not indicate an unacceptable risk, but only that further risk evaluation is warranted. COIs with maximum concentrations exceeding a conservative screening benchmark are identified as COPCs requiring further evaluation.

As described in more detail below, this evaluation relied on the screening assessment to demonstrate that constituents present in groundwater underlying the PAP do not pose an unacceptable human health or ecological risk. That is, after the screening step, no COPCs were identified and further assessment was not warranted.

3.2 Human and Ecological Conceptual Exposure Models

A CEM provides an overview of the receptors and exposure pathways requiring risk evaluation. The CEM describes the source of the contamination, the mechanism that may lead to a release of contamination, the environmental media to which a receptor may be exposed, the route of exposure (exposure pathway), and the types of receptors that may be exposed to these environmental media.

3.2.1 Human Conceptual Exposure Model

The human CEM for the Site depicts the relationships between the off-Site environmental media potentially impacted by constituents in groundwater and human receptors that could be exposed to these media. Figure 3.2 presents a human CEM for the Site. It considers a human receptor who could be exposed to COIs hypothetically released from the PAP into groundwater, surface water, sediment, and fish. The following human receptors and exposure pathways were evaluated for inclusion in the Site-specific CEM.

[2] As discussed further in Section 3.3.2, GWQS are protective of human health and not necessarily of ecological receptors. While ecological receptors are not exposed to groundwater, groundwater can potentially enter into the adjacent surface water and impact ecological receptors. Therefore, two sets of COIs were identified: one for humans and another for ecological receptors.

- Residents – exposure to groundwater/surface water as drinking water;
- Residents – exposure to groundwater/surface water used for irrigation;
- Recreators in the lake adjacent to the Site:
  - Boaters – exposure to surface water and sediment while boating;
  - Swimmers – exposure to surface water and sediment while swimming;
  - Anglers – exposure to surface water and sediment and consumption of locally caught fish.

All of these exposure pathways were considered to be complete, except for residential exposure to groundwater or surface water used for drinking water or irrigation, and swimming. Section 3.2.1.1 explains why the residential drinking water and irrigation pathways are incomplete, and Section 3.2.1.2 provides additional description of the recreational exposures. While a recreator's potential exposure to surface water in Newton Lake was evaluated, swimming does not occur in Newton Lake, because it is owned by IPGC and used as a cooling reservoir (IDNR, 2022).

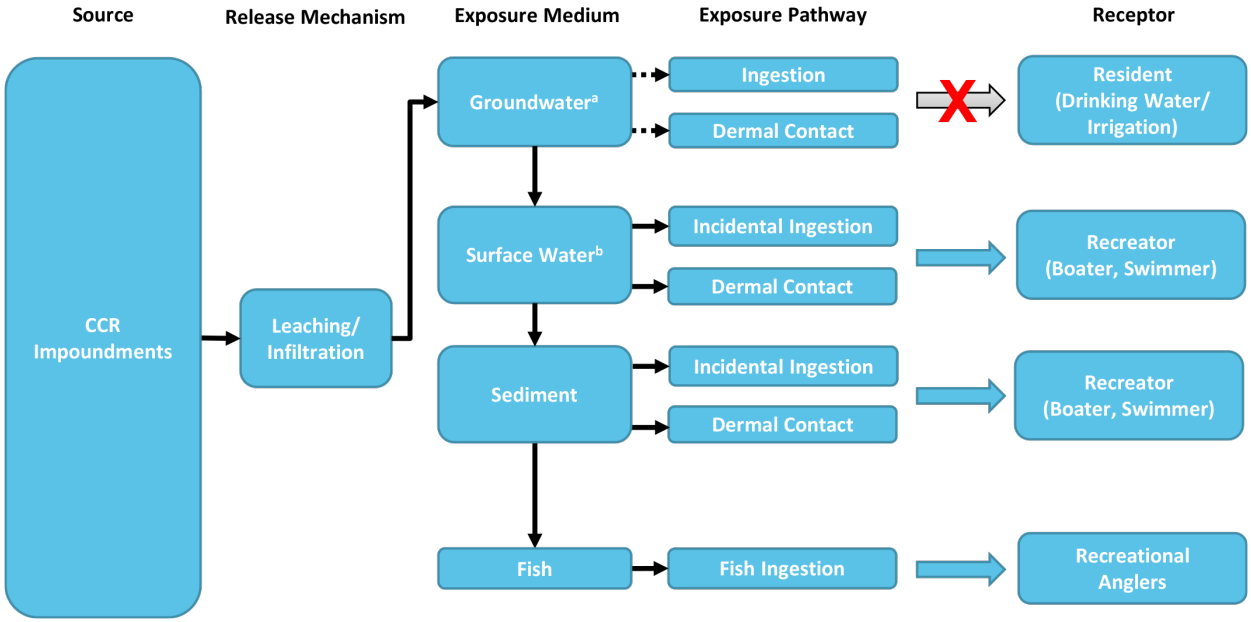

Figure 3.2 Human Conceptual Exposure Model. CCR = Coal Combustion Residual. Dashed line/Red X = Incomplete or insignificant exposure pathway. (a) Groundwater in the vicinity of the Site is not used as a drinking water or irrigation source. (b) Surface water is not used as a drinking water source.

3.2.1.1 Groundwater or Surface Water as a Drinking Water/Irrigation Source

Groundwater as a source of drinking water and/or irrigation water is not a complete exposure pathway for CCR-related constituents originating from the PAP. Specifically, shallow groundwater from the UA and the PMP in the vicinity of the PAP is not used as a source of drinking water, and no potable wells were identified downgradient of the PAP. A summary of the evidence supporting the conclusion that there are no residential uses of the shallow groundwater and Newton Lake surface water as a source of drinking water is presented below:

- **No potential groundwater receptors are in the vicinity of the PAP**. Relying on state databases, Ramboll completed a potable water well survey in 2021 (Ramboll, 2021). Two wells[3] were identified within a 1,000-meter radius of the PAP boundary during a comprehensive search of the Illinois State Geological Survey's (ISGS) Illinois Water and Related Wells (ILWATER) Map (ISGS, 2020) (Figure 3.3). Both wells are listed as dry/abandoned and are not currently in use as a source of drinking water (Ramboll, 2021).
- **There is no off-Site migration of CCR-related constituents in groundwater**. Newton Lake is intersected by both the UA and the PMP; thus, groundwater from the UA and the PMP may interact with surface water in the lake in some areas. The two water wells that are identified within a 1,000 m radius of the PAP are located on the southeast side of Newton Lake, *i.e.*, the opposite side of the lake from the PAP. Thus, Newton Lake separates the wells from the PAP (Figure 3.3). CCR-constituents in groundwater within the UA and the PMP are not expected to flow underneath or bypass Newton Lake.
- **Newton Lake adjacent to the PAP is not used as a public water supply.** Newton Lake is a cooling water pond owned and maintained by IPGC. IPGC restricts the use of the pond as a source of drinking water. Therefore, the human exposure pathway of surface water ingestion (as potable water) adjacent to the PAP was not evaluated further.
- **The PAP has a limited hydraulic connection to underlying groundwater**. The LCU and the shale BCU underlying the shallow aquifers (*i.e.*, the UA and the PMP) form a hydraulic barrier between the PAP and deeper groundwater resources. Due to the very low hydraulic conductivity of these confining units, downward migration of shallow groundwater is expected to be limited. Therefore, the likelihood of PAP-related impacts to deep groundwater is minimal.

[3] These are well numbers 120790038600 and 120790043600 (Ramboll, 2021).

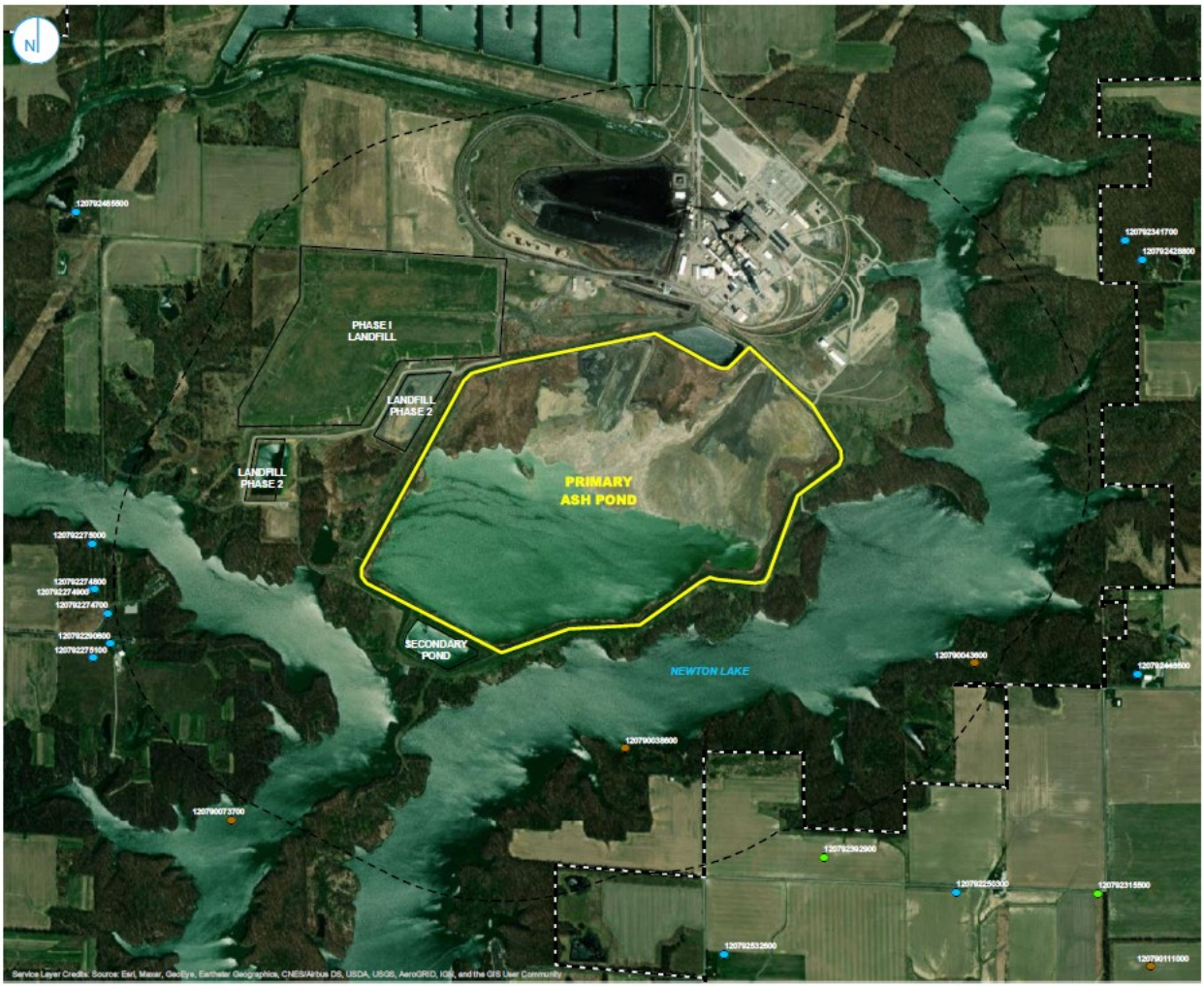

Figure 3.3 Water Wells Within 1,000 meters of the Primary Ash Pond. Source: Ramboll, 2021, Figure B-1.

3.2.1.2 Recreational Exposures

Newton Lake is located adjacent to the Site and is owned by IPGC. A portion of the NPP property along the lake has been leased to the Illinois Department of Natural Resources (IDNR) for use as a State Fish and Wildlife Area; thus, the lake is used for recreational fishing (IDNR, 2019). Recreational exposure to surface water and sediment may occur during activities such as boating or fishing in the lake. Recreational anglers may also consume locally caught fish from Newton Lake. Swimming does not occur in Newton Lake because it is owned by IPGC and used as a cooling reservoir (IDNR, 2022).

3.2.2 Ecological Conceptual Exposure Model

The ecological CEM for the Site depicts the relationships between off-Site environmental media (surface water and sediment) potentially impacted by COIs in groundwater and ecological receptors that may be exposed to these media. The ecological risk evaluation considered both direct toxicity as well as secondary toxicity *via* bioaccumulation. Figure 3.4 presents the ecological CEM for the Site. The following ecological receptor groups and exposure pathways were considered:

- **Ecological Receptors Exposed to Surface Water:**
  - Aquatic plants, amphibians, reptiles, and fish.
- **Ecological Receptors Exposed to Sediment:**
  - Benthic invertebrates (*e.g.*, insects, crayfish, mussels).
- **Ecological Receptors Exposed to Bioaccumulative COIs:**
  - Higher trophic-level wildlife (avian and mammalian) *via* direct exposures (surface water and sediment exposure) and secondary exposures through the consumption of prey (*e.g.*, plants, invertebrates, small mammals, fish).

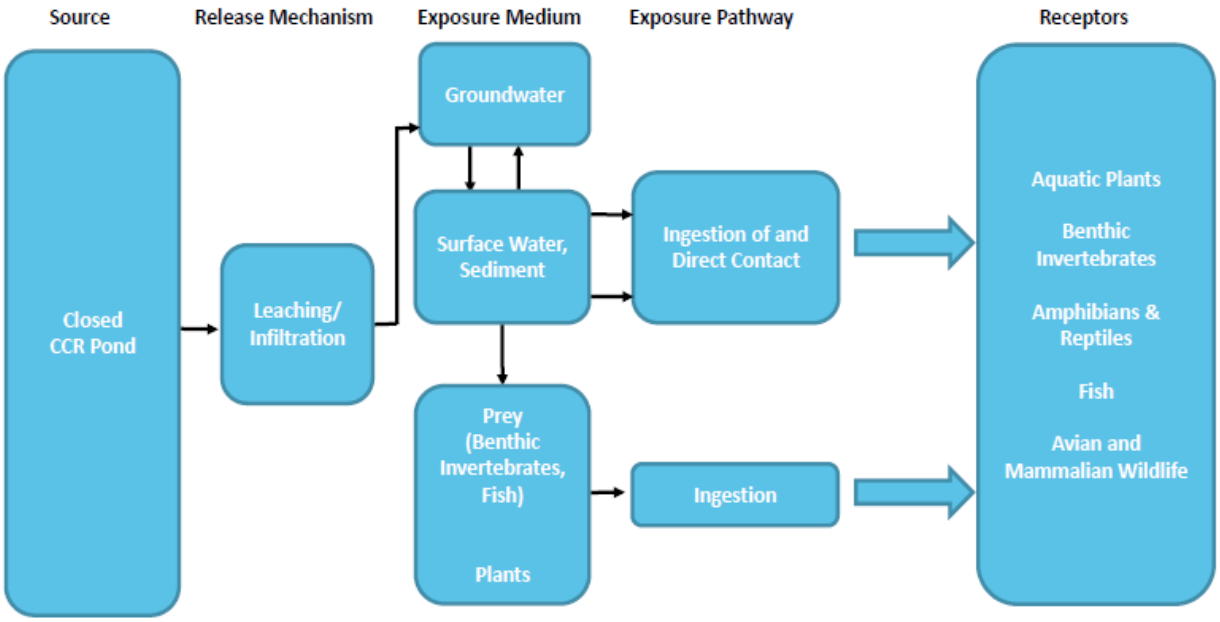

Figure 3.4 Ecological Conceptual Exposure Model. CCR = Coal Combustion Residual.

3.3 Identification of Constituents of Interest

Risks were evaluated for COIs. A constituent was considered a COI if the maximum detected constituent concentration in groundwater exceeded a health-based benchmark. According to US EPA risk assessment guidance (US EPA, 1989), this screening step is designed to reduce the number of constituents carried through the risk evaluation that are anticipated to have a minimal contribution to the overall risk. Identified COIs are the constituents that are most likely to pose a risk concern in the surface water adjacent to the Site.

3.3.1 Human Health Constituents of Interest

For the human health risk evaluation, COIs were conservatively identified as constituents with maximum concentrations in groundwater above the GWPS listed in the Illinois CCR Rule Part 845.600 (IEPA, 2021). Gradient used the maximum detected concentrations from groundwater samples collected from all of the PAP-associated wells, regardless of hydrostratigraphic unit. The use of groundwater data in this risk evaluation does not imply that detected constituents are associated with the PAP or that they have been identified as potential groundwater exceedances. Using this approach, 7 COIs (arsenic, cobalt, lead,

lithium, thallium, radium-226+228, and fluoride) were identified for the human health risk evaluation *via* the surface water pathway (Table 3.1).

The water quality parameters that exceeded the GWPS included chloride, sulfate, and total dissolved solids; however, these constituents were not included in the risk evaluation because the GWPS is based on aesthetic quality and there is an absence of studies regarding toxicity to human health. The US EPA secondary maximum contaminant levels (MCLs) for chloride, sulfate, and total dissolved solids are based on aesthetic quality. The secondary MCLs for chloride and sulfate (250 mg/L) are based on salty taste (US EPA, 2021a). The secondary MCL for total dissolved solids (500 mg/L) is based on hardness, deposits, colored water, staining, and salty taste (US EPA, 2021a). Given that these parameters are not likely to pose a human health risk concern in the event of exposure, they were not considered to be human health COIs.

Table 3.1 Human Health Constituents of Interest

Constituents[a]	Maximum Concentration	GWPS[b]	Human Health COI[c]
Total Metals (mg/L)			
Antimony	0.0036	0.0060	No
Arsenic	0.13	0.010	Yes
Barium	1.5	2.0	No
Beryllium	0.0033	0.0040	No
Boron	0.66	2.0	No
Cadmium	0.0034	0.0050	No
Chromium	0.090	0.10	No
Cobalt	0.036	0.0060	Yes
Lead	0.065	0.0075	Yes
Lithium	0.30	0.040	Yes
Mercury	0.0020	0.0020	No
Molybdenum	0.045	0.10	No
Selenium	0.0060	0.050	No
Thallium	0.0036	0.0020	Yes
Radionuclides (pCi/L)			
Radium-226+228	15	5.0	Yes
Other (mg/L)			
Chloride	550	200	No[d]
Fluoride	8.2	4.0	Yes
Sulfate	3,200	400	No[d]
Total Dissolved Solids	5,500	1,200	No[e]

Notes:
COI = Constituent of Interest; GWPS = Groundwater Protection Standard; MCL = Maximum Contaminant Level; pCi/L = PicoCuries Per Liter.
Shaded = Compound identified as a COI.
(a) The constituents are those listed in the IL Part 845.600 GWPS (IEPA, 2021).
(b) The IL Part 845.600 GWPS (IEPA, 2021) were used to identify COIs.
(c) COIs are constituents for which the maximum concentration exceeds the groundwater standard.
(d) This constituent is not likely to pose a human health risk concern due to the absence of studies regarding toxicity to human health. Therefore, this constituent is not considered a COI.
(e) Total dissolved solids are not considered a COI because the MCL is based on aesthetic quality.

3.3.2 Ecological Constituents of Interest

The Illinois GWPS, as defined in IEPA's guidance, were developed to protect human health but not necessarily ecological receptors. While ecological receptors are not exposed to groundwater, groundwater can potentially migrate into the adjacent surface water and impact ecological receptors. Therefore, to identify ecological COIs, the maximum concentrations of constituents detected in groundwater were compared to ecological surface water benchmarks protective of aquatic life.

The surface water screening benchmarks for freshwater organisms were obtained from the following hierarchy of sources:

- IEPA (2019) SWQS. IEPA SWQS are health-protective benchmarks for aquatic life exposed to surface water on a long-term basis (*i.e.*, chronic exposure). The SWQS for several metals are hardness dependent (cadmium, chromium, copper, lead, manganese, nickel, and zinc). Screening benchmarks for these constituents were calculated assuming US EPA's default hardness of 100 mg/L (US EPA, 2022).[4]
- US EPA Region IV (2018) surface water Ecological Screening Values (ESVs) for hazardous waste sites.

Benchmarks from the United States Department of Energy's (US DOE) guidance document ("A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota") were used for radium (US DOE, 2019). US DOE presents benchmarks for radium-226 and radium-228 (4 and 3 picoCuries per liter [pCi/L], respectively). Given that radium concentrations are expressed as total radium (radium-226+228, *i.e.*, the sum of radium-226 and radium-228), Gradient used the lower of the two benchmarks (3 pCi/L for radium-228) to evaluate total radium concentrations.

Consistent with the human health risk evaluation, Gradient used the maximum detected concentrations from groundwater samples collected from all of the PAP-associated wells, (regardless of hydrostratigraphic unit) without considering spatial or temporal representativeness for ecological receptor exposures. The use of the maximum constituent concentrations in this evaluation is designed to conservatively identify COIs that warrant further investigation. Cadmium, cobalt, lead, mercury, radium-226+228, chloride, and fluoride were identified as COIs for ecological receptors (Table 3.2).

[4] Hardness data are not available for Newton Lake adjacent to the Site, therefore, the US EPA (2022) default hardness of 100 mg/L was used. Use of a higher hardness value would result in less stringent screening values, thus, use of the US EPA default hardness is conservative.

Table 3.2 Ecological Constituents of Interest

Constituents[a]	Maximum Groundwater Concentration	Ecological Benchmark[b]	Basis	Ecological COI[c]
Total Metals (mg/L)				
Antimony	0.0036	0.19	US EPA R4 ESV	No
Arsenic	0.13	0.19	IEPA SWQC	No
Barium	1.5	5.0	IEPA SWQC	No
Beryllium	0.0033	0.064	US EPA R4 ESV	No
Boron	0.66	7.6	IEPA SWQC	No
Cadmium	0.0034	0.0011	IEPA SWQC	Yes
Chromium	0.09	0.21	IEPA SWQC	No
Cobalt	0.036	0.019	US EPA R4 ESV	Yes
Lead	0.065	0.020	IEPA SWQC	Yes
Lithium	0.3	0.44	US EPA R4 ESV	No
Mercury	0.002	0.0011	IEPA SWQC	Yes
Molybdenum	0.045	7.2	US EPA R4 ESV	No
Selenium	0.006	1.0	IEPA SWQC	No
Thallium	0.0036	0.0060	US EPA R4 ESV	No
Radionuclides (pCi/L)				
Radium-226+228	15.2	3.0	US DOE	Yes
Other (mg/L, unless otherwise noted)				
Chloride	550	500	IEPA SWQC	Yes
Fluoride	8.16	4.0	IEPA SWQC	Yes
Sulfate	3200	NA	NA	No
Total Dissolved Solids	5500	NA	NA	No

Notes:
COI = Constituent of Interest; DOE = Department of Energy; GWPS = Groundwater Protection Standard; IEPA SWQS = Illinois Environmental Protection Agency Surface Water Quality Standards; NA = Not Available; PAP = Primary Ash Pond; pCi/L = PicoCuries Per Liter; US EPA R4 ESV = US Environmental Protection Agency Region IV Ecological Screening Value.
Shaded = Compound identified as a COI.
(a) The constituents are those listed in the IL Part 845.600 GWPS (IEPA, 2021) that were detected in at least one groundwater sample from the wells related to the Newton PAP.
(b) Ecological benchmarks are from the hierarchy of sources discussed in Section 3.3.2: IEPA SWQS (IEPA, 2019); US EPA R4 "Ecological Risk Assessment Supplemental Guidance" (US EPA Region IV, 2018); and US DOE's guidance document "A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota" (US DOE, 2019).
(c) Constituents with maximum detected concentrations exceeding a benchmark protective of surface water exposure are considered ecological COIs.

3.3.3 Surface Water and Sediment Modeling

Surface water sampling has been conducted in Newton Lake adjacent to the Site. To estimate the potential contribution to surface water (and sediment) from groundwater specifically associated with the PAP, Gradient modeled concentrations in Newton Lake surface water and sediment from groundwater flowing into the lake for the detected human and ecological COIs. This is because the constituents detected in groundwater above an ecological or health-based benchmark are most likely to pose a risk concern in the adjacent surface water. Gradient modeled human health and ecological COI concentrations in the surface water and sediment using a mass balance calculation based on the surface water and groundwater mixing. The model assumes a well-mixed groundwater-surface water location. The maximum detected

concentrations in groundwater (regardless of well location) from 2015 to 2021 were conservatively used to model COI concentrations in surface water and sediment. The groundwater data were measured as total metals. Use of the total metal concentration for these COIs may overestimate surface water concentrations because dissolved concentrations, which are lower than total concentrations, represent the mobile fractions of constituents that could likely flow into and mix with surface water.

The modeling approach does not account for geochemical transformations that may occur during groundwater mixing with surface water. Gradient assumed that predicted surface water concentrations were influenced only by the physical mixing of groundwater as it enters the surface water and were not further influenced by the geochemical reactions in the water and sediment, such as precipitation. In addition, the model only predicts surface water and sediment concentrations as a result of the potential migration of COI concentrations in PAP-related groundwater and does not account for background concentrations in surface water or sediment.

For this evaluation, Gradient adapted a simplified and conservative form of US EPA's indirect exposure assessment methodology (US EPA, 1998) that was used in US EPA's coal combustion waste risk assessment (US EPA, 2014). The model is a mass balance calculation based on surface water and groundwater mixing and the concept that the dissolved and sorbed concentrations can be related through an equilibrium partitioning coefficient (K_d). The model assumes a well-mixed groundwater-surface water location, with partitioning among total suspended solids, dissolved water column, sediment pore water, and solid sediments.

Sorption to soil and sediment is highly dependent on the surrounding geochemical conditions. To be conservative, we ignored the natural attenuation capacity of soil and sediment and estimated the surface water concentration based only on the physical mixing of groundwater and surface water (*i.e.*, dilution) at the point where groundwater flows into surface water.

The aquifer and surface water properties used to estimate the volume of groundwater flowing into Newton Lake and surface water concentrations are presented in Table 3.3. The COI concentrations in sediment were modeled using the COI-specific sediment-to-water partitioning coefficients and the sediment properties presented in Table 3.4. In the absence of Site-specific information for Newton Lake, Gradient used default assumptions (*e.g.*, depth of the upper benthic layer and bed sediment porosity) to model sediment concentrations. The modeled surface water and sediment concentrations are presented in Table 3.5. These modeled concentrations reflect conservative contributions from groundwater. A description of the modeling and the detailed results are presented in Appendix A.

Table 3.3 Groundwater and Surface Water Properties Used in Modeling

Parameter	Unit	Values	Notes/Source
Groundwater			
COI Concentration	mg/L	Constituent specific	Maximum detected concentration in groundwater.
Cross Section Area for the Uppermost Aquifer[a]	m^2	18,330	The sum of the maximum thicknesses of the PMP and the UA (*i.e.*, approximately 7.3 m) multiplied by the length of the ash pond intersecting Newton Lake (*i.e.*, about 2,500 m) (Ramboll, 2021).
Hydraulic Gradient	m/m	0.0048	The average hydraulic gradient determined for the UA was used (Ramboll, 2021).
Hydraulic Conductivity of the Uppermost Aquifer	cm/s	0.00495	Average of the geometric mean horizontal hydraulic conductivities measured for the PMP (3×10^{-3} cm/s) and the UA (6.8×10^{-3} cm/s).
Surface Water			
Surface Water Flow Rate	L/yr	3.37×10^{13}	An overflow dam located in the south portion of the lake (between the two lake arms) regulates water discharge out of the lake. The total discharge rate through the dam is 59,450 cubic feet per second [cfs] (US National Dams, 2022). This flow is assumed to be representative of the sum of discharges from the eastern and western arms of the Lake. A flow rate of 37,701 cfs was determined for the eastern arm adjacent to the PAP based on watershed ratio analysis (Archfield & Vogel, 2010; Gianfagna *et al*., 2015) using the USGS StreamStats application (USGS, 2022).
Total Suspended Solids	mg/L	9.2	Average of TSS concentrations measured at four monitoring locations in Newton Lake (USGS *et al*., 2022).
Depth of the Water Column	m	5.08	Depth of Newton Lake near the power plant (Ramboll, 2021).
Suspended Sediment to Water Partition Coefficient	mg/L	Constituent specific	Values based on US EPA (2014).

Notes:
cfs = Cubic Feet per Second; COI = Constituent of Interest; L/yr = Liter Per Year; m^2 = Square Meter; PAP = Primary Ash Pond; PMP = Primary Migration Pathway; TSS = Total Suspended Solids; UA = Uppermost Aquifer; US EPA = United States Environmental Protection Agency.
(a) Cross-sectional area represents the area through which groundwater flows from the UA into Newton Lake (*i.e.*, the area where groundwater intersects Newton Lake).

Table 3.4 Sediment Properties Used in Modeling

Parameter	Unit	Value	Notes/Source
Sediment			
Depth of Upper Benthic Layer	m	0.03	Default (US EPA, 2014)
Depth of Water Body	m	5.11	Depth of water column (5.08 m, depth of Newton Lake near the power plant (Ramboll, 2021) plus depth of upper benthic layer (0.03 m) (US EPA, 2014)
Bed Sediment Particle Concentration	g/cm^3	1	Default (US EPA, 2014)
Bed Sediment Porosity	-	0.6	Default (US EPA, 2014)
TSS Mass per Unit Area	kg/m^2	0.047	Depth of water column × TSS × conversion factors (10^{-6} kg/mg and 1,000 L/m^3)
Sediment Mass per Unit Area	kg/m^2	30	Depth of upper benthic layer × bed sediment particulate concentration × conversion factors (0.001 kg/g, 10^6 cm^3/m^3)
Sediment to Water Partition Coefficients	mg/L	Constituent specific	Values based on US EPA (2014)

Notes:
TSS = Total Suspended Solids; US EPA = United States Environmental Protection Agency.

Table 3.5 Surface Water and Sediment Modeling Results

COI	Groundwater Concentration (mg/L or pCi/L)	Mass Discharge Rate (mg/year or pCi/year)	Total Water Column Concentration (mg/L or pCi/L)	Concentration Sorbed to Bottom Sediments (mg/kg or pCi/kg)
Total Metals				
Arsenic	0.13	1.8E+07	5.3E-07	1.2E-04
Cadmium	0.0034	4.7E+05	1.4E-08	1.6E-05
Cobalt	0.036	4.9E+06	1.5E-07	1.2E-04
Lead	0.065	8.9E+06	2.7E-07	1.9E-03
Lithium	0.30	4.1E+07	1.2E-06	(a)
Mercury	0.0020	2.7E+05	8.2E-09	2.3E-04
Thallium	0.0036	4.9E+05	1.5E-08	2.6E-07
Radionuclides				
Radium-226+228	15	2.1E+09	6.2E-05	4.3E-01
Other				
Chloride	550	7.6E+10	2.3E-03	(a)
Fluoride	8.2	1.1E+09	3.4E-05	5.3E-03
Sulfate	3,200	4.4E+11	1.3E-02	(a)

Notes:
COI = Constituent of Concern; K_d = Equilibrium Partition Coefficient; pCi/L = PicoCuries Per Liter; pCi/kg = PicoCuries Per Kilogram.
(a) Lithium, chloride, and sulfate do not readily sorb to soil or sediment particles; a K_d value of 0 was used for the modeling.

3.4 Human Health Risk Evaluation

The section below presents the results of the human health risk evaluation for recreators (boaters and anglers) in Newton Lake adjacent to the Site. Risks were assessed using the maximum measured or modeled COIs in surface water.

3.4.1 Recreators Exposed to Surface Water

Screening Exposures: Recreators could be exposed to surface water *via* incidental ingestion and dermal contact while boating. In addition, anglers could consume fish caught in Newton Lake. The maximum measured or modeled COI concentrations in surface water were used as conservative upper-end estimates of the COI concentrations to which a recreator might be exposed directly (incidental ingestion of COIs in surface water while boating) and indirectly (consumption of locally caught fish exposed to COIs in surface water).

Screening Benchmarks: Illinois surface water criteria (IEPA, 2019), known as human threshold criteria (HTC), are based on incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities, as well as the consumption of fish. The HTC values were calculated from the following equation (IEPA, 2019):

$$\mathrm{HTC} = \frac{\mathrm{ADI}}{\mathrm{W} + (\mathrm{F} \times \mathrm{BCF})}$$

where:

HTC = Human health protection criterion in milligrams per liter (mg/L)
ADI = Acceptable daily intake (mg/day)
W = Water consumption rate (L/day)
F = Fish consumption rate (kg/day)
BCF = Bioconcentration factor (L/kg-tissue)

Illinois defines the acceptable daily intake (ADI) as the "maximum amount of a substance which, if ingested daily for a lifetime, results in no adverse effects to humans" (IEPA, 2019). US EPA defines its chronic reference dose (RfD) as an "estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure for a chronic duration (up to a lifetime) to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime" (US EPA, 2011a). Illinois lists methods to derive an ADI from the primary literature (IEPA, 2019). In accordance with Illinois guidance, Gradient derived an ADI by multiplying the MCL by the default water ingestion rate of 2 L/day (IEPA, 2019). In the absence of an MCL, Gradient applied the RfD used by US EPA to derive its Regional Screening Levels (RSLs) (US EPA, 2021b) as a conservative estimate of the ADI. The RfDs are given in mg/kg-day, while the ADIs are given in mg/day; thus, Gradient multiplied the RfD by a standard body weight of 70 kg to obtain the ADI in mg/day. The calculation of the HTC values is shown in Appendix B, Table B.1.

Gradient used bioconcentration factors (BCFs) from a hierarchy of sources. The primary BCFs were those that US EPA used to calculate the National Recommended Water Quality Criteria (NRWQC) for human health (US EPA, 2002). Other sources included BCFs used in the US EPA coal combustion ash risk assessment (US EPA, 2014) and BCFs reported by Oak Ridge National Laboratory's Risk Assessment

Information System (ORNL RAIS) (ORNL, 2020).[5] Lithium did not have a BCF value available from any authoritative source; therefore, the water quality criterion for lithium was calculated assuming a BCF of 1. This is a conservative assumption, as lithium does not readily bioaccumulate in the aquatic environment (ECHA, 2020a,b; ATSDR, 2010).

Illinois recommends a fish consumption rate of 0.020 kg/day (20 g/day) for an adult weighing 70 kg (IEPA, 2019). Illinois recommends a water consumption rate of 0.01 L/day for "incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities" (IEPA, 2019). Appendix B, Table B.1 presents the calculated HTC for fish and water and for fish consumption only.

The HTC for fish consumption for radium-226+228 was calculated as follows:

$$\mathrm{HTC} = \frac{\mathrm{TCR}}{(\mathrm{SF} \times \mathrm{BAF} \times \mathrm{F})}$$

where:

HTC = Human health protection criterion in picoCuries per liter (pCi/L)
TCR = Target cancer risk ($1x10^{-5}$)
SF = Food ingestion slope factor (risk/pCi)
BAF = Bioaccumulation factor (L/kg-tissue)
F = Fish consumption rate (kg/day)

The food ingestion slope factor (lifetime excess total cancer risk per unit exposure, in risk/pCi) used to calculate the HTC was the highest value of those for radium-226 (Ra-226), radium-228 (Ra-228), and "Ra-228+D" (US EPA, 2001). According to US EPA (2001), "+D" indicates that "the risks from associated short-lived radioactive decay products (*i.e.,* those decay products with radioactive half-lives less than or equal to 6 months) are also included."

Screening Risk Evaluation: The maximum modeled and measured COI concentrations in surface water were compared to the calculated Illinois HTC values (Table 3.6). All surface water concentrations were below their respective benchmarks. The HTC values are protective of recreational exposure *via* water and/or fish ingestion and do not account for dermal exposures to COIs in surface water while boating. However, given that the measured and modeled COI surface water concentrations are orders of magnitude below HTC protective of water and/or fish ingestion, dermal exposures to COIs are not expected to be a risk concern. Moreover, the dermal uptake of metals is considered to be minimal and only a small proportion of ingestion exposures. Thus, none of the COIs evaluated would be expected to pose an unacceptable risk to recreators exposed to surface water while boating and anglers consuming fish caught in Newton Lake.

[5] Although recommended by US EPA (2015b), US EPA EpiSuite 4.1 (US EPA, 2019) was not used as a source of BCFs because inorganic compounds are outside the estimation domain of the program.

Table 3.6 Risk Evaluation for Recreators (Boaters and Anglers)

COI	Maximum SW Concentration		HTC for Water and Fish	HTC for Water Only	HTC for Fish Only	COPC	
	Modeled	Measured[a]				Based on Modeled Concentrations	Based on Measured Concentrations
Total Metals (mg/L)							
Arsenic	5.3E-07	4.2E-03	0.022	2.0	0.023	No	No
Cobalt	1.5E-07	ND	0.0035	2.1	0.0035	No	NA
Lead	2.7E-07	ND	0.015	0.015	0.015	No	NA
Lithium	1.2E-06	ND	4.7	14	7.0	No	NA
Thallium	1.5E-08	ND	0.0017	0.40	0.0017	No	NA
Radionuclides (pCi/L)							
Radium-226+228	6.2E-05	2.1E+00	1,000	1,000	87,413	No	No
Other (mg/L)							
Fluoride	3.4E-05	5.1E-01	143	800	174	No	No

Notes:
COI = Constituent of Interest; COPC = Constituent of Potential Concern; HTC = Human Threshold Criteria; NA = Not Applicable; ND = Not Determined; pCi/L = PicoCuries Per Liter; SW = Surface Water.
(a) Measured concentrations are listed only for the constituents identified as COIs. Measured surface water concentrations may be different from modeled concentrations because measured data include the effects of background and other industrial sources. Modeled concentrations only represent the potential effect on surface water quality resulting from the measured groundwater concentrations.

3.4.2 Recreators Exposed to Sediment

Recreational exposure to sediment may occur during boating activity in Newton Lake; exposure to sediment may occur through incidental ingestion and dermal contact.

Screening Exposures: COIs in impacted groundwater flowing into the river can sorb to sediments. In the absence of sediment data, sediment concentrations were modeled using maximum detected groundwater concentrations.

Screening Benchmarks: There are no established recreator RSLs that are protective of recreational exposures to sediment (US EPA, 2021c). Therefore, benchmarks that are protective of recreational exposures to sediment *via* incidental ingestion and dermal contact were calculated using US EPA's RSL guidance (US EPA, 2021c). These benchmarks were calculated using the recommended assumptions (*i.e.*, oral bioavailability, body weights, averaging time) and toxicity reference values (*i.e.*, RfD and cancer slope factor [CSF]). Recreators were assumed to be exposed to sediment while recreating 60 days a year (or two weekend days per week for 30 weeks a year, from April to October). The exposure duration was assumed for a child 6 years of age and an adult 20 years of age, per US EPA guidance (Stalcup, 2014). The daily recommended residential soil ingestion rates of 200 mg/day for a child and 100 mg/day for an adult are based on an all-day exposure to residential soils (Stalcup, 2014; US EPA, 2011b). Since recreational exposures to sediment are assumed to occur for less than four hours per day, one-third of the daily residential soil ingestion (67 mg/day for a child and 33 mg/day for an adult) was used as a conservative assumption. For dermal exposures, recreators were assumed to be exposed to sediment on their lower legs and feet (1,026 cm^2 for the child and 3,026 cm^2 for the adult, based on the age-weighted surface areas reported in US EPA, 2011b). While other body parts may be exposed to sediment, the contact time will likely be very short, as the sediment would wash off in the surface water. Gradient used US EPA's recommended adherence factor of 0.2 mg/cm^2 based on child exposure to wet soil (US EPA, 2004; Stalcup, 2014), which was used in the US EPA RSL User's Guide for a child recreator exposed to soil or sediment

(US EPA, 2021c). The sediment screening benchmarks were calculated based on a target hazard quotient of 1, or a target cancer risk of $1x10^{-5}$. Appendix B, Table B.2 presents the calculation of screening benchmarks protective of recreational exposures to sediment. A recreator sediment screening benchmark for radium-226+228 was based on soil Preliminary Remediation Goals (PRGs) calculated for radium-226 and radium-228 using US EPA's PRG calculator (US EPA, 2020). The lower of the two values was used as the recreator sediment screening benchmark for radium-226+228 (Appendix B, Table B.3).

Screening Risk Evaluation: The modeled sediment concentrations were well below the recreational sediment screening benchmarks (Table 3.7). Therefore, exposure to sediment is not expected to pose an unacceptable risk to recreators while boating.

Table 3.7 Risk Evaluation for Recreators Exposed to Sediment

COI	Modeled Sediment Concentration (mg/kg)	Recreator Sediment Screening Benchmark (mg/kg)	COPC
Total Metals (mg/kg)			
Arsenic	1.2E-04	6.8E+01	No
Cobalt	1.2E-04	4.1E+02	No
Lead	1.9E-03	4.0E+02	No
Lithium	(a)	2.7E+03	NA
Thallium	2.6E-07	1.4E+01	No
Radionuclides (pCi/kg)			
Radium-226+228	4.3E-01	7.9E+03	No
Other (mg/kg)			
Fluoride	5.3E-03	5.5E+04	No

Notes:
COI = Constituent of Interest; COPC = Constituent of Potential Concern; K_d = Equilibrium Partition Coefficient; NA = Not Applicable; pCi/kg = PicoCuries Per Kilogram.
(a) Lithium does not readily sorb to soil or sediment particles; a K_d value of 0 was used for the modeling.

3.5 Ecological Risk Evaluation

Based on the ecological CEM (Figure 3.4), ecological receptors could be exposed to surface water and dietary items (*i.e.*, prey and plants) potentially impacted by identified COIs (cadmium, cobalt, lead, mercury, radium-226+228, chloride, and fluoride).

3.5.1 Ecological Receptors Exposed to Surface Water

Screening Exposures: The ecological evaluation considered aquatic communities in Newton Lake potentially impacted by identified ecological COIs. Measured and modeled surface water concentrations were compared to risk-based ecological screening benchmarks.

Screening Benchmarks: Surface water screening benchmarks protective of aquatic life were obtained from the following hierarchy of sources:

- IEPA SWQS (IEPA, 2019), regulatory standards that are intended to protect aquatic life exposed to surface water on a long-term basis (*i.e.*, chronic exposure). For cadmium, the surface water

benchmark is hardness dependent and calculated using a default hardness of 100 mg/L (US EPA, 2022)[6];

- US EPA Region IV (2018) surface water ESVs for hazardous waste sites; and
- US DOE benchmarks from the guidance document, "A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota" (US DOE, 2019).

Risk Evaluation: The maximum measured and modeled COI concentrations in surface water were compared to the benchmarks protective of aquatic life (Table 3.8). The measured and modeled surface water concentrations for the COIs were below their respective benchmarks. Thus, none of the COIs evaluated are expected to pose an unacceptable risk to aquatic life in Newton Lake.

Table 3.8 Risk Evaluation of Ecological Receptors Exposed to Surface Water

COI	Maximum Surface Water Concentration		Ecological Freshwater Benchmark	Basis	COPC	
	Modeled	Measured			Based on Modeled Concentrations	Based on Measured Concentrations
Total Metals (mg/L)						
Cadmium	1.4E-08	ND	0.0011	IEPA SWQC	No	NA
Cobalt	1.5E-07	ND	0.019	US EPA R4 ESV	No	NA
Lead	2.7E-07	ND	0.020	IEPA SWQC	No	NA
Mercury	8.2E-09	ND	0.0011	IEPA SWQC	No	NA
Radionuclides (pCi/L)						
Radium-226+228	6.2E-05	2.1	3.0	US DOE	No	No
Other (mg/L)						
Chloride	2.3E-03	9.6	500	IEPA SWQC	No	No
Fluoride	3.4E-05	0.51	4.0	IEPA SWQC	No	No

Notes:
COI = Constituent of Interest; COPC = Constituent of Potential Concern; IEPA SWQC = Illinois Environmental Protection Agency Surface Water Quality Standard; NA = Not Applicable; ND = Not Detected; pCi/L = PicoCuries Per Liter; US DOE = United States Department of Energy; US EPA R4 ESV = United States Environmental Protection Agency Region IV Ecological Screening Value.

3.5.2 Ecological Receptors Exposed to Sediment

Screening Exposures: COIs in impacted groundwater discharging into Newton Lake can sorb to sediments *via* chemical partitioning. In the absence of sediment data, sediment concentrations were modeled using maximum detected groundwater concentrations. Therefore, the modeled COI sediment concentrations reflect the potential maximum Site-related sediment concentration originating from groundwater.

Screening Benchmarks: Sediment screening benchmarks were obtained from US EPA Region IV (2018). The majority of the sediment ESVs are based on threshold effect concentrations (TECs) from MacDonald *et al.* (2000), which provide consensus values that identify concentrations below which harmful effects on sediment-dwelling organisms are unlikely to be observed. In the absence of an ESV for radium-226+228, a sediment screening value of 90,000 pCi/kg was used, based on the biota concentration guide (BCG) for radium-228 (US DOE, 2019).[7] Chloride and fluoride are not expected to sorb to sediment; therefore, risk

[6] Conservatisms associated with using a default hardness value are discussed in Section 3.6.
[7] The biota concentration guide (BCG) for sediment is 90 pCi/g for Ra-228 and 100 pCi/g for Ra-226; the lower of the two values was used for Ra-226+228, and converted to pCi/kg (US DOE, 2019).

to ecological receptors exposed to sediment was not evaluated for these constituents. The benchmarks used in this evaluation are listed in Table 3.9.

Screening Risk Results: The maximum modeled COI sediment concentrations were below their respective sediment screening benchmarks (Table 3.9). The modeled sediment concentrations attributed to potential contributions from Site groundwater for all COIs were less than 1% of the sediment screening benchmark. Therefore, the modeled sediment concentrations attributed to potential contributions from Site groundwater are not expected to significantly contribute to ecological exposures in Newton Lake adjacent to the Site.

Table 3.9 Risk Evaluation of Ecological Receptors Exposed to Sediment

COI	Modeled Sediment Concentration	ESV[a]	COPC	% of Benchmark
Total Metals (mg/kg)				
Cadmium	1.6E-05	0.99	No	0.0016%
Cobalt	1.2E-04	50	No	0.00024%
Lead	1.9E-03	35.8	No	0.0053%
Mercury	2.3E-04	0.18	No	0.13%
Radionuclides (pCi/kg)				
Radium-226+228	4.3E-01	90,000[b]	No	0.00048%
Other (mg/kg)				
Chloride	-	-	-	-
Fluoride	5.3E-03	NA	-	-

Notes:
COI = Constituent of Interest; COPC = Constituent of Potential Concern; ESV = Ecological Screening Value; NA = Not available; pCi/kg = PicoCuries Per Kilogram; US DOE = United States Department of Energy; US EPA = United States Environmental Protection Agency.
(a) ESV from US EPA Region IV (2018).
(b) ESV from US DOE (2019); value converted from 90 pCi/g to 90,000 pCi/kg.

3.5.3 Ecological Receptors Exposed to Bioaccumulative Constituents of Interest

Screening Exposures: COIs with bioaccumulative properties can impact higher-trophic-level wildlife exposed to these COIs *via* direct exposures (surface water and sediment exposure) and secondary exposures through the consumption of dietary items (*e.g.*, plants, invertebrates, small mammals, and fish).

Screening Benchmark: US EPA Region IV (2018) guidance and IEPA SWQS (IEPA, 2019) guidance were used to identify constituents with potential bioaccumulative effects.

Risk Evaluation: With the exception of mercury, the ecological COIs (cadmium, cobalt, lead, radium-226+228, chloride, and fluoride) were not identified as having potential bioaccumulative effects. Therefore, these COIs are not considered to pose an ecological risk *via* bioaccumulation. IEPA (2019) identifies mercury as the only metal with bioaccumulative properties. US EPA Region IV (2018) also identifies mercury (including methyl mercury) as having potential bioaccumulative effects.[8]

The modeled mercury concentration in surface water (8.2×10^{-9} mg/L) was below the mercury surface water ESV for wildlife (1.3×10^{-6} mg/L), and the modeled mercury concentration in sediment (2.3×10^{-4} mg/kg) was below the sediment ESV for wildlife (0.18 mg/kg) (US EPA Region IV, 2018). Both the

[8] US EPA Region IV (2018) identifies selenium as having potential bioaccumulative effects. Although selenium was detected in groundwater, it was not considered an ecological COI.

modeled surface water and sediment concentrations were below benchmarks protective of receptors accounting for bioacccumulative properties. Therefore, in addition to not posing an ecological risk from direct toxicity, mercury does not pose a risk from bioaccumulation exposures.

3.6 Uncertainties and Conservatisms

A number of uncertainties and their potential impact on the risk evaluation are discussed below. Wherever possible, conservative assumptions were used in an effort to minimize uncertainties and overestimate rather than underestimate risks.

Exposure Estimates:

- The risk evaluation included the IL Part 845.600 constituents detected in groundwater samples (above GWPS) collected from wells associated with the PAP. However, it is possible that not all of the detected constituents are related specifically to the PAP.
- The human health and ecological risk characterizations were based on the maximum measured or modeled COI concentrations, rather than on averages. Thus, the variability in exposure concentrations was not considered. Assuming continuous exposure to the maximum concentration overestimates human and ecological exposures, given that receptors are mobile and concentrations change over time. For example, US EPA guidance states that risks should be estimated using average exposure concentrations as represented by the 95% upper confidence limit on the mean (US EPA, 1992). Given that exposure estimates based on the maximum concentrations did not exceed risk benchmarks, Gradient has greater confidence that there is no risk concern.
- Only constituents detected in groundwater were used to identify COIs and model COI concentrations in surface water and sediment. For the constituents that were not detected in PAP groundwater, the detection limits were below the IL Part 845.600 GWPS and thus do not require further evaluation.
- COI concentrations in surface water were modeled using the maximum detected total COI concentrations in groundwater. Modeling surface water concentrations using total metal concentrations may overestimate surface water concentrations because dissolved concentrations, which are lower than total concentrations, represent the mobile fractions of constituents that could likely flow into and mix with surface water.
- The COIs identified in this evaluation also occur naturally in the environment. Contributions to exposure from natural or other non-AP-related sources were not considered in the evaluation of modeled concentrations; only exposure contributions potentially attributable to Site groundwater mixing with surface water were evaluated. While not quantified, exposures from potential PAP-related groundwater contributions are likely to represent only a small fraction of the overall human and ecological exposure to COIs that also have natural or non-AP-related sources.
- Screening benchmarks for human health were developed using exposure inputs based on US EPA's recommended values for reasonable maximum exposure (RME) assessments (Stalcup, 2014). RME is defined as "the highest exposure that is reasonably expected to occur at a site but that is still within the range of possible exposures" (US EPA, 2004). US EPA states the "intent of the RME is to estimate a conservative exposure case (*i.e.*, well above the average case) that is still within the range of possible exposures" (US EPA, 1989). US EPA also notes that this high-end exposure "is the highest dose estimated to be experienced by some individuals, commonly stated as approximately equal to the 90th percentile exposure category for individuals" (US EPA, 2015c). Thus, most individuals will have lower exposures than those presented in this risk assessment.

Toxicity Benchmarks:

- Screening-level ecological benchmarks were compiled from IEPA and US EPA guidance and designed to be protective of the majority of Site conditions, leaving the option for Site-specific refinement. In some cases, these benchmarks may not be representative of the Site-specific conditions or receptors found at the Site, or may not accurately reflect concentration-response relationships encountered at the Site. For example, the ecological benchmark for cadmium is hardness dependent. However, hardness data are not available for Newton Lake; therefore, Gradient relied on US EPA's default hardness of 100 mg/L. Use of a higher hardness value would increase the cadmium SWQS because benchmarks become less stringent with higher levels of hardness. Regardless of the hardness, the maximum modeled cadmium concentration is orders of magnitude below the SWQS.
- In addition, for the ecological evaluation, Gradient conservatively assumed all constituents to be 100% bioavailable. Modeled COI concentrations in surface water are considered total COI concentrations. In addition, the measured surface water data used in this report represent total concentrations. US EPA recommends using dissolved metals as a measure of exposure to ecological receptors because it represents the bioavailable fraction of metal in water (US EPA, 1993). Therefore, the modeled surface water COI concentrations may be an overestimation of exposure concentrations to ecological receptors.
- In general, it is important to appreciate that the human health toxicity factors used in this risk evaluation are developed to account for uncertainties, such that safe exposure levels used as benchmarks are often many times lower (even orders of magnitude lower) than the levels that cause effects that have been observed in human or animal studies. For example, toxicity factors incorporate a 10-fold safety factor to protect sensitive subpopulations. This means that a risk exceedance does not necessarily equate to actual harm.

4 Summary and Conclusions

A screening-level risk evaluation was performed for Site-related constituents in groundwater at the NPP in Newton, Illinois. The CSM developed for the Site indicates that groundwater beneath the PAP flows into Newton Lake adjacent to the Site and may potentially impact surface water and sediment.

CEMs were developed for human and ecological receptors. The complete exposure pathways for humans include recreators (boaters) in Newton Lake who are exposed to surface water and sediment, and anglers who consume locally caught fish. Based on the local hydrogeology, residential exposure to groundwater used for drinking water or irrigation is not a complete pathway and was not evaluated. The complete exposure pathways for ecological receptors include aquatic life (including aquatic and marsh plants, amphibians, reptiles, and fish) exposed to surface water; benthic invertebrates exposed to sediment; and avian and mammalian wildlife exposed to bioaccumulative COIs in surface water, sediment, and dietary items.

Groundwater data collected from 2015 to 2021 were used to estimate exposures. Surface water data collected from Newton Lake were also evaluated. For groundwater constituents retained as COIs, surface water and sediment concentrations were modeled using the maximum detected groundwater concentration. Surface water and sediment exposure estimates were screened against benchmarks protective of human health and ecological receptors for this risk evaluation.

US EPA has established acceptable risk metrics. Risks above these US EPA-defined metrics are termed potentially "unacceptable risks". Based on the evaluation presented in this report, no unacceptable risks to human or ecological receptors resulting from CCR exposures associated with the PAP were identified. This means that the risks from the Site are likely indistinguishable from normal background risks. Specific risk assessment results include the following:

- For recreators exposed to surface water, all COIs were below the conservative risk-based screening benchmarks. Therefore, none of the COIs evaluated in surface water are expected to pose an unacceptable risk to recreators in Newton Lake adjacent to the Site.
- For recreators exposed to sediment *via* incidental ingestion and dermal contact, the modeled sediment concentrations were below health-protective sediment benchmarks. Therefore, the modeled sediment concentrations are not expected to pose an unacceptable risk to recreators exposed to sediment in Newton Lake adjacent to the Site.
- For anglers consuming locally caught fish, the modeled concentrations of all COIs in surface water (as well as the measured data) were below conservative benchmarks protective of fish consumption. Therefore, none of the COIs evaluated are expected to pose an unacceptable risk to recreators consuming fish caught in Newton Lake.
- Ecological receptors exposed to surface water include aquatic and marsh plants, amphibians, reptiles, and fish. The risk evaluation showed that none of the modeled or measured COIs in surface water exceeded protective screening benchmarks. Ecological receptors exposed to sediment include benthic invertebrates. The modeled sediment COIs did not exceed the conservative screening benchmarks; therefore, none of the COIs evaluated in sediment are expected to pose an unacceptable risk to ecological receptors.

- Ecological receptors were also evaluated for exposure to bioaccumulative COIs. This evaluation considered higher-trophic-level wildlife with direct exposure to surface water and sediment and secondary exposure through the consumption of dietary items (*e.g.*, plants, invertebrates, small mammals, fish). Mercury was the only ecological COI identified as having potential bioaccumulative effects. However, the modeled concentrations did not exceed benchmarks protective of bioaccumulative effects. Therefore, mercury is not considered to pose an ecological risk *via* bioaccumulation. Overall, this evaluation demonstrated that none of the COIs evaluated are expected to pose an unacceptable risk to ecological receptors.

It should be noted that this evaluation incorporates a number of conservative assumptions that tend to overestimate exposure and risk. The risk evaluation was based on the maximum detected COI concentration; however, US EPA guidance states that risks should be based on a representative average concentration such as the 95% upper confidence limit on the mean; thus, using the maximum concentration tends to overestimate exposure. Although the COIs identified in this evaluation also occur naturally in the environment, the contributions to exposure from natural background sources and nearby industry were not considered; thus, CCR-related exposures were likely overestimated. Exposure estimates assumed 100% metal bioavailability, which likely results in overestimates of exposure and risks. Exposure estimates were based on inputs to evaluate the "reasonable maximum exposure"; thus, most individuals will have lower exposures than those estimated in this risk assessment.

Finally, it should be noted that because current conditions do not present a risk to human health or the environment, there will also be no unacceptable risk to human health or the environment for future conditions when the PAP is closed. For all future closure scenarios, potential releases of CCR-related constituents will decline over time and, consequently, potential exposures to CCR-related constituents in the environment will also decline.

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Appendix A

Surface Water and Sediment Modeling

Gradient modeled concentrations in river surface water and sediment based on available groundwater data. First, Gradient estimated the flow rate of constituents of interest (COIs) that may flow into Newton Lake *via* groundwater. Then, Gradient adapted United States Environmental Protection Agency's (US EPA's) indirect exposure assessment methodology (US EPA, 1998) in order to model surface water and sediment water concentrations in Newton Lake.

Model Overview

Groundwater flow into Newton Lake is represented by a one-dimensional steady-state model. In this model, the groundwater plume migrates horizontally in the Uppermost Aquifer (UA) and the potential migration pathway (PMP) prior to discharging into Newton Lake. The groundwater flow entering the lake is the flow going through a cross-sectional area with a length equal to the length of the lake adjacent to the Primary Ash Pond (PAP) with potential CCR-related impacts and a height equal to the maximum saturated thicknesses of the UA and the PMP. This is a conservative assumption because groundwater elevation data indicate that only groundwater on the eastern side of the PAP has potential to interact with surface water in the lake. It was assumed that groundwater flowing through the shallow water bearing zones (*i.e.*, the UA and the PMP) may flow into Newton Lake. The length of the groundwater discharge zone was estimated using Google Earth Pro (Google LLC, 2022).

Groundwater flow into Newton Lake mixes with the surface water in the lake. The COIs entering the lake *via* groundwater can dissolve into the water column, sorb to suspended sediments, or sorb to benthic sediments. Using US EPA's indirect exposure assessment methodology (US EPA, 1998), the model evaluates the surface water and sediment concentrations at a location downstream of the groundwater discharge, assuming a well-mixed water column.

Groundwater Discharge Rate

The groundwater discharge rate was evaluated using conservative assumptions. Gradient conservatively assumed that the groundwater concentrations were uniformly equal to the maximum detected concentration for each individual COI. Gradient ignored adsorption by subsurface soil and assumed that groundwater flowing through the shallow aquifers was discharged into the lake.

For each groundwater unit, the groundwater flow rate into the river was derived using Darcy's Law:

$$Q = KiA$$

where:

Q = Groundwater flow rate (m^3/s)
K = Hydraulic conductivity (m/s)
i = Hydraulic gradient (m/m)
A = Cross-sectional area (m^2)

For each COI, the mass discharge rate into the lake was then calculated by:

$$m_c = C_c \times Q \times CF$$

where:

m_c = Mass discharge rate of the COI (mg/year)
C_c = Maximum groundwater concentration of the COI (mg/L)
Q = Groundwater flow rate (m^3/s)

CF = Conversion factors: 1,000 L/m^3; 31,557,600 s/year

The values of the aquifer parameters used for these calculations are provided in Table A.1. The calculated mass discharge rates were then used as inputs for the surface water and sediment partitioning model.

The cross-sectional area for the shallow aquifers was 18,330 m^2. The length of the discharge zone was estimated to be approximately 2,500 m. The height of the discharge zone was assumed to be the sum of the maximum thicknesses of the PMP and the UA (*i.e.*, approximately 7.3 m) (Ramboll, 2021).

The hydraulic gradient was 0.0048 m/m, based on the average horizontal hydraulic gradient determined for the UA (Ramboll, 2021). Hydraulic gradient was not measured in the PMP.

The hydraulic conductivity was 0.00495 cm/s, based on the average of the geometric mean horizontal hydraulic conductivities measured for the PMP (3 x 10^{-3} cm/s) and the UA (6.8 x 10^{-3} cm/s) (Ramboll, 2021).

Surface Water and Sediment Concentration

Groundwater that flows into the lake will be diluted in the surface water flow. Constituents transported by groundwater into the surface water migrate into the water column and the bed sediments. The surface water model Gradient used to estimate the surface water and sediment concentrations is a steady-state model described in US EPA's indirect exposure assessment methodology (US EPA, 1998), and also used in US EPA's "Human and Ecological Risk Assessment of Coal Combustion Residuals" (US EPA, 2014). This model describes the partitioning of constituents between surface water, suspended sediments, and benthic sediments based on equilibrium partition coefficients. It estimates the concentrations of constituents in surface water, suspended sediments, and benthic sediments at steady-state equilibrium at a theoretical location downstream of the discharge point after complete mixing of the water column. In the analysis, Gradient used the partitioning coefficients given in Table J-1 of the US EPA CCR Risk Assessment for all COIs (US EPA, 2014). These coefficients are presented in Table A.2.

To be conservative, Gradient assumed that the constituents were not affected by dissipation or degradation once they entered the water body. The total water body concentration of the COI was calculated as (US EPA, 1998):

$$C_{wtot} = \frac{m_c}{V_f \times f_{water}}$$

where:

C_{wtot} = Total water body concentration of the constituent (mg/L)
m_c = Mass discharge rate of the COI (mg/year)
V_f = Water body annual flow (L/year)
f_{water} = Fraction of COI in the water column (unitless)

Newton Lake was formed by damming and is used as a cooling water supply for Newton Power Plant (NPP) (US National Dams, 2022). Water is drawn from the eastern arm near the power plant and thermal effluent is released at two locations in the western arm *via* NPDES permitted outfalls (IEPA, 2016). A small overflow dam located in the south portion of the lake (between the two lake arms) regulates water discharge out of the lake. The total discharge rate of 59,450 cubic feet per second (cfs) through the overflow dam (US National Dams. 2022) is assumed to be representative of the sum of discharges from the eastern and western arms of the Newton Lake. A flow rate of 37,701 cfs was determined for the eastern arm based on watershed ratio analysis (Archfield & Vogel, 2010; Gianfagna *et al.*, 2015) using the USGS StreamStats application (USGS, 2022). The surface water parameters are presented in Table A.3.

The fraction of COIs in the water column was calculated for each COI using the sediment/water and suspended solids/water partition coefficients (US EPA, 2014, Table J-1). The fraction of COIs in the water column is defined as (US EPA, 2014):

$$f_{water} = \frac{(1 + [K_{dsw} \times TSS \times 0.000001]) \times \frac{d_w}{d_z}}{\left([1 + (K_{dsw} \times TSS \times 0.000001)] \times \frac{d_w}{d_z}\right) + ([bsp + K_{dbs} \times bsc] \times \frac{d_b}{d_z})}$$

where:

K_{dsw}	=	Suspended sediment-water partition coefficient (mL/g)
K_{dbs}	=	Sediment-water partition coefficient (mL/g)
TSS	=	Total suspended solids in the surface water body (mg/L), set equal to 9.2 mg/L, which is the average of TSS concentrations measured at four monitoring locations at Newton Lake (*i.e.*, IL_EPA_WQX-RCR-1, IL_EPA_WQX-RCR-2, IL_EPA_WQX-RCR-3, and IL_EPA_WQX-RCR-4) (USGS *et al*., 2022)
0.000001	=	Units conversion factor
d_w	=	Depth of the water column (m). The depth of the water column was estimated as 5.08 m, based on the geologic cross-section in Ramboll (2021 Figure 2-7). .
d_b	=	Depth of the upper benthic layer (m), set equal to 0.03 m (US EPA, 2014)
$d_z = d_w + d_b$	=	Depth of the water body (m) = 5.11 m
bsp	=	Bed sediment porosity (unitless), set equal to 0.6 (US EPA, 2014)
bsc	=	Bed sediment particle concentration (g/cm^3), set equal to 1.0 g/cm^3 (US EPA, 2014)

The fraction of COIs dissolved in the water column (f_d) is calculated as (US EPA 2014):

$$f_d = \frac{1}{1 + K_{dsw} \times TSS \times 0.000001}$$

The values of the fraction of COIs in the water column and other calculated parameters are presented in Table A.4.

The total water column concentration (C_{wcTot}) of the COIs, comprising both the dissolved and suspended sediment phases, is then calculated as (US EPA, 2014):

$$C_{wcTot} = C_{wtot} \times f_{water} \times \frac{d_z}{d_w}$$

Finally, the dissolved water column concentration (C_{dw}) for the COIs is calculated as (US EPA, 2014):

$$C_{dw} = f_d \times C_{wcTot}$$

The dissolved water column concentration was then used to calculate the concentration of COIs sorbed to suspended solids in the water column (US EPA, 1998):

$$C_{sw} = C_{dw} \times K_{dsw}$$

where:

C_{sw} = Concentration sorbed to suspended solids (mg/kg)
C_{dw} = Concentration dissolved in the water column (mg/L)
K_{dsw} = Suspended solids/water partition coefficient (mL/g)

In the same way, using the total water body concentration and the fraction of COIs in the benthic sediments, the model derives the total concentration in benthic sediments (US EPA, 2014, Table J-1-12):

$$C_{bstot} = f_{benth} \times C_{wtot} \times \frac{d_z}{d_b}$$

where:

C_{bstot} = Total concentration in bed sediment (mg/L or g/m^3)
C_{wtot} = Total water body concentration of the constituent (mg/L)
f_{benth} = Fraction of contaminant in benthic sediments (unitless)
d_b = Depth of the upper benthic layer (m)
$d_z = d_w + d_b$ = Depth of the water body (m)

This value can be used to calculate dry weight sediment concentration as follows:

$$C_{sed-dw} = \frac{C_{bstot}}{bsc}$$

where:

C_{sed-dw} = Dry weight sediment concentration (mg/kg)
C_{bstot} = Total sediment concentration (mg/L)
bsc = Bed sediment bulk density (default value of 1 g/cm^3 from US EPA, 2014)

The total sediment concentration is composed of the concentration dissolved in the bed sediment pore water (equal to the concentration dissolved in the water column) and the concentration sorbed to benthic sediments (US EPA, 1998).

The concentration sorbed to benthic sediments was calculated from (US EPA, 1998):

$$C_{sb} = C_{dbs} \times K_{dbs}$$

where:

C_{sb} = Concentration sorbed to bottom sediments (mg/kg)
C_{dbs} = Concentration dissolved in the sediment pore water (mg/L)
K_{dbs} = Sediments/water partition coefficient (mL/kg)

For each COI, the modeled total water column concentration, the modeled dry weight sediment concentration, and the modeled concentration sorbed to sediment are presented in Table A.5.

Table A.1 Parameters Used to Estimate Groundwater Discharge to Surface Water

Groundwater Unit	Parameter	Name	Value	Unit
Uppermost Aquifer and Potential Migration Pathway	A	Cross-Sectional Area[a]	18,330	m^2
Uppermost Aquifer and Potential Migration Pathway	i	Hydraulic Gradient[b]	0.0048	m/m
Uppermost Aquifer and Potential Migration Pathway	K	Hydraulic Conductivity[c]	0.00495	cm/s

Notes:
Source: Hydraulic gradient and hydraulic conductivity values from Ramboll (2021).
Cross-sectional area was estimated from Ramboll (2021).
(a) The sum of the maximum thicknesses of the PMP and the UA (i.e., approximately 7.3 m) multiplied by the length of the ash pond intersecting Newton lake (*i.e.*, about 2,500 m).
(b) Hydraulic gradient measurements are not available for the PMP. The average hydraulic gradient determined for the UA was used.
(c) Average of the geometric mean horizontal hydraulic conductivities measured for the PMP (3×10^{-3} cm/s) and the UA (6.8×10^{-3} cm/s).

Table A.2 Partition Coefficients

Constituent	Sediment-Water, Mean, K_{dbs}		Suspended Sediment-Water, Mean, K_{dsw}	
	Value (log_{10}) (mL/g)	Value (mL/g)	Value (log_{10}) (mL/g)	Value (mL/g)
Metals				
Arsenic	2.4	2.51E+02	3.9	7.94E+03
Cadmium	3.3	2.00E+03	4.9	7.94E+04
Cobalt	3.1	1.26E+03	4.8	6.31E+04
Lead	4.6	3.98E+04	5.7	5.01E+05
Lithium	-	-	-	-
Mercury	4.9	7.94E+04	5.3	2.00E+05
Thallium	1.3	2.00E+01	4.1	1.26E+04
Radionuclides				
Radium-226+228	-	7.40E+03	-	7.40E+03
Other				
Chloride	-	-	-	-
Fluoride	2.2	1.58E+02	2.2	1.58E+02
Sulfate	-	-	-	-

Notes:
Source: US EPA (2014).
Lithium, chloride, and sulfate do not readily sorb to soils and sediments. Consequently, sediment concentrations were not modeled for these constituents (K_d was assumed to be 0).

Table A.3 Surface Water Parameters

Parameter	Name	Value	Unit
TSS	Total Suspended Solids	9.2	mg/L
V_{fx}	Surface Water Flow Rate	3.37×10^{13}	L/yr
d_b	Depth of Upper Benthic Layer (default)	0.03	m
d_w	Depth of Water Column	5.08	m
d_z	Depth of Water Body	5.11	m
bsc	Bed Sediment Bulk Density (default)	1	g/cm^3
bsp	Bed Sediment Porosity (default)	0.6	-
M_{TSS}	TSS Mass per Unit Area[a]	0.047	kg/m^2
M_S	Sediment Mass per Unit Area[b]	30	kg/m^2

Notes:
Source of default values: US EPA (2014).
Source of TSS data: USGS *et al*., 2022.
(a) Determined by multiplying total suspended solids, TSS by the depth of water column, d_w.
(b) Determined by multiplying depth of upper benthic layer, d_b, with sediment bed particle concentration of 1 g/cc.

Table A.4 Calculated Parameters

COI	Fraction of Constituent in the Water Column f_{water}	Fraction of Constituent in the Benthic Sediments $f_{benthic}$	Fraction of Constituent Dissolved in the Water Column $f_{dissolved}$
Arsenic	0.419	0.581	0.932
Cadmium	0.1280	0.8720	0.5778
Cobalt	0.175	0.825	0.633
Lead	0.023	0.977	0.178
Lithium	0.996	0.004	
Mercury	0.006	0.994	0.353
Thallium	0.902	0.098	0.896
Radionuclides			
Radium-226+228	0.024	0.976	0.936
Other			
Fluoride	0.516	0.484	0.999

Note:
COI = Constituent of Interest.

Table A.5 Surface Water and Sediment Modeling Results

COI	Groundwater Concentration (mg/L or pCi/L)	Mass Discharge Rate (mg/year or pCi/year)	Total Water Column Concentration (mg/L or pCi/L)	Concentration Sorbed to Bottom Sediments (mg/kg or pCi/kg)
Total Metals				
Arsenic	0.13	1.8E+07	5.3E-07	1.2E-04
Cadmium	0.0034	4.7E+05	1.4E-08	1.6E-05
Cobalt	0.036	4.9E+06	1.5E-07	1.2E-04
Lead	0.065	8.9E+06	2.7E-07	1.9E-03
Lithium	0.30	4.1E+07	1.2E-06	(a)
Mercury	0.0020	2.7E+05	8.2E-09	2.3E-04
Thallium	0.0036	4.9E+05	1.5E-08	2.6E-07
Radionuclides				
Radium-226+228	15	2.1E+09	6.2E-05	4.3E-01
Other				
Chloride	550	7.6E+10	2.3E-03	(a)
Fluoride	8.2	1.1E+09	3.4E-05	5.3E-03
Sulfate	3,200	4.4E+11	1.3E-02	(a)

Notes:

COI = Constituent of Interest; pCi/kg = PicoCuries Per Kilogram; pCi/L = PicoCuries Per Liter.

(a) Lithium, chloride, and sulfate do not readily sorb to soil or sediment particles; a K_d value of 0 was used for the modeling.

Appendix B

Screening Benchmarks

Table B.1 Calculated Water Quality Standards Protective of Incidental Ingestion and Fish Consumption

Human Health COI	BCF[a] (L/kg-tissue)	Basis	MCL (mg/L)	RfD (mg/kg-day)	ADI[b] (mg/day)	Human Threshold Criteria		
						Water & Fish (mg/L)	Water Only (mg/L)	Fish Only (mg/L)
Arsenic	44	NRWQC (2002)	0.010	0.00030	0.020	0.022	2.0	0.023
Cobalt	300	ORNL (2020)	NC	0.00030	0.021	0.0035	2.1	0.0035
Fluoride	2.3	US EPA (2014)	4.0	0.040	8.0	143	800	174
Lead	46	US EPA (2014)	0.015	NC	0.030	0.015	0.015	0.015
Lithium	1	(c)	NC	0.002	0.14	4.7	14	7.0
Thallium	116	NRWQC (2002)	0.0020	0.000010	0.0040	0.0017	0.40	0.0017

Human Health COI	BAF (L/kg-tissue)		MCL (pCi/L)	ADI (pCi/day)	Food Ingestion Slope Factor[d] (risk/pCi)	Human Threshold Criteria		
	SW-Fish	Basis				Water & Fish (pCi/L)	Water Only (pCi/L)	Fish Only (pCi/L)
Radium-226 + 228	4.0	ORNL (2020)	5	10	1.43E-09	1,000	1,000	87,413

Notes:

ADI = Acceptable Daily Intake; BAF = Bioaccumulation Factor; BCF = Bioconcentration Factor; MCL = Maximum Contaminant Level; NC = No Criterion Available; NRWQC = National Recommended Water Quality Criteria; ORNL = Oak Ridge National Laboratory; pCi = picocurie; Ra = Radium; RAIS = Risk Assessment Information System; RfD = Reference Dose; US EPA = United States Environmental Protection Agency.

(a) BCFs from the following hierarchy of sources:

NRWQC (US EPA, 2002). National Recommended Water Quality Criteria: 2002. Human Health Criteria Calculation Matrix.

US EPA (2014). Human and Ecological Risk Assessment of Coal Combustion Residuals.

ORNL RAIS (ORNL, 2020). Risk Assessment Information System (RAIS) Toxicity Values and Chemical Parameters.

(b) ADI based on the MCL is calculated as the MCL (mg/L) multiplied by a water ingestion rate of 2 L/day. In the absence of an MCL, the ADI was calculated as the RfD (mg/kg-day) multiplied by the body weight (70 kg).

(c) BCF of 1 was used as a conservative assumption, due to lack of published BCF.

(d) Food ingestion slope factors for Ra-226+D and Ra-228+D were compared and the higher factor (Ra-228+D) was selected. The "+D" indicates that the risks from "associated short-lived radioactive decay products are also included" (US EPA, 2001).

Equations from IEPA (2019):

Consumption of Water and Fish

$$HTC = \frac{ADI}{W + (F \times BCF)}$$

Incidental Consumption of Water Only

$$HTC = \frac{ADI}{W}$$

Consumption of Fish Only

$$HTC = \frac{ADI}{F \times BCF}$$

Where:

Human Threshold Criteria (HTC)	Chemical-specific	mg/L
Acceptable Daily Intake (ADI)	Chemical-specific	mg/day
Fish Consumption Rate (F)	0.02	kg/day
Bioconcentration Factor (BCF)/ Bioaccumulation Factor (BAF)	Chemical-specific	L/kg-tissue
Water Consumption Rate (W)	0.01	L/day
Body Weight	70	kg
Target Cancer Risk (TCR)	1.0E-05	

Radium-226+228

$$HTC = \frac{TCR}{(SF \times BAF \times F)}$$

Table B.2 Recreator Exposure to Sediment

COI	Relative Bioavailability (unitless)	Dermal Absorption Fraction (unitless)	Cancer				Cancer SL (mg/kg)	Non-Cancer								Recreator RSL Sediment (mg/kg)	Basis[a]
			TRV		Child + Adult			TRV		Child		Adult		Child	Adult		
			CSF $(mg/kg\text{-}day)^{-1}$	Dermal CSF $(mg/kg\text{-}day)^{-1}$	Incidental Ingestion SL (mg/kg)	Dermal Contact SL (mg/kg)		RfD (mg/kg-day)	Dermal RfD (mg/kg-day)	Incidental Ingestion SL (mg/kg)	Dermal Contact SL (mg/kg)	Incidental Ingestion SL (mg/kg)	Dermal Contact SL (mg/kg)	Non-Cancer SL (mg/kg)			
Total Metals																	
Arsenic	1	3.0E-02	1.5E+00	1.5E+00	8.1E+01	4.1E+02	6.8E+01	3.0E-04	3.0E-04	4.1E+02	4.4E+03	4.4E+03	8.0E+03	3.8E+02	2.8E+03	6.8E+01	c
Cobalt	1	NA	NC	NC	NC	NC	NC	3.0E-04	3.0E-04	4.1E+02	NA	4.4E+03	NA	4.1E+02	4.4E+03	4.1E+02	nc
Lead	1	NA	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	4.0E+02	L
Lithium	1	NA	NC	NC	NC	NC	NC	2.0E-03	2.0E-03	2.7E+03	NA	2.9E+04	NA	2.7E+03	2.9E+04	2.7E+03	nc
Thallium	1	NA	NC	NC	NC	NC	NC	1.0E-05	1.0E-05	1.4E+01	NA	1.5E+02	NA	1.4E+01	1.5E+02	1.4E+01	nc
Other																	
Fluoride	1	NA	NC	NC	NC	NC	NC	4.0E-02	4.0E-02	5.5E+04	NA	5.8E+05	NA	5.5E+04	5.8E+05	5.48E+04	nc
Radionuclides																**Total Soil PRG (pCi/kg)**	
Radium-226 + 228																7.9E+03	

Notes:

ABS = Dermal Absorption Fraction; COI = Constituent of Interest; CSF = Cancer Slope Factor; NC = No Criterion Available; pCi = PicoCurie; PRG = Preliminary Remediation Goal; RfD = Reference Dose; RSL = Regional Screening Level; SL = Screening Level; TRV = Toxicity Reference Value; US EPA = United States Environmental Protection Agency.

(a) Screening benchmark defined as the lower of the Screening Levels for cancer and non-cancer. The basis of the benchmark presented as c = based on cancer endpoint, nc = based on non-cancer endpoint, or L = based on blood lead levels.

Equations for Screening Benchmark and Screening Levels:

$$\text{Screening Benchmark} = \frac{1}{\frac{1}{SL_{ing}} + \frac{1}{SL_{derm}}}$$

$$\text{Non-cancer } SL_{ing} = \frac{THQ * RfD}{Intake} \qquad \text{Cancer } SL_{ing} = \frac{TR}{Intake * CSF}$$

$$\text{Non-cancer } SL_{derm} = \frac{THQ * RfD}{Intake * ABS} \qquad \text{Cancer } SL_{derm} = \frac{TR}{Intake * ABS * CSF}$$

Where:

Target Risk (TR)	1E-05	
Target Hazard Quotient (THQ)	1	
Reference Dose (RfD)	Chemical-specific	mg/kg-day
Dermal Absorption Fraction (ABS)	Chemical-specific	
Cancer Slope Factor (CSF)	Chemical-specific	mg/kg
Incidental Ingestions Screening Level (SL_{ing})	Chemical-specific	mg/kg
Dermal Contact Screening Level (SL_{derm})	Chemical-specific	mg/kg

Sediment – Ingestion (Chemical)

Intake Factor (IF) = $\frac{IR \times EF \times ED \times CF}{BW \times AT}$ =			Non-Cancer		Cancer		Basis
			7.3E-07 Child	6.8E-08 Adult	6.3E-08 Child	2.0E-08 Adult	
	IR	Ingestion Rate (mg/day)	67	33	67	33	One-third of US EPA residential soil ingestion rate (Professional Judgment)
	EF	Sediment Exposure Frequency (days/year)	60	60	60	60	2 days/week between April and October when air temperature > 70°F (Professional Judgment)
	ED	Exposure Duration (years)	6	20	6	20	Default value for Resident (US EPA, 2021b)
	CF	Conversion Factor (kg/mg)	0.000001	0.000001	0.000001	0.000001	
	BW	Body Weight (kg)	15	80	15	80	Default value for Resident (US EPA, 2021b)
	AT	Averaging Time (days)	2,190	7,300	25,550	25,550	Default value for Resident (US EPA, 2021b)

Sediment – Dermal Contact (Chemical)

Intake Factor (IF) = $\frac{SA \times AF \times EF \times ED \times CF}{BW \times AT}$ =			Non-Cancer		Cancer		Basis
			2.2E-06 Child	1.2E-06 Adult	1.9E-07 Child	3.6E-07 Adult	
	SA	Surface Area Exposed to Sediment (cm^2/day)	1,026	3,026	1,026	3,026	Age weighted SA for lower legs and feet (US EPA, 2011b)
	AF	Sediment Skin Adherence Factor (mg/cm^2)	0.2	0.2	0.2	0.2	Age weighted AF for children exposed to sediment (US EPA, 2011b)
	EF	Sediment Exposure Frequency (days/year)	60	60	60	60	2 days/week between April and October when air temperature > 70°F (Professional Judgment)
	ED	Exposure Duration (years)	6	20	6	20	Default value for Resident (US EPA, 2021b)
	CF	Conversion Factor (kg/mg)	0.000001	0.000001	0.000001	0.000001	
	BW	Body Weight (kg)	15	80	15	80	Default value for Resident (US EPA, 2021b)
	AT	Averaging Time (days)	2,190	7,300	25,550	25,550	Default value for Resident (US EPA, 2021b)

Table B.3.1 Recreator PRGs for Soil, input values

Variable	Recreator Soil Default Value	Form-input Value
A (PEF Dispersion Constant)	16.2302	16.8653
B (PEF Dispersion Constant)	18.7762	18.7848
City (Climate Zone)	Default	Chicago, IL (7)
C (PEF Dispersion Constant)	216.108	215.0624
Cover layer thickness for GSF (gamma shielding factor) cm	0 cm	0 cm
$CF_{rec\text{-}fowl}$ (fowl contaminated fraction) unitless	1	1
$CF_{rec\text{-}game}$ (game contaminated fraction) unitless	1	1
ED_{rec} (exposure duration - recreator) yr		26
EF_{rec} (exposure frequency - recreator) day/yr		60
$f_{p\text{-}fowl}$ (fowl on-site fraction) unitless	1	1
$f_{p\text{-}game}$ (land game on-site fraction) unitless	1	1
$f_{s\text{-}fowl}$ (fraction of year fowl is on site) unitless	1	1
$f_{s\text{-}game}$ (fraction of year land game is on site) unitless	1	1
$MLF_{pasture}$ (pasture plant mass loading factor) unitless	0.25	0.25
t_{rec} (time - recreator) yr		26
TR (target risk) unitless	0.000001	0.000001
F(x) (function dependent on U_m/U_t) unitless	0.194	0.182
PEF (particulate emission factor) m^3/kg	1,359,344,438	1,560,521,177
Q/C_{wind} (g/m^2-s per kg/m^3)	93.77	98.431
A_s (acres)	0.5	0.5
Site area for ACF (area correction factor) m^2	1,000,000 m^2	1,000 m^2
ED_{rec} (exposure duration - recreator) yr		26
$ED_{rec\text{-}a}$ (exposure duration - recreator adult) yr		20
$ED_{resc\text{-}c}$ (exposure duration - recreator child) yr		6
EF_{rec} (exposure frequency - recreator) day/yr		60
$EF_{rec\text{-}a}$ (exposure frequency - recreator adult) day/yr		60
$EF_{rec\text{-}c}$ (exposure frequency - recreator child) day/yr		60
ET_{rec} (exposure time - recreator) hr/day		8
$ET_{rec\text{-}a}$ (exposure time - recreator) hr/day		8
$ET_{rec\text{-}c}$ (exposure time - recreator) hr/day		8
$IFA_{rec\text{-}adj}$ (age-adjusted inhalation rate - recreator) m^3		9,200
$IFS_{rec\text{-}adj}$ (age-adjusted soil intake rate - recreator) mg		63,720
$IRA_{rec\text{-}a}$ (inhalation rate - recreator adult) m^3/day	20	20
$IRA_{rec\text{-}c}$ (inhalation rate - recreator child) m^3/day	10	10
$IRS_{rec\text{-}a}$ (soil intake rate - recreator adult) mg/day	100	33
$IRS_{rec\text{-}c}$ (soil intake rate - recreator child) mg/day	200	67
t_{rec} (time - recreator) yr		26
TR (target risk) unitless	0.000001	0.000001
U_m (mean annual wind speed) m/s	4.69	4.65
U_t (equivalent threshold value)	11.32	11.32
V (fraction of vegetative cover) unitless	0.5	0.5

Notes:

IL = Illinois; PRG = Preliminary Remediation Goal; yr = year.

Table B.3.2 Recreator PRGs for Soil, Ra-226

Isotope	ICRP Lung Absorption Type	Soil Ingestion Slope Factor (risk/pCi)	Inhalation Slope Factor (risk/pCi)	External Exposure Slope Factor (risk/yr per pCi/g)	Food Ingestion Slope Factor (risk/pCi)	Lambda (1/yr)	Half-life (yr)	1,000 m^2 Soil Volume Area Correction Factor	0 cm Soil Volume Gamma Shielding Factor	Particulate Emission Factor (m^3/kg)	Dry Soil-to-plant transfer factor (pCi/g-fresh plant per pCi/g-dry soil)	Beef Transfer Factor (pCi/kg per pCi/d)	Poultry Transfer Factor (pCi/kg per pCi/d)	Ingestion PRG TR=1.0E-06 (pCi/g)	Inhalation PRG TR=1.0E-06 (pCi/g)	External Exposure PRG TR=1.0E-06 (pCi/g)	Total PRG TR=1.0E-06 (pCi/g)	Total PRG TR=1.0E-06 (mg/kg)	Total PRG TR=1.0E-06 (pCi/kg)
Ra-226	S	6.77E-10	2.82E-08	2.50E-08	5.14E-10	4.33E-04	1.60E+03	6.85E-01	1.00E+00	1.56E+09	1.95E-02	1.70E-03	-	2.32E+01	6.02E+03	4.10E+01	1.48E+01	1.50E-05	1.48E+04

Notes:

d = Day; ICRP = International Commission on Radiological Protection; Ra = Radium; S = Slow; pCi = Picocurie; PRG = Preliminary Remediation Goal; TR = Target Risk; yr = Year.

Table B.3.3 Recreator PRGs for Soil, Ra-228

Isotope	ICRP Lung Absorption Type	Soil Ingestion Slope Factor (risk/pCi)	Inhalation Slope Factor (risk/pCi)	External Exposure Slope Factor (risk/yr per pCi/g)	Food Ingestion Slope Factor (risk/pCi)	Lambda (1/yr)	Half-life (yr)	1,000 m^2 Soil Volume Area Correction Factor	0 cm Soil Volume Gamma Shielding Factor	Particulate Emission Factor (m^3/kg)	Dry Soil-to-plant transfer factor (pCi/g-fresh plant per pCi/g-dry soil)	Beef Transfer Factor (pCi/kg per pCi/d)	Poultry Transfer Factor (pCi/kg per pCi/d)	Ingestion PRG TR=1.0E-06 (pCi/g)	Inhalation PRG TR=1.0E-06 (pCi/g)	External Exposure PRG TR=1.0E-06 (pCi/g)	Total PRG TR=1.0E-06 (pCi/g)	Total PRG TR=1.0E-06 (mg/kg)	Total PRG TR=1.0E-06 (pCi/kg)
Ra-228	S	1.98E-09	4.37E-08	3.43E-11	1.42E-09	1.21E-01	5.75E+00	1.00E+00	1.00E+00	1.56E+09	1.95E-02	1.70E-03	-	7.93E+00	3.89E+03	2.04E+04	7.91E+00	2.90E-08	7.91E+03

Notes:

d = Day; ICRP = International Commission on Radiological Protection; Ra= Radium; S = Slow; pCi = Picocurie; PRG = Preliminary Remediation Goal; TR = Target Risk; yr = Year.

Appendix B

Corrective Action Alternative Analysis – Supporting Information Report

Intended for
Illinois Power Generating Company
6725 North 500th Street
Newton, Illinois, 62448

Date
April 1, 2025

Project No.
1940103584-008

CORRECTIVE ACTION ALTERNATIVES ANALYSIS SUPPORTING INFORMATION REPORT

NEWTON POWER PLANT, PRIMARY ASH POND, IEPA ID NO. W0798070001-01

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CORRECTIVE ACTION ALTERNATIVES ANALYSIS SUPPORTING INFORMATION REPORT NEWTON POWER PLANT, PRIMARY ASH POND, IEPA ID NO. W0798070001-01

Project name	**Newton Power Plant Primary Ash Pond**
Project no.	**1940103584-008**
Recipient	**Illinois Power Generating Company**
Document type	**Supporting Information Report**
Revision	**FINAL**
Date	**April 1, 2025**
Prepared by	**Elizabeth (Richter) Rotstein, PE**
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Description	**Corrective Action Alternatives Analysis Supporting Information Report**

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I, Elizabeth Rotstein, being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this report has been prepared in accordance with the accepted practice of engineering. The content of this report is not to be used other than for its intended purpose and meaning, or for extrapolations beyond the interpretations contained herein.

Elizabeth C. Rotstein

Elizabeth (Richter) Rotstein, PE
Qualified Professional Engineer

062.068935	IL	11/30/2025
License Number	**State**	**Exp. Date**

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Table B	Feasibility-Level Implementation Schedule – Alternative 2 Source Control with GWET

APPENDICES

Appendix A	Feasibility-Level Design Drawings for Alternative 2 Remedy
Appendix B1	Groundwater Modeling Technical Memorandum
Appendix B2	Groundwater Model Report
Appendix C	Material Quantity, Labor, and Mileage Estimates for Alternative 2 Remedy

ACRONYMS AND ABBREVIATIONS

35 I.A.C.	Title 35 of the Illinois Administrative Code
40 C.F.R.	Title 40 of the Code of Federal Regulations
bgs	below ground surface
BMP	best management practices
CAAA	Corrective Action Alternatives Analysis
CAAA-SIR	Corrective Action Alternatives Analysis Supporting Information Report
CAP	Corrective Action Plan
CCR	coal combustion residuals
CCR Rule	40 C.F.R. § 257 Subpart D
CIP	closure-in-place
CMA	Corrective Measures Assessment
COC	constituents of concerns
Gradient	Gradient Corporation
GWE	groundwater extraction
GWET	groundwater extraction trench
GWPS	groundwater protection standard(s)
ID	identification
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
IPGC	Illinois Power Generating Company
Kd	soil adsorption coefficient
mL/g	milliliters per gram
MNA	Monitored Natural Attenuation
NAVD88	North American Vertical Datum of 1988
NEW	Newton Power Station
NID	National Inventory of Dams
No.	number
NPDES	National Pollutant Discharge Elimination System
NPP	Newton Power Plant
O&M	operations and maintenance
PAP	Primary Ash Pond, also referred to as Site
PMP	potential migration pathway
Ramboll	Ramboll Americas Engineering Solutions, Inc.
RS Means	RS Means Heavy Construction Cost Data
SI	surface impoundment
TDS	total dissolved solids
TSS	total suspended solids
UA	uppermost aquifer
USEPA	United States Environmental Protection Agency

1. INTRODUCTION AND BACKGROUND

1.1 Plant and Site Information

Illinois Power Generating Company (IPGC) is the owner of the active coal-fired Newton Power Plant (NPP), also referred to as the Newton Power Station (NEW), in Newton, Illinois. IPGC intends to complete groundwater corrective action at the coal combustion residuals (CCR) surface impoundment (SI) Primary Ash Pond (PAP), which is identified by Illinois Environmental Protection Agency (IEPA) identification (ID) number (No.) W0798070001-01, CCR Unit ID 501, and National Inventory of Dams (NID) No. IL50719. Groundwater corrective action for the PAP will be performed under the requirements of Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845, Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments [1] and the requirements of Title 40 of the Code of Federal Regulations (40 C.F.R.) § 257, herein referred to as the Federal CCR Rule [2].

1.2 CAAA-SIR Background and Scope

35 I.A.C. § 845 requires a Corrective Action Alternatives Analysis (CAAA) to be completed as part of remedy selection, pursuant to the requirements of 35 I.A.C. § 845.670(e). The CAAA for the NEW PAP was prepared by Gradient Corporation (Gradient). Ramboll Americas Engineering Solutions, Inc. (Ramboll) has prepared this Corrective Action Alternatives Analysis Supporting Information Report (CAAA-SIR) to provide information requested by Gradient to support the CAAA for the NEW PAP.

This CAAA-SIR was prepared to address specific constituents of concern (COC) where exceedances of the 35 I.A.C. § 845.600 groundwater protection standards (GWPS) have been detected in the PAP's groundwater compliance monitoring wells. The COCs with exceedances[1] addressed by this CAAA-SIR, as of the 2024 Annual Report [3], include lithium, sulfate, and total dissolved solids (TDS).

This CAAA-SIR is a feasibility-level assessment utilized to evaluate multiple groundwater corrective action alternatives. The remedy that is ultimately selected within the CAAA, to which this CAAA-SIR is attached, was then further developed into a permit-level remedy within the Corrective Action Plan (CAP), to which the CAAA is attached. Therefore, there may be minor differences in information presented for the selected remedy between this CAAA-SIR and the CAP. Information that may be different includes, but is not limited to, groundwater quality data, groundwater modeling inputs and results, implementation schedules, time to reach GWPS, and the physical dimensions and scope of the remedy, and engineering design parameters. These differences are due to the further remedy refinement that is inherent with advancing the selected alternative into the permit-level remedy that is included within the CAP.

[1] Throughout this document, "exceedance" or "exceedances" is intended to refer only to potential exceedances of proposed applicable background statistics or GWPSs as described in the proposed groundwater monitoring program, which was submitted to the IEPA on October 25, 2021 as part of IPGC's operating permit application for the NPP PAP. That operating permit application, including the proposed groundwater monitoring program, remains under review by the IEPA and, therefore, IPGC has not identified any actual exceedances.

1.2.1 Identified Corrective Action Alternatives

Corrective action remedies selected for evaluation within this CAAA-SIR were identified as potentially feasible for the PAP in the Corrective Measures Assessment (CMA), prepared by Ramboll and attached to the CAAA prepared by Gradient. The remedies identified as potentially feasible included:

- Alternative 1: Source control with groundwater polishing (GWP); and
- Alternative 2: Source control with groundwater extraction trenches (GWET).

Other remedies, including source control with cutoff wall and source control with *in-situ* chemical treatment, were determined to be infeasible for the site during the CMA process.

1.2.2 Scope of CAAA-SIR

Ramboll completed the following tasks and documented the tasks within this CAAA-SIR, for each of the corrective action alternative remedies listed in **Section 1.2.1**:

- Feasibility-level design drawings were developed to show the approximate extents and typical sections/details of the Alternative 2 remedy, source control with GWET, (**Appendix A**). Drawings were not prepared for the Alternative 1 remedy as it does not involve construction at the site.
- Narratives describing the implementation of each remedy were developed, including the pre-design, design, construction, operations, and maintenance (O&M), and closeout phases.
- Feasibility-level schedules providing the estimated time to implement the remedy were developed, including design, permitting, construction, and post-construction O&M.
- Feasibility-level plans for the management of extracted groundwater were developed for the Alternative 2 remedy that include the generation of extracted groundwater.
- Information required to evaluate specific portions of 35 I.A.C. § 845.670(e) requirements were prepared, as requested by Gradient, including 35 I.A.C. § 845.670(e)(1)(H) and 35 I.A.C. § 845.670(e)(3).
- Estimates of implementation-based equipment mileage, vehicle delivery mileage, labor hour, and labor commuting mileage, were developed for each remedy alternative where physical construction and/or O&M activities are expected to occur.

All remedies presented within this CAAA-SIR assume that the source control presented in the Final Closure Plan [4] for the PAP, and the subsequent update that was submitted to IEPA in 2025 [5] would also be implemented. Source control is the primary corrective action for the PAP and would include removing free liquids from the CCR and completing a hybrid closure-in-place (CIP). This includes consolidating the current PAP footprint from 404 acres down to 252.3 acres (the CIP area), in accordance with the 2025 update to the closure plan [5] and installing a geomembrane final cover system.

Updated groundwater modeling (**Appendix B1**) estimates that source control alone would result in GWPS being achieved approximately 34 years after closure completion (**Appendix B1**) without implementing other forms of corrective action. The potential remedies evaluated in this CAAA-SIR are intended to work in conjunction with the primary remedy, which is source control.

1.2.3 Criterion for Estimating Time to Achieve GWPS

Times to achieve GWPS for each of the remedial alternative remedies were estimated using 26 PAP monitoring wells in the vicinity of the proposed corrective action alternatives with average observed sulfate concentrations exceeding the GWPS of 400 milligrams per liter (mg/L).

1.3 Report Contents

The following information is included within this report:

- **Section 1** includes the introduction and background;
- **Section 2** includes information for the Alternative 1 Remedy: Source control with GWP;
- **Section 3** includes information for the Alternative 2 Remedy: Source control with GWET,
- **Section 4** includes information used to develop estimates of material quantities, labor hours, and mileage; and
- **Section 5** includes reference documents used in the development of this CAAA-SIR.

2. ALTERNATIVE 1 REMEDY: SOURCE CONTROL WITH GROUNDWATER POLISHING

The Alternative 1 remedy, source control with GWP, would include a consolidate-and-cap approach for source control, after which GWP would be implemented. GWP is a remedial alternative that relies on natural geochemical processes and may be appropriate as recognized by the United States Environmental Protection Agency (USEPA) in a final policy directive for groundwater remediation [6].

2.1 Supporting Groundwater Modeling and Time to Reach GWPS

The COCs exceeding the GWPS at compliance groundwater monitoring wells as of the 2024 Annual Report [3] are lithium, sulfate, and TDS. Sulfate was selected for modeling the source control presented in the Final Closure Plan and was identified as a surrogate for the exceedances of lithium and TDS, as described in the Groundwater Modeling Report [7] (included in **Appendix B2**) and subsequent update prepared to support the revised closure plan [5]. For modeling purposes, it was assumed that sulfate would not significantly sorb or chemically react with aquifer solids (soil adsorption coefficient [Kd] was set to 0 milliliters per gram [mL/g]) which is a conservative estimate for predicting contaminant transport times in the model. Sulfate transport is likely to be affected by both chemical and physical attenuation mechanisms (*i.e.*, adsorption and/or precipitation reactions as well as dilution and dispersion). Physical attenuation (dilution and dispersion) of contaminants in groundwater is simulated in the groundwater computer models. Chemical attenuation mechanisms and their effect on modeled times for exceedances to reach the GWPS are discussed in the Groundwater Polishing Evaluation Report [8] and summarized herein.

Groundwater modeling for the Alternative 1 remedy, performed to support the revised closure plan and CAAA-SIR (**Appendix B**), estimated that GWPS would be met in 34 years after the implementation of source control for all wells within the existing PAP monitoring well network.

2.2 Remedy Implementation

Implementation of this portion of the remedy would be initiated after source control (*e.g.,* final closure of the PAP) is completed. Implementation would include performing corrective action groundwater monitoring, enacting an adaptive management strategy, and, after GWPS have been met, performing corrective action closure and completion activities. Information associated with each of these activities is described below.

- Corrective Action Groundwater Monitoring
  - Regular corrective action groundwater monitoring would be conducted utilizing a corrective action groundwater monitoring network designed in accordance with 35 I.A.C. § 845.680(c), which specifies that wells must be installed in the plume of contamination that lies beyond the waste boundary.
    - Samples will be collected for major ions for evaluating groundwater chemistry and COCs. Samples will be collected on a quarterly basis initially and potentially reduced to a semiannual basis once five years of monitoring have occurred, in accordance with 35 I.A.C. 845.650(b)(4).

  - Monitoring results would be submitted to IEPA for each monitoring event, in addition to an annual groundwater monitoring and corrective action report, in accordance with 35 I.A.C. 845.610(e).
  - Routine maintenance of the monitoring well system would occur during the monitoring period. This would include inspecting the wells, making repairs to the wells (as and if needed), and rehabilitating and/or replacing wells to improve performance (as and if needed).

- Adaptive Management during Monitoring
  - Groundwater monitoring results would be evaluated and documented in in the monitoring reports submitted to IEPA, in accordance with 35 I.A.C. 845.610(e)
  - Remedy progress evaluation as part of adaptive site management may include additional investigation to inform updates to the CSM, groundwater, and geochemical models.
  - If remedy progress does not correspond with expectations, additional methods or techniques to achieve compliance with GWPS would be evaluated and, if feasible, implemented in accordance with 35 I.A.C. 845.680(b).
- Corrective Action Confirmation Monitoring and Completion
  - After GWPS have been met for all corrective action monitoring wells, corrective action confirmation groundwater monitoring would be implemented. This would include monitoring each well for three additional years to confirm that GWPS have been achieved, in accordance 35 I.A.C. 845.680(c).
    - It should be noted that post-closure care groundwater monitoring required fora 30-year period by 35 I.A.C. 845.780(c) will continue to occur after corrective action groundwater monitoring is expected to be completed.
  - After completion of the corrective action confirmation monitoring period, a Corrective Action Completion Report and Certification would be prepared and submitted to IEPA, in accordance with 35 I.A.C. 845.680(e).

2.2.1 Remedy Implementation Schedule

A feasibility-level implementation schedule for the Alternative 1 source control with GWP remedy is provided in **Table A** below.

Table A. Feasibility-Level Implementation Schedule – Alternative 1: Source Control with GWP

Implementation Phase	Implementation Task	Timeframe* (Preliminary Estimates)
Corrective Action Implementation	Corrective Action Monitoring (Time to Meet GWPS)	408 months
	Corrective Action Confirmation Monitoring	36 months
	Corrective Action Completion	6 months
	Timeframe to Complete Corrective Action Implementation	450 months
	Total Timeline to Complete Corrective Action (after completion of source control)	450 months (37.5 years)

*All timeframes are assumed to start after source control (*e.g.,* final closure of the SI) is complete and a corrective action permit has been issued by IEPA, whichever is later.

2.2.2 Management of Extracted Groundwater

No groundwater extraction would occur under this remedy.

2.2.3 35 I.A.C. § 845.670(e)(1)(H) and 35 I.A.C. § 845.670(e)(3) Information

As requested by Gradient, the following information required by 35 I.A.C. § 845.670(e)(1)(H) and 35 I.A.C. § 845.670(e)(3) has been developed for the remedy. The information was developed based on preliminary-level information contained within the CMA for the NEW PAP and then refined based on additional feasibility-level design activities performed as part of the development of this CAAA-SIR.

- Potential Need for Replacement of the Remedy – 35 I.A.C. § 845.670(e)(1)(H)
  - No replacement of the remedy would be required for source control with GWP, as a physical remedy would not be constructed.
- Degree of Difficulty Associated with Constructing the Remedy – 35 I.A.C. § 845.670(e)(3)(A)
  - No construction would be required with the source control with GWP remedy; therefore, there is no difficulty in construction of the remedy.
- Expected Operational Reliability of the Remedy - 35 I.A.C. § 845.670(e)(3)(B)
  - As documented in the Groundwater Polishing Evaluation Report [8], groundwater geochemical processes anticipated to occur as downgradient groundwater approaches ambient background conditions are not expected to alter the chemical mechanisms of GWPS and are not expected to delay the modeled time to achieve GWPS compliance.
  - GWP will begin once source control has been completed without delays and continuously function during the corrective action period.
- Need to Coordinate with and Obtain Necessary Approvals and permits from Other Agencies - 35 I.A.C. § 845.670(e)(3)(C)
  - No permits from other agencies would be required outside of permits issued by IEPA for source control (Final Closure Plan and Construction Permit Application, submitted to IEPA in 2022 and subsequently revised in 2025 [4, 5]).
- Availability of Necessary Equipment and Specialists - 35 I.A.C. § 845.670(e)(3)(D)
  - Equipment and specialists for field data collection and groundwater sampling are required for the GWP alternative. Laboratory equipment and specialists would also be required to assess groundwater concentrations of site constituents. Groundwater professionals (*i.e.,* geologists, hydrogeologists, statisticians, geochemists) would be required to perform statistical analysis and other assessments to confirm that GWP is functioning as-intended and prepare corrective-action related groundwater monitoring and progress reports.
  - The equipment and specialists required for site groundwater monitoring and analysis are currently performing this work as part of the routine groundwater monitoring program in accordance with 35 I.A.C. § 845.220(c)(4). Therefore, no new equipment or specialists are required for groundwater monitoring for this alternative.
- Available Capacity and Location of Needed Treatment, Storage, and Disposal Services – 35 I.A.C. § 845.670(e)(3)(E)
  - No treatment, storage, or disposal services would be required with the source control with GWP remedy, as GWP would not generate any appreciable volume of waste or wastewater.

3. ALTERNATIVE 2 REMEDY: SOURCE CONTROL WITH GROUNDWATER EXTRACTION TRENCHES

The Alternative 2 remedy, source control with groundwater extraction trenches (GWETs), includes the construction of two downgradient GWETs that would be constructed in conjunction with source control (*e.g.*, final closure) implementation. Each trench is described below:

- East Trench
  - The east trench would be located in the vicinity of APW10 to address impacts of TDS at APW04 and APW12 and sulfate at APW04 and APW10.
  - The east trench would extend from grade surface to approximately 30 feet below ground surface (bgs) to an approximate elevation[2] of 503 feet, in order to capture impacted groundwater in the uppermost aquifer (UA) and potential migration pathway (PMP).
  - The east trench would have a total length of approximately 2,000 feet, extending along the exterior toe of the former perimeter dike of the PAP.
- West Trench
  - The west trench would be located in the vicinity of APW02 to address impacts of lithium, sulfate, and TDS at APW02.
  - The west trench would extend from grade surface to approximately 25 to 35 feet bgs to an approximate elevation of 510 feet in order to capture impacted groundwater in the UA and PMP.
  - The west trench would have a total length of approximately 2,500 feet, extending along the exterior toe of the former perimeter dike of the PAP.

The preliminary depth and extents of both trenches were based on available groundwater and other site data and may be adjusted during future phases of design. The trenches would be constructed by excavating existing subgrade soils, installation of a collection pipe in the trench, backfilling with clean granular fill, and placement of a compacted cap over the trench to reduce surface water infiltration. The collection pipes would drain to sump pumps spaced throughout each trench. Extracted groundwater would be collected and routed via pneumatic pumps and air compressors to a new on-site lined settling pond and discharged through either a new or existing outfall, where it would be managed in accordance with the National Pollutant Discharge Elimination System (NPDES) permit for the site.

A feasibility-level drawing of the source control with GWET remedy is provided as **Figure 2** in **Appendix A.**

3.1 Remedy Scoping and Groundwater Modeling Results

The locations of the GWETs were selected by reviewing physical constraints around the PAP and designating locations on IPGC property where the trenches could feasibly be constructed with limited impacts to other site features. The locations were additionally selected to address exceedances in the vicinity of APW02 on the western side of the PAP and APW10 on the eastern

[2] All elevations in this report are in the North American Vertical Datum of 1988 (NAVD88), unless otherwise noted.

side of the PAP, while avoiding sensitive areas such as wetlands and floodplains [9, 10, 11] and limiting other adverse impacts or conflicts with the PAP final closure construction, Newton Lake, and other site utilities or features. This resulted in both the east and west GWET being located along the exterior toe of the former perimeter dike of the PAP, adjacent to Newton Lake. The selected locations have accessible space which is not within regulatory floodplains or known wetlands to allow for trench construction. Additionally, the areas are outside the limits of the PAP final closure, and therefore would reduce impacts to the final closure construction.

The depths of the GWET were selected using iterative, three-dimensional groundwater fate and transport modeling. Various depth intervals were tested during groundwater modeling simulations to identify optimal depths to achieve reduction in the time to reach GWPS while also remaining feasible to construct and operate. During these groundwater modeling simulations, the addition of a downgradient cutoff wall, intended to reduce inflows from Newton Lake from reaching the trench, was determined not to be beneficial and did not result in additional reduction in the time to reach GWPS. Thus, the use of cutoff walls as a corrective technology, either combined with GWE or as a standalone remedial measure, was not further considered in this CAAA-SIR.

Groundwater modeling for the Alternative 2 remedy (**Appendix B1**) estimated that GWPS would be met in 33 years after the implementation of source control and the remedy for all wells within the existing PAP monitoring well system.

3.2 Remedy Implementation

Implementation of the Alternative 2 source control with GWET remedy is expected to include multiple tasks spread out over three phases, including pre-construction activities (Phase 1), corrective action construction (Phase 2), and corrective action operations, maintenance, and closeout (Phase 3). Information for each phase is described in this section.

3.2.1 Phase 1: Pre-Construction Activities

Pre-construction activities would include further pre-design investigation, obtaining permits from other agencies, completing the final design of the remedy, and selecting a remedy implementation contractor via a bidding process. Information associated with each of these activities is descried below.

- Completing pre-design investigation, final design and bid activities, including:
  - Completing additional subsurface investigations and groundwater monitoring data to further refine the necessary extents of both the east and west trenches.
  - Completion of final design subsurface investigations, laboratory soil testing, engineering calculations, design drawings, specifications, and a construction quality assurance plan.
  - Bidding and selection of the GWET system construction contractor.
- Obtaining permits from other agencies including:
  - A general stormwater permit for construction site activities though IEPA, including construction stormwater controls and other best management practices (BMPs) such as silt fences and other measures.

- Illinois Department of Natural Resources (IDNR) Office of Water Resources, Dam Safety modification permit, for modification of the embankment (if determined to be necessary).
- A modification to the site's NPDES outfall for the management and discharge of extracted groundwater.

3.2.2 Phase 2: Corrective Action Construction

Corrective action construction would be initiated after pre-construction activities are complete. It would include mobilizing construction equipment to the site, preparing the site for construction activities, construction of the GWETs (which would include replacement of existing subgrade soils with permeable trench materials), and performing post-construction and site restoration activities.

Extraction trench construction is assumed to occur concurrently within the latter phases of the PAP closure construction, utilizing a contractor separate from the closure construction contractor. This would allow spoils generated during extraction trench construction to be placed beneath the final cover system within the PAP. This would likely mean that the GWET would be constructed after the PAP has been dewatered and CCR has been removed from the closure-by-removal portions of the PAP, but before the final cover system has been completed. This would also reduce the risk of GWET construction potentially destabilizing or causing other distress of the PAP perimeter dike. This would act as a risk mitigation measure, as dike destabilization could lead to a release CCR-impacted water that would be present prior to dewatering of the PAP.

Information associated with each of these activities is described below.

- The contractor would mobilize equipment, construction facilities, and materials to the site, and install stormwater BMPs around the construction area, construct a staging and laydown area, perform tree and vegetation clearing along the trench alignment, and construct temporary access roads leading from the extraction trench alignment to the existing site access road.
- The existing fire water supply line extending from the pump house adjacent to Newton Lake to the NEW would be abandoned and rerouted to make way for construction of the eastern extraction trench.
- Materials and earthwork required to construct an approximately 40-foot wide engineered, earthen work pad would be completed along the GWET construction zones. Grading and surface improvements would also be made to allow for vehicle access along the work pad.
  - For the east trench, this would include excavating into the existing grades in some areas and filling in other areas to provide a level work pad.
  - The existing area around the western trench is relatively level and would require stabilizing the ground surface.
  - Construction of the earthen work pad would include removing, relocating, or modifying existing site infrastructure to allow the platform to be constructed.
  - Affected infrastructure includes, but is not limited to, the existing fire water supply line that extends from the pump house to the plant area, existing monitoring wells and piezometers, fencing or electric utilities, or other features that may conflict with the construction of the trenches.

- Geotechnical monitoring would be performed to ensure the integrity of the PAP perimeter dikes during construction of the GWETs.
- The GWETs are assumed to be constructed using one-pass trenching methods. This method involves the use of a specialized one-pass trencher that would excavate subgrade soils, place collection piping and sumps, and backfill the trench with granular fill in a single operation. Other construction methods could be utilized if later determined to be appropriate based on site-specific subsurface conditions and constructability considerations.
  - The trenches would be excavated along the design alignment on the outer side of the former containment dike. Excavation would be conducted to the design depth, which terminates below the PMP (*i.e.*, Upper Drift unit). Perforated groundwater collection pipe would be laid in the trench base at an approximate 0.5 to 2% grade to slope towards the sump. The constructed trench is expected to be on the order of 3-feet wide.
  - Sump locations would be installed along the trenches. Sumps would consist of a pit to hold extracted water, a discharge line, a pneumatic pump to pump water to the discharge line, and an air compressor. Vertical sumps would be located every 200 to 300 feet along the length of each collection trench.
  - The trench would be backfilled with imported clean granular material and capped with low-permeability clay and topsoil at the surface, or a more erosion-resistant material (*i.e.*, a turf-reinforced mat or gravel), if needed to prevent stormwater erosion and infiltration of the trench.
  - Excavated soils (*e.g.*, spoils) would be placed into off-road dump trucks and hauled to the PAP for use as contouring fill beneath the final cover system (*i.e.*, subgrade). The material would be moisture-conditioned by spreading it in thin lifts and compacting in accordance with the subgrade fill specifications for the PAP final closure.
- An approximately 1-acre, geomembrane lined settling pond for management of extracted groundwater would be constructed using conventional construction equipment.
  - The settling pond would be sited to limit adverse impacts or conflicts with the PAP final closure construction and future solar redevelopment. The precise location of the pond would be evaluated during later design phases.
  - The settling pond is assumed to be approximately 1-acre in size and 5-feet deep. Soils from the settling pond excavation and/or from the construction of the eastern earthen work pad would be used to create 10-foot wide berms around the perimeter of the settling pond to contain extracted groundwater. All excavated soils from the settling pond would be managed within the settling pond footprint.
  - The settling pond may be located in the existing footprint of the former secondary pond located south of the PAP and the existing dikes may be utilized, as feasible.
- Electrical power drops would be installed in the eastern and western trench areas and the settling pond area, in order to provide power for pumping activities.
- Equalization tanks and transfer pumps would be placed at the surface adjacent to each trench due to the extended distance required for conveyance of extracted groundwater to the settling pond.

- Underground trenches would be excavated to allow placement of HDPE piping to convey extracted groundwater from the GWET to the settling pond and from the settling pond to either an existing or a new NDPES outfall to Newton Lake. Trenches would be backfilled with imported granular material.
  - An additional transfer pump may be required for discharge of extracted groundwater to the settling pond.
- Site restoration would be completed following the installation of the GWET. This would include repairing site infrastructure that was relocated or damaged during construction and minor regrading and seeding of disturbed areas.
- Temporary BMPs would also be installed during the site restoration period, if required in accordance with site land disturbance permits. The BMPs would be removed once vegetation is established.

3.2.3 Phase 3: Corrective Action Operations, Maintenance, and Closeout

Corrective action operations, maintenance, and closure would be initiated after corrective action construction is completed. It would include performing corrective action groundwater monitoring, and, after GWPS have been met, performing corrective action closeout and completion activities. Information associated with each of these activities is described below.

- Corrective Action O&M
  - Continued operation of the GWET would require routine, scheduled inspections and associated maintenance including, but not limited to, totalizer data collection, and maintenance of extraction pumps as well as other system components.
  - Non-routine maintenance that may occur during extended operation of the GWET may include tasks such as repair or replacement of the extraction pumps, repair or replacement of a system air compressor, and flushing or jetting of water conveyance lines in the event organic or inorganic solids accumulate on the interior walls.
  - Routine monitoring and compliance activities associated with the treatment and discharge of extracted water via the site's NPDES permit and either existing or new outfall would also be completed during this phase.
  - Ongoing operation and associated O&M activities of the GWET would continue for approximately 33 years or until GWPS are met. Once GWPS were achieved, the extraction system would be shut off and O&M would cease.
- Corrective Action Groundwater Monitoring
  - Regular corrective action groundwater monitoring would be conducted using a corrective action groundwater monitoring network designed in accordance with 35 I.A.C. § 845.680(c), which specified that wells must be installed within the plume of contamination that lies beyond the waste boundary.
    - Samples will be collected for major ions for evaluating groundwater chemistry and COCs. Samples will be collected on a quarterly basis initially and potentially reduced to a semiannual basis once five years of monitoring have occurred, in accordance with 35 I.A.C. 845.650(b)(4).

    - Monitoring results would be submitted to IEPA after each monitoring event, in addition to an annual groundwater monitoring and corrective action report, in accordance with 35 I.A.C. 845.640(e). The annual corrective action report would include an evaluation of the actual performance of the remedy relative to the remedy's expected performance.
    - Routine maintenance of the monitoring well network would be conducted during the monitoring period. This would include inspection of the wells, making repairs to the wells (as and if needed), and rehabilitation and/or replacing the wells to improve performance (as and if needed).
  - If the remedy does not achieve its expected performance, additional methods or techniques to achieve compliance with GWPS would be evaluated and, if feasible, implemented in accordance with 35 I.A.C. 845.680(b).

- Adaptive Management during Monitoring
  - Groundwater monitoring results would be evaluated and documented in in the monitoring reports submitted to IEPA, in accordance with 35 I.A.C. 845.610(e)
  - Remedy progress evaluation as part of adaptive site management may include additional investigation to inform updates to the CSM, groundwater, and geochemical models.
  - If remedy progress does not correspond with expectations, additional methods or techniques to achieve compliance with GWPS would be evaluated and, if feasible, implemented in accordance with 35 I.A.C. 845.680(b).
- Corrective Action Confirmation Monitoring and Completion
  - After GWPS have been met for all compliance wells for a period of three years, corrective action would be considered complete, per 35 I.A.C. 845.680(c).
    - It should be noted that post-closure care groundwater monitoring required for a 30-year period by 35 I.A.C. 845.780(c) would continue to occur after corrective action groundwater monitoring is expected to be completed.
  - After completion of the corrective action confirmation monitoring period, a Corrective Action Completion Report and Certification would be prepared and submitted to IEPA, in accordance with 35 I.A.C. 845.680(e).

3.2.4 Remedy Implementation Schedule

A feasibility-level implementation schedule for the Alternative 2 source control with GWET is provided in **Table B** on the following page.

Table B. Feasibility-Level Implementation Schedule – Alternative 2 Source Control with GWET

Implementation Phase	Implementation Task	Timeframe (Preliminary Estimates)
1: Pre-Construction	Agency Coordination, Approvals, and Permitting	18 to 24 months
	Final Design and Bid Process	24 to 36 months
	Timeframe to Complete Corrective Action Pre-Construction Activities	42 to 60 months after Corrective Action Plan Approval
2: Corrective Action Construction	Corrective Action Construction	9 to 18 months
	Timeframe to Complete Corrective Action Construction	9 to 18 months
3: Corrective Action O&M and Closure*	Corrective Action Monitoring (Time to Meet GWPS)	396 months
	Corrective Action Confirmation Monitoring	36 months
	Corrective Action Completion	6 months
	Timeframe to Complete Corrective Action O&M and Closeout	438 months
	Total Timeline to Complete Corrective Action	489 to 516 months (41 to 43 years)
	Total Timeline to Complete Corrective Action (after completion of source control)	438 months (36.5 years)

*Denotes a timeframe that is assumed to start after source control (*e.g.,* final closure of the SI) is complete and a corrective action construction permit application has been issued by IEPA, whichever is later.

It should be noted that Phases 1 and 2 were assumed to occur concurrently with closure construction, to allow spoils to be disposed of beneath the PAP final cover system. Therefore, the start of Phase 3 (Corrective Action O&M and closeout) is assumed to begin at the completion of source control (final closure of the PAP). In the event that Phases 1 and 2 could not be completed concurrently with source control, due to a delay in receiving permits or construction-related conflicts, the total schedule would likely increase.

3.2.5 Management of Extracted Groundwater

Extracted groundwater were assumed to be managed and treated by the GWE system and a newly-constructed settling pond, which would be located on site. However, other means for managing and treated extracted groundwater may be evaluated during later design phases. The settling pond would need to be sited to not conflict with site infrastructure. A settling pond approximately 1-acre in size was assumed to be sufficient to allow sediments to settle from extracted groundwater prior to discharge. Groundwater collected from the GWET would be sent to the settling pond via the pneumatic extraction pumps and transfer piping. Treated water would discharge via an existing or new NPDES outfall to Newton Lake. All groundwater would be discharged in accordance with site-specific NPDES permit requirements.

3.2.6 35 I.A.C. § 845.670(e)(1)(H) and 35 I.A.C. § 845.670(e)(3) Information

As requested by Gradient, the following information required by 35 I.A.C. § 845.670(e)(1)(H) and 35 I.A.C. § 845.670(e)(3) has been developed for the remedy. The information was developed based on preliminary-level information contained within the CMA for the NEW PAP and

then refined based on additional feasibility-level design activities performed as part of the development of this CAAA-SIR.

- Potential Need for Replacement of the Remedy – 35 I.A.C. § 845.670(e)(1)(H)
  - No replacement of the remedy is expected to be required during the design life of the remedy, although the remedy would require ongoing monitoring and maintenance to retain its effectiveness.
- Degree of Difficulty Associated with Constructing the Remedy – 35 I.A.C. § 845.670(e)(3)(A)
  - The remedy would require use of specialized contractors and equipment (*i.e.*, one-pass trenching contractor and equipment) for the installation of the trenches, in addition to general construction equipment (*i.e*., excavation and grading equipment).
  - Construction of the GWET would require modifications to the PAP dike in order to provide an earthen work pad for construction equipment. In addition to likely requiring a permit from the IDNR, the construction would require a detailed geotechnical design of the earthen work pad and geotechnical monitoring of the embankment for signs of distress during construction. In the event that distress is noted, construction may need to be temporarily paused to evaluate the sources of the distress and mitigate, if needed.
  - The performance of the GWETs will be dependent on the construction techniques. Continuous quality control monitoring will be required during construction as part of construction quality control and quality assurance activities.
  - The performance of the GWET would also be dependent on the actual hydraulic conductivity of the geologic units surrounding the trenches. This may require additional pre-design investigation activities to confirm existing hydrogeologic conditions of the proposed trench locations.
- Expected Operational Reliability of the Remedy - 35 I.A.C. § 845.670(e)(3)(B)
  - The GWET are expected to have high operational reliability if constructed in accordance with the design and specifications.
  - The extraction trench system is a mechanical system that would require routine maintenance in order to reliably operate, as outlined in the Corrective Action O&M, **Section 3.2.3**.
- Need to Coordinate with and Obtain Necessary Approvals and permits from Other Agencies - 35 I.A.C. § 845.670(e)(3)(C)
  - Agency permits would need to be obtained from IEPA for construction stormwater controls and BMPs, modifications to the site's NDPES permit, and potentially an IDNR Dam Safety modification permit. These permits typically take 18 to 24 months to obtain.
    - While these permits may also be obtained for the PAP final closure, the schedule for approval is uncertain for the final closure plan and the eventual CAP, therefore it is has been assumed that separate permit applications for closure and corrective action construction would be submitted.
- Availability of Necessary Equipment and Specialists - 35 I.A.C. § 845.670(e)(3)(D)

- Construction of the GWET would require a specialized contractor experienced with construction of similar types of trenches in similar geologic environments. Relatively few construction contractors with this experience, particularly using one-pass equipment, are available. The contractor would likely need specialized and often custom-built equipment.
- Specialists in one-pass trenching methods would also need to be utilized during the design and construction phase. The specialists would include design engineers, construction managers, and contractor staff experienced with trench construction and equipment operation.
- Geotechnical specialists would be needed to design the earthen work pad and monitor the PAP embankment for signs of distress during one-pass trench installation.
- These types of equipment and specialists have been utilized in the past for other similar types of extraction trench design and construction projects. However, there may be backlogs associated with the equipment and specialists, due to high existing demand for specialty ground improvement contractors and design specialists who are supporting similar types of projects in the electric utility, dam/levee, and other market sectors. These backlogs could add additional delay to the project schedule above current assumptions.
- Specialists would be needed to maintain the GWE system during the operational timeframe and are currently being utilized as part of GWE O&M. System components that require maintenance include totalizers, instrumentation, and the extraction and transfer pumps.
    - Additionally, specialists are occasionally needed for non-routine O&M which may include flushing or jetting of the conveyance lines, replacement of faulty system components, replacement of pumps or pump controllers, and replacement of faulty system instrumentation.
    - Specialists and replacement equipment are generally available within proximity (100 to 300 miles) of the site but some of the more complex equipment, including the transfer pumps and transfer pump controller, may have extended lead times for replacement or servicing.
    - Equipment and specialists for field data collection, groundwater sampling, analysis, and periodic corrective action groundwater monitoring and reporting would be required for the remedy. As described in **Section 2.2.3**, the equipment and specialists required to support these activities are currently performing routine groundwater monitoring in accordance with 35 I.A.C. § 845.220(c)(4). Therefore, no new equipment or specialists are required for groundwater monitoring in this alternative.
        - The equipment and specialists required for site groundwater monitoring and analysis are currently performing this work in accordance with 35 I.A.C. § 845.220(c)(4). Therefore, no new equipment or specialists are required for groundwater monitoring for this alternative.

- Available Capacity and Location of Needed Treatment, Storage, and Disposal Services – 35 I.A.C. § 845.670(e)(3)(E)
    - Wastes generated during GWET construction would be limited to spoils; these would be disposed of onsite in the PAP, during closure construction, as compacted contouring fill beneath the final cover system. Completing the extraction trench construction at the same

time as the PAP closure would provide sufficient on-site capacity for the disposal of generated spoils.

- The extraction trench system would send extracted groundwater to a settling pond on-site to settle solids extracted during groundwater recovery via the pneumatic extraction pumps and transfer piping. This settling pond would be new construction that would need to be sited, designed, constructed, and maintained.
- The settling pond would need to be sited to not conflict with planned solar redevelopment, wetlands, floodplains, or other site infrastructure.

4. MATERIAL QUANTITY, LABOR, AND MILEAGE ESTIMATES

Estimates of material quantities, total labor hours, and mileage were prepared for Alternative 2 source control with GWET, to support Gradient in preparing a CAAA. Estimates were prepared for the construction and O&M of each remedy. Estimates were not prepared for Alternative 1 source control with GWP as the alternative does not require remedial construction or O&M of a physical remedy.

Estimates were prepared utilizing the following approach:

- Major implementation (*e.g.,* construction) components and line items were identified, in accordance with the remedy implementation narratives contained within this CAAA-SIR.
- Construction quantities were estimated based on quantity estimates for volumes, areas, and units, as obtained from the feasibility-level engineering drawings and schedules included within this CAAA-SIR.
- RS Means Heavy Construction Cost Data (RS Means) [12] was utilized to estimate the crew size, equipment description, and daily output associated with each line item.
- For line items where RS Means data was not available, the crew size, equipment description, and daily output were estimated based on Ramboll's experience, information from contractors, and/or information from material suppliers.
- For the Alternative 2 source control with GWET remedy, daily construction and O&M labor mobilization miles were estimated assuming a weekly mobilization/demobilization from Chicago (720 miles round trip) and a local commute of 40 miles round trip per day. The number of working days and hours per week were estimated from the construction schedule developed for each remedy.
- Estimates of material delivery miles were prepared based on Ramboll's experience.

The detailed material quantity, labor, and mileage estimates are provided in **Appendix C** for each alternative.

5. REFERENCES

[1] "Illinois Administrative Code, Title 35, Subtitle G, Chapter I, Subchapter J, Part 845: Standards for The Disposal Of Coal Combustion Residuals In Surface Impoundments," effective April 21, 2021.

[2] Code of Federal Regulations, "Title 40, Chapter I, Subchapter I, Part 257, Subpart D, Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments," April 17, 2015.

[3] Ramboll Americas Engineering Solutions, Inc, "2024 35 I.A.C. § 845 Annual Groundwater Monitoring and Corrective Action Report. Primary Ash Pond, Newton Power Plant," April 2025.

[4] HDR, Inc., "Illinois Power Generating Company, Primary Ash Pond, Final Closure Plan, Newton, Illinois," July 2022.

[5] HDR, Inc., "Illinois Power Generating Company, Primary Ash Pond, Final Closure Plan, Newton Power Plant Version 1," April 1, 2025.

[6] United States Environmental Protection Agency, "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites," OSWER Directive Number 9200.4-17P, April 21, 1999.

[7] Ramboll, Groundwater Modeling Report, Primary Ash Pond, Newton Power Plant, Newton, Illinois, 2025.

[8] Ramboll Americas Engineering Solutions, Inc, "Groundwater Polishing Evaluation Report, Primary Ash Pond, Newton Power Plant," 2025.

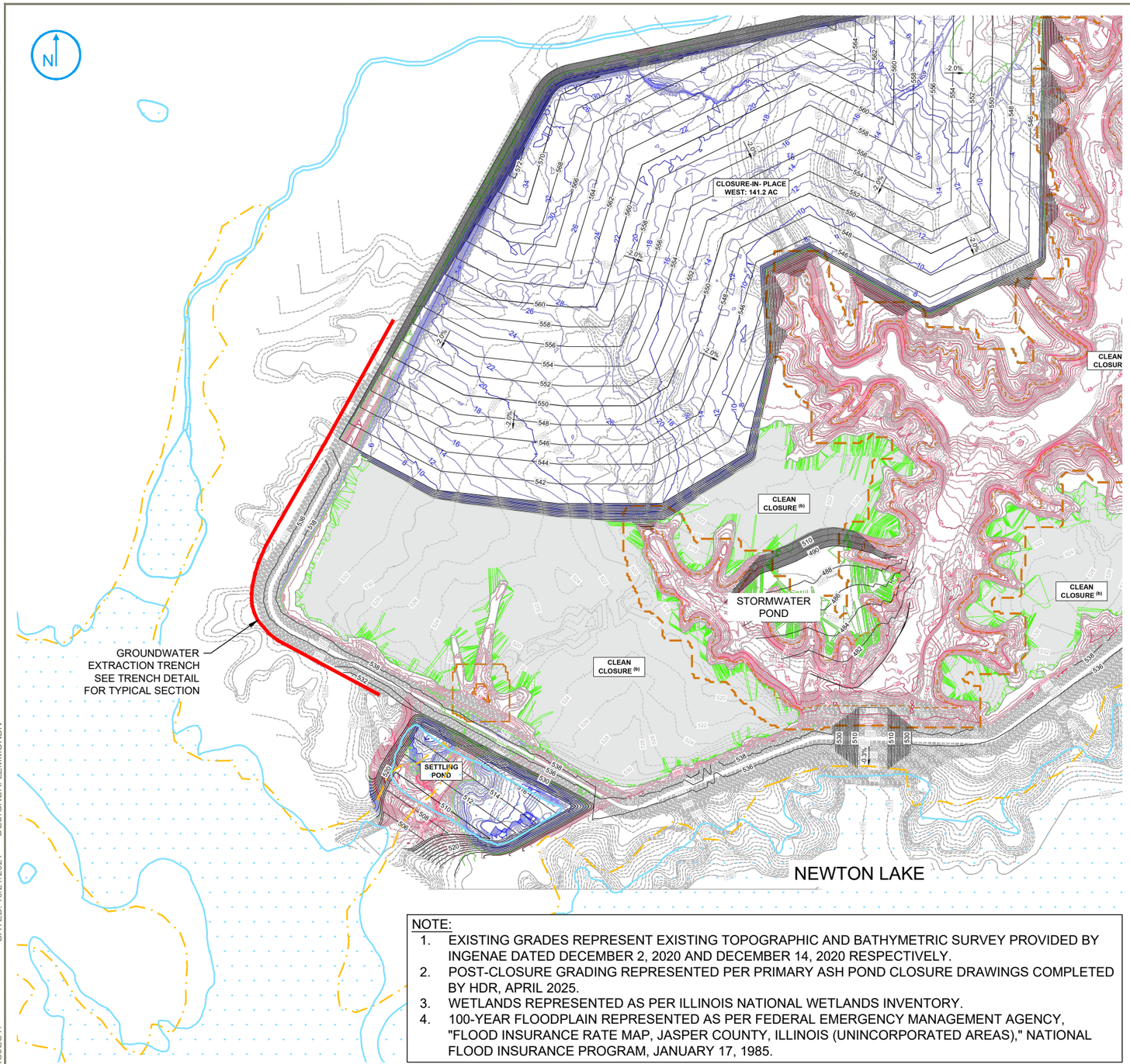
[9] Federal Emergency Management Agency, "Flood Insurance Rate Map, Jasper County, Illinois (Unincorporated Areas), National Flood Insurance Program," January 17, 1985.

[10] Federal Emergency Management Agency, ""National Flood Hazard Layer," U.S. Department of Homeland Security," 26 August 2021. [Online]. Available: https://www.fema.gov/flood-maps/national-flood-hazardlayer.

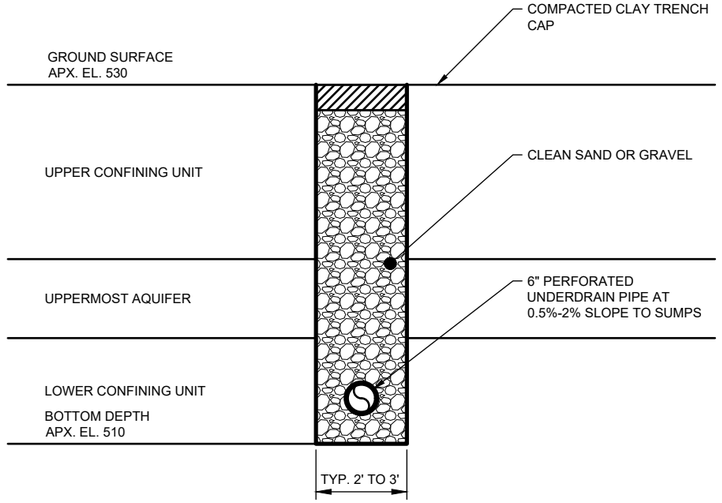
[11] U.S. Fish and Wildlife Service, "National Wetlands Inventory, Surface Waters and Wetlands," [Online]. Available: https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/.

[12] Gordian, RS Means Data version 8.7, Effingham, Illinois: Gordian, 2023.

APPENDIX A
FEASIBILITY-LEVEL DESIGN DRAWINGS FOR ALTERNATIVE 2 REMEDY



NOTE:
1. EXISTING GRADES REPRESENT EXISTING TOPOGRAPHIC AND BATHYMETRIC SURVEY PROVIDED BY INGENAE DATED DECEMBER 2, 2020 AND DECEMBER 14, 2020 RESPECTIVELY.
2. POST-CLOSURE GRADING REPRESENTED PER PRIMARY ASH POND CLOSURE DRAWINGS COMPLETED BY HDR, APRIL 2025.
3. WETLANDS REPRESENTED AS PER ILLINOIS NATIONAL WETLANDS INVENTORY.
4. 100-YEAR FLOODPLAIN REPRESENTED AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY, "FLOOD INSURANCE RATE MAP, JASPER COUNTY, ILLINOIS (UNINCORPORATED AREAS)," NATIONAL FLOOD INSURANCE PROGRAM, JANUARY 17, 1985.



TRENCH DETAIL

NOT TO SCALE

WORK PAD DETAIL

NOT TO SCALE

BODY OF WATER

WETLANDS BOUNDARY (SEE NOTE 3)

100-YR FLOODPLAIN (SEE NOTE 4)

MONITORING WELLS

CLOSURE IN PLACE WASTE BOUNDARY

CLOSURE BY REMOVAL BOUNDARY

360 MAJOR CONTOUR

GROUNDWATER EXTRACTION TRENCH

0 600 Feet

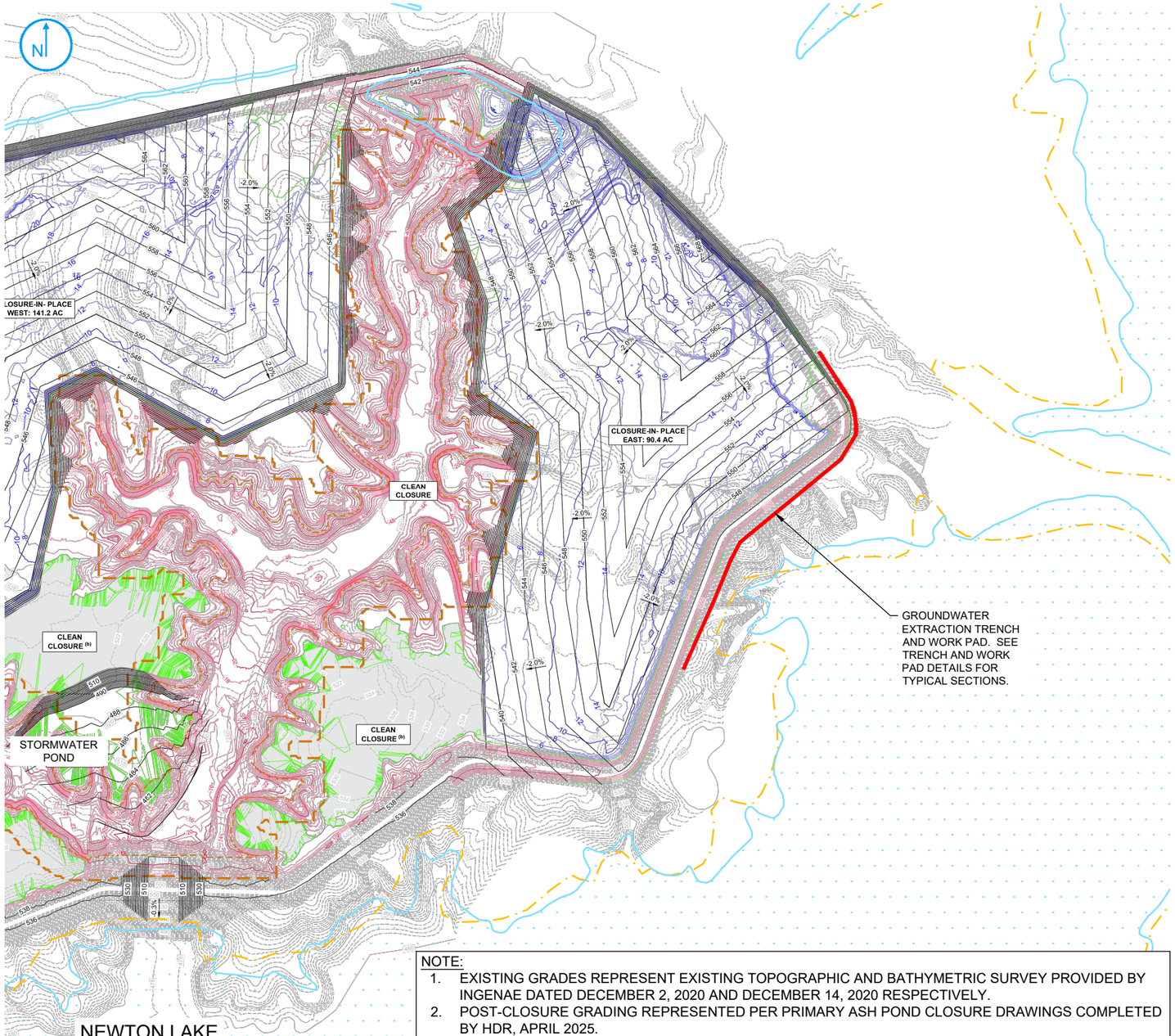
WEST EXTRACTION TRENCH
FEASIBILITY-LEVEL DESIGN

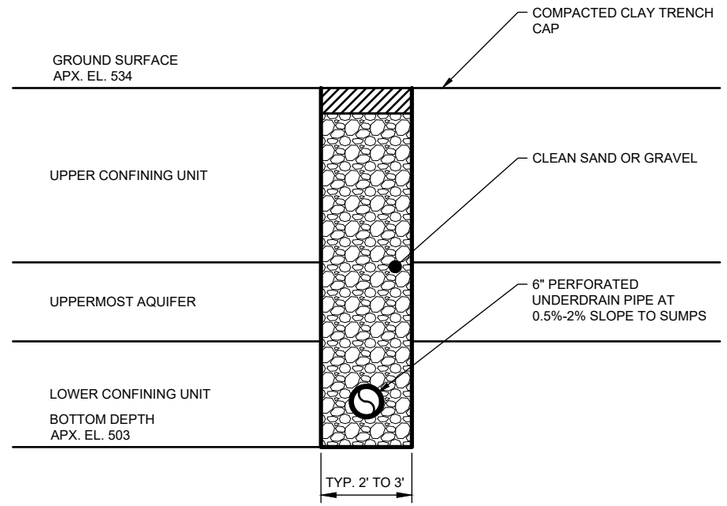
Newton PAP
Newton Power Plant 3275 N 500th St Newton, IL 62448

FIGURE 1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY
RAMBOLL

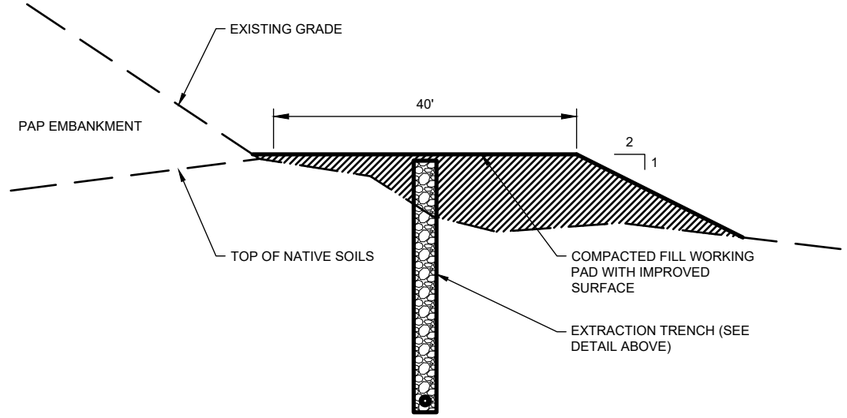
DATED: 10/21/2024 C:\DOCS\Project Files\4 Delivery\40 WIP\401 Civil\Drawings\03_CAAA-SIR\NEW-PAP CAAA-SIR_HDR_Overlay.dwg
PROJECT: ----
1940103584-008 Vistra Energy NEW-PAP





TRENCH DETAIL

NOT TO SCALE



WORK PAD DETAIL

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BODY OF WATER

WETLANDS BOUNDARY (SEE NOTE 3)

100-YR FLOODPLAIN (SEE NOTE 4)

MONITORING WELLS

CLOSURE IN PLACE WASTE BOUNDARY

CLOSURE BY REMOVAL BOUNDARY

360 MAJOR CONTOUR

GROUNDWATER EXTRACTION TRENCH

0 600 Feet

EAST EXTRACTION TRENCH
FEASABILITY-LEVEL DESIGN

Newton PAP
Newton Power Plant 3275 N 500th St Newton, IL 62448

FIGURE 2

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

DATED: 10/21/2024 DESIGNED: ---- DRAWN: ---- CHECKED: ----
PROJECT: ----
103584-008 Vistra Energy NEW-PAP\Project Files\4 Delivery\40 WIP\401 Civil\Drawings\03_CAAA-SIR\NEW-PAP CAAA-SIR_HDR_Overlay.dwg
Plotted: 21 Oct 2024 - 2:46pm By: Carpenter, Ryan ASIRUS-1940103584-008

APPENDIX B
GROUNDWATER MODELING DOCUMENTS

APPENDIX B1
GROUNDWATER MODELING TECHNICAL MEMORANDUM

Intended for
Illinois Power Generating Company

Date
April 1, 2025

Project No.
1940103584-008

GROUNDWATER MODELING TECHNICAL MEMORANDUM

PRIMARY ASH POND NEWTON POWER PLANT

NEWTON, ILLINOIS

IEPA ID NO. W0798070001-01

RAMBOLL Bright ideas. Sustainable change.

GROUNDWATER MODELING TECHNICAL MEMORANDUM PRIMARY ASH POND NEWTON POWER PLANT NEWTON, ILLINOIS

Project name	**Newton Power Plant Primary Ash Pond**
Project no.	**1940103584-008**
Recipient	**Illinois Power Generating Company**
Document type	**Groundwater Modeling Technical Memorandum**
Revision	**FINAL**
Date	**April 1, 2025**
Prepared by	**Pejman Rasouli, PhD**
Checked by	**Beth Richter**
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TABLES (ATTACHED)

Table 1	Predicted Sulfate Concentrations at PAP Monitoring Wells and Simulated Time to Achieve Compliance
Table 2	Estimated Extraction Trench Elevation and Cutoff Wall Depth

FIGURES (ATTACHED)

Figure 1	Location of Proposed Extraction Trenches and Monitoring Wells with Exceedances.
Figure 2	Time-series of Predicated Sulfate Concentrations.
Figure 3	Time-series of Extraction Rates at Trenches

APPENDICES

Appendix A	MODFLOW and MT3DMS Modeling Files (Electronic Only)

ACRONYMS AND ABBREVIATIONS

35 I.A.C.	Title 35 of the Illinois Administrative Code
bgs	below ground surface
CAAA	Corrective Action Alternatives Analysis
CAP	Corrective Action Plan
CCR	coal combustion residual(s)
CBR	closure-by-removal
CIP	closure-in-place
cm/s	centimeters per second
ft/d	feet per day
ft^2/day	square feet per day
GMR	Groundwater Modeling Report
gpm	gallons per minute
GWPS	groundwater protection standard(s)
HFB	horizontal flow barrier
ID	identification
IEPA	Illinois Environmental Protection Agency
IPGC	Illinois Power Generating Company
IRM	interim remedial measure
LCU	lower confining unit
mg/L	milligrams per liter
NAVD88	North American Vertical Datum of 1988
NID	National Inventory of Dams
No.	number
NPP	Newton Power Plant
PAP	Primary Ash Pond
Ramboll	Ramboll Americas Engineering Solutions, Inc.
Tech Memo	Groundwater Modeling Technical Memorandum
UA	uppermost aquifer
UCU	upper confining unit
UD	upper drift

EXECUTIVE SUMMARY

Ramboll Americas Engineering Solutions, Inc. (Ramboll) has prepared this Groundwater Modeling Technical Memorandum ("Tech Memo") on behalf of the Newton Power Plant (NPP), operated by Illinois Power Generating Company (IPGC), in accordance with requirements of Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845. This document presents the results of additional predictive groundwater modeling simulations in support of the Corrective Action Alternatives Analysis (CAAA) required by 35 I.A.C. § 845,670(e), for the Primary Ash Pond (PAP) in Newton, Illinois, identified by Illinois Environmental Protection Agency (IEPA) identification (ID) number (No.) W0798070001-01 and National Inventory of Dams (NID) No. IL50719.

This document presents the evaluation of two potential corrective action remedial alternatives aimed at achieving compliance with applicable groundwater standards. The primary objective of the groundwater modeling effort was to assess the long-term effectiveness and the timeframe required to achieve Groundwater Protection Standards (GWPS)[1] for two scenarios:

- Alternative 1. source control with groundwater extraction trenches, and
- Alternative 2. source control with groundwater extraction trenches augmented by a cutoff wall.

Both alternatives assume that the source control presented in the Final Closure Plan Version 1 (HDR, 2025) for the PAP would also be implemented. Source control is the primary corrective action for the PAP and would include removing free liquids from the CCR and completing a hybrid closure-in-place (CIP) by consolidating the current PAP footprint from 404 acres down to 252 acres (the CIP area) and installing a geomembrane final cover system. The predictive groundwater model simulations were divided into three distinct periods: current conditions, dewatering and closure construction, and post-closure.

Under the baseline closure-in-place (CIP) scenario (Ramboll 2025b), the predicted concentration of sulfate in monitoring wells attained the GWPS within 34 years. The Corrective Action Plan (CAP) simulations were extended from the baseline CIP model (Ramboll, 2025b), to evaluate the performance of Alternatives 1 and 2 described above. Modeling involved the use of MODFLOW and MT3DMS for simulating groundwater flow and contaminant transport.

This memorandum examines two remedial alternatives: (1) Source control with groundwater extraction trenches, and (2) Source control with groundwater extraction trenches and a cutoff wall intended to reduce flow volumes into the eastside trench from the adjacent Newton Lake. The first alternative includes constructing two downgradient groundwater extraction trenches near APW10 and APW02, located between the PAP and Newton Lake. The second alternative involves adding a cutoff wall adjacent to the eastside trench.

The predictive model includes these new components. The optimal depths for the extraction trenches were determined through a series of iteration of three-dimensional groundwater fate and transport models. Various depth intervals were examined in these simulations to find the optimal balance between reducing the time needed to attain the GWPSs and maintaining the practicality of construction and operation. Factors taken into account during modeling included

[1] Sulfate was selected for modeling source control presented in the Final Closure Plan and was identified as a surrogate for the exceedances of lithium and TDS, as described in the GMR (Ramboll, 2022).

how the height of the trench's water elevation (stage) compared to that of Newton Lake, as well as the effects of different penetration depths of cutoff wall.

Predictive modeling of Alternative 2, indicated that the addition of a cutoff wall did not enhance the effectiveness of the extraction trenches in reducing the time to reach GWPS and also did not significantly reduce volumes of extracted groundwater.

1. INTRODUCTION

1.1 Background

This Tech Memo is prepared to evaluate how two potential corrective action remedial alternatives would achieve compliance with the applicable groundwater standards in support of the CAAA. The groundwater modeling efforts consist of predictive fate and transport modeling to assess the long-term effectiveness and time for achieving GWPS for sulfate for the following groundwater remedial alternatives: (1) source control with groundwater extraction trenches, and (2) source control with groundwater extraction trenches augmented with a cutoff wall. In both cases, source control is the CIP scenario that was selected as the closure alternative for the PAP (HDR, 2025).

1.2 Previous Groundwater Modeling Reports

In accordance with requirements of 35 I.A.C. § 845, Ramboll developed the Newton MODFLOW and MT3DMS Groundwater flow and transport models (original model) in 2022 and submitted the report (Ramboll, 2022) as an attachment to the Construction Permit Application for NPP PAP in June 2022. The groundwater model was revised in 2025 (Ramboll, 2025b) and the results were included in an attachment to the revised Construction Permit Application (HDR, 2025).

The COCs currently exceeding[2] the GWPS at compliance groundwater monitoring wells that are attributable to the PAP as of the 2024 Annual Report (Ramboll, 2025a) include lithium, sulfate, and TDS. A surrogate parameter was selected for groundwater flow and transport modeling that is a conservative parameter (i.e., aqueous concentrations are predominantly affected by physical processes such as dilution and dispersion rather than by chemical attenuation mechanisms) and therefore represents the maximum plume extent. The use of a conservative parameter to represent plume extent and clean-up times is consistent with USEPA modeling examples intended for evaluating relative remedy effectiveness[3]. For modeling purposes, sulfate was identified as the surrogate, and it was assumed that sulfate would not significantly sorb or chemically react with aquifer solids (soil adsorption coefficient [Kd] was set to 0 milliliters per gram [mL/g]) which is a conservative estimate for predicting contaminant transport times in the model. Sulfate transport is likely to be affected by both chemical and physical attenuation mechanisms (i.e., adsorption and/or precipitation reactions as well as dilution and dispersion). Physical attenuation (dilution and dispersion) of contaminants in groundwater is simulated in the groundwater computer models. Chemical attenuation mechanisms and their effect on modeled times for exceedances to reach the GWPS are discussed in the Groundwater Polishing Evaluation Report (Ramboll, 2025c) and summarized in **Section 3.2.**

Prior modeling results indicated that groundwater flow downward through the upper drift (UD) and upper confining unit (UCU) into the uppermost aquifer (UA) which is consistent with the Hydrogeologic Site Characterization Report (Ramboll, 2021). Groundwater in the UA flows from north to south/southwest and converges near a former drainage feature located west of the PAP. (Ramboll, 2022). The 2022 MODFLOW and MT3DMS models were used to evaluate two closure scenarios, including CCR consolidation and CIP, and closure-by-removal (CBR). The CIP was

[2] Throughout this document, "exceedance" or "exceedances" is intended to refer only to potential exceedances of proposed applicable background statistics or Groundwater Protection Standards (GWPSs) as described in the proposed groundwater monitoring program, which was submitted to the IEPA on October 31, 2021 as part of IPGC's operating permit application for the PAP. That operating permit application, including the proposed groundwater monitoring program, remains under review by the IEPA and, therefore, IPGC has not identified any actual exceedances.

[3] USEPA. 1994. Ground-Water Modeling Compendium. Second Edition. Office of Solid Waste and Emergency Response. 500-B-94-004. July.

selected as the preferred alternative to meet regulatory requirements for closure of the PAP. The groundwater remedial alternatives evaluated in this memo are an extension of the model simulations developed for the CIP scenario (source control CIP scenario) in 2025 (Ramboll, 2025b).

2. BASELINE SIMULATION OF CLOSURE-IN-PLACE (CIP)

The revised GMR (Ramboll, 2025b) simulates closure of the PAP as described in the *Primary Ash Pond Final Closure Plan* (HDR, 2025). The PAP will be closed using a consolidate-and-cap approach consisting of excavating nearly 3.6 million cubic yards of CCR and placing it in a consolidated CCR footprint at an elevation greater than 12 feet above the uppermost aquifer (UA) and above the estimated post-closure water table (HDR, 2025). The results of the revised groundwater modeling are summarized below. No changes were made to the 2025 revised GMR model prior to simulation of remedial alternatives.

2.1 Model Description

CIP was simulated using the calibrated historical flow and transport model for the PAP as a base, to be consistent with the specifications and timelines expressed in the *Primary Ash Pond Final Closure Plan Version 1* (HDR, 2025).The model was developed to simulate three explicit periods of closure: current conditions (Period 1), dewatering and closure construction (Period 2), and post-closure (Period 3) (Ramboll, 2025b).

2.2 Simulation Results

Figure 1 presents the location of monitoring wells with exceedances of the sulfate GWPS and proposed extraction trenches at the west and east side of PAP. **Figure 2(A)** presents concentrations of sulfate following closure at five (APW02, APW04, APW05S, APW10, and APW12) of the 26 PAP monitoring wells which have average or maximum concentrations observed between 2015 and 2021 exceeding the GWPS of 400 milligrams per liter (mg/L) (**Table 1**). In the baseline CIP scenario, predicted concentration of sulfate attained the GWPS at these locations within approximately 1 to 34 years of completion of the CIP remedy, with a mean time of 12 years (**Figure 2(A) and Table 1**). Sulfate concentrations in AWP04 were predicted to attain 400 mg/L within 34 years which is the longest time to reach below GWPS (**Table 1** and **Figure 2(A)**).

3. CORRECTIVE ACTION PLAN ALTERNATIVE SIMULATIONS

The CAP remedial alternatives (groundwater extraction trench and cutoff wall) were simulated to evaluate effects of additional remedial actions, beyond CIP, on sulfate concentrations at the PAP. The CIP simulations provided in the revised GMR (Ramboll, 2025b) provide a baseline source control scenario for comparison to additional remedial action.

The groundwater modeling activities documented in this report utilized the following software and model codes, consistent with previous modeling:

- Groundwater flow was simulated in three dimensions using the original MODFLOW version 88/96.
- The Horizontal Flow Barrier (HFB) package of MODFLOW was used to simulate the cutoff wall scenario.
- Contaminant transport was simulated in three dimensions using MT3DMS.
- Use of Groundwater Vistas as a MODFLOW/MT3DMS processing tool

3.1 Alternative 1. CIP with Groundwater Extraction Trenches

3.1.1 Overview

This remedy alternative, source control with groundwater extraction, would include the construction of two downgradient groundwater extraction trenches. **Figure 1** presents the location of monitoring wells with exceedances and proposed extraction trenches at the west and east side of PAP. The trenches would be located in the vicinity of APW10 (east side of PAP) and APW02 (west side of PAP) and will be located between the PAP and the adjacent Newton Lake in both areas. The goal of this alternative is to capture impacted groundwater from the UA and PMP to reduce the time to reach GWPS while limiting inflow from the lake. The trench at APW10 will extend from grade surface to approximately 30 feet below ground surface (bgs) to an approximate elevation of 503 feet[4]. The total length of the APW10 groundwater extraction trench will be approximately 1,400 feet, extending along the exterior toe of the former perimeter dike of the PAP. The trench at APW2 will extend from ground surface to approximately 25 to 35 feet bgs to an approximate elevation of 510 feet. The total length of the APW02 groundwater extraction trench will be approximately 2,500 feet, extending along the exterior toe of the former perimeter dike of the PAP.

3.1.2 Model Approach

To simulate Alternative 1 the CIP predictive model, as presented in the revised GMR, was modified to include a groundwater extraction trench situated along the berm near APW10 (east side of PAP) and APW02 (west side of PAP). These wells are located between PAP and the adjacent Newton Lake in both areas, aiming to capture groundwater from PAP. The depths of the extraction trenches were selected using iterative, three-dimensional groundwater fate and transport modeling. Various depth intervals were tested during groundwater modeling simulations to identify optimal depths to achieve reduction in the time to reach GWPSs while also

[4] All elevations in this report are in the North American Vertical Datum of 1988 (NAVD88), unless otherwise noted.

remaining feasible to construct and operate. Modeling considerations included the trench stage relative to Newton Lake's stage. **Table 2** presents a summary of the model construction details for the extraction trenches for each scenario.

Extraction trenches are represented in the model using the Drain package of MODFLOW, with conductance values set to 10,000 square feet per day (ft^2/day) that corresponds to concrete sand hydraulic conductivity (2.2 x 10^{-2} cm/sec or 62.4 ft/day), to facilitate adequate water flow. The drain stage is assumed to be 1 foot above the bottom of the drain cell, providing sufficient space for the placement of a perforated extraction pipe. In Alternative 1, an extraction trench was implemented in the eastern side, with the drain stage set at an elevation of 503 ft, which is lower than the lake's head elevation of 504.62 ft due to the presence of exceedances in the UA well APW10. The extraction trench on the west side uses a drain stage of 510 ft, which is greater than the lake elevation because exceedances are limited to the shallow PMP wells APW02.

3.1.3 Alternative 1 Simulation Results

Figure 2(B) presents concentrations of sulfate simulated for Alternative 1 following closure at the same five wells with sulfate exceedances (**Table 1**). In the Alternative 1 scenario, predicted concentration of sulfate attained the GWPS within approximately 1 to 33 years of completion of the CIP remedy, with a mean time of 9 years (**Figure 2(B) and Table 1**). Sulfate concentrations in AWP04 were predicted to attain 400 mg/L within 33 years which is the longest time to attain the GWPS for this alternative.

The approximate extraction rates from the trenches are initially 10.7 and 0.2 gpm for the eastside and westside trenches, respectively. Extraction rates are predicted to decrease with time such that at the time the GWPS is attained extraction rates have declined to approximately 1.2 and 0.1 gallons per minute (gpm) for eastside and westside trenches respectively (**Figure 3**).

3.2 Alternative 2. CIP with Groundwater Extraction Trenches and Cutoff Wall

3.2.1 Overview

This remedy alternative, source control with groundwater extraction and cutoff wall, is based on Alternative 1 with the addition of a cutoff wall adjacent to the east side trench to determine if the additional cutoff wall will improve time to reach the GWPS and/or decrease the volume of extracted water from the eastern trench which is in close proximity to Newton Lake.

3.2.2 Model Approach

The cutoff wall was represented in the model using the HFB package of MODFLOW, for the purpose of reducing groundwater inflows from Newton Lake into the trench. The wall thickness is set at 3 feet, and its hydraulic conductivity at 1 x 10^{-7} centimeters per second (cm/s) or 0.000283 feet per day (ft/d), assuming a cement-bentonite or soil-bentonite backfill composition. The cutoff wall extends from the ground surface to the bottom of model layer 6 which is lower than the base of the drain which is in layer 5. Layer 6 is underlain by the UA and Lower Confining Unit (LCU), consisting of sand, gravel, silty clay (layer 6), and lean clays of Smithboro (layer 7) with horizontal hydraulic conductivities ranging from 1 x 10^{-3} ft/d. In general, the lower cutoff wall elevation is between 473 to 476 feet. The cutoff wall was introduced solely in the eastside, focusing on the area where APW10 has observed exceedance in the UA. The east side extraction

trench, adjacent to APW10, intersects each of the four model layers (namely, layers 1 through 4) with the drain cells' stage set at elevation of 503 feet (**Table 2**).

3.2.3 Alternative 2 Simulation Results

Figure 2(C) presents concentrations of sulfate simulated for Alternative 2 following closure at the same five wells with sulfate exceedances (**Table 1**). In the Alternative 2 scenario, predicted concentration of sulfate attained the GWPS within approximately 1 to 33 years of completion of the CIP remedy, with a mean time of 9 years (**Figure 2(C) and Table 1**). Sulfate concentrations in AWP04 were predicted to attain 400 mg/L within 33 years which is the longest time to attain the GWPS for this alternative.

The extraction rates for Alternative 2 did not change significantly from Alternative 1. The approximate extraction rates from the trenches are initially 10.7 and 0.2 gpm for the eastside and westside trenches, respectively. Extraction rates are predicted to decrease with time such that at the time the GWPS is attained extraction rates have declined to approximately 1.2 and 0.1 gallons per minute (gpm) for eastside and westside trenches respectively (**Figure 3**).

3.3 Assessment of Geochemical Processes

This groundwater flow and transport model estimates the time for sulfate to reach the GWPS under different potential corrective actions based on physical components of groundwater polishing. As described in the Groundwater Modeling Report submitted with the construction permit, it was assumed that sulfate would not significantly sorb or chemically react with aquifer solids (distribution coefficient [Kd] was set to 0 milliliters per gram [mL/g]), which is a conservative estimate for estimating contaminant transport times.

A Groundwater Polishing Evaluation Report (GPR) was prepared as an attachment to the Corrective Actions Alternative Analysis (CAAA) prepared by Gradient for Newton Power Plant Primary Ash Pond (NPP PAP). The geochemical modeling effort presented in the GPR supports the assessment of groundwater polishing as a component of the proposed corrective action by evaluating the potential for chemical attenuation of constituents of concern COCs before and after source control as a means of contextualizing the times estimated in the flow and transport model. The GPR also provides an initial foundation for understanding groundwater chemistry to inform adaptive site management as a key component of the Corrective Action Groundwater Monitoring Program.

Results from the speciation modeling presented in the GPR show that a substantial proportion of lithium and minimal amount of sulfate are retained in the solid phase under current conditions. Solid sorbing phases are anticipated to be stable as current geochemical conditions return to background conditions following source control. Desorption of lithium may result in transient increases in concentration after source control is completed. Desorption from sulfate from the solid phase is unlikely to effect on dissolved phase concentrations after source control is completed.

Results provided in the GPR confirm that sulfate does not significantly sorb or chemically react with aquifer solids; therefore, geochemical changes are not expected to have an effect on the modeled time to reach the GWPS for sulfate. GPR modeling results interpreted in conjunction with site-specific observations indicate that mobilization of currently sorbed lithium may contribute to dissolved phase concentrations of lithium in groundwater after source control, but

the magnitude of that desorption may be substantially lower than indicated by the model results. Adaptive site management, a critical aspect of every corrective action considered in the CAAA, will be used to monitor performance of the corrective action plan.

The GPR modeling evaluates return to background conditions following source control which will be completed for all of the remedial alternatives simulated in the groundwater modeling technical memorandum; as such, any transient mobilization of lithium that may occur as modeled in the GPR has the same potential to occur regardless of the remedial alternative selected. In other words, because all the remedial alternatives evaluated include the same source control measure of consolidation with a protective cover system, the potential for mobilization of lithium modeled in the GPR will be the same for all remedial alternatives evaluated.

The results of geochemical modeling do not suggest any modifications or adjustments are necessary to the groundwater model estimates of time to reach the GWPS for the following reasons:

- Sulfate which was modeled as a surrogate for all potential GWPS exceedance parameters does not significantly sorb or chemically react with aquifer solids; therefore, geochemical changes are not expected to have an effect on modeled time to reach the GWPS.
- Potential mobilization of lithium modeled in the GPR will be the same for all remedial alternatives evaluated; therefore, the groundwater model can be used to compare and contrast all of the remedial alternatives.

4. CONCLUSIONS

The groundwater modeling efforts in this tech memo consist of flow and transport modeling using MODFLOW and MT3DMS to assess the time to achieve GWPS for sulfate for two different remedy alternatives: (1) source control with groundwater extraction trenches, and (2) source control with groundwater extraction trenches augmented by a cutoff wall. The effects of these two corrective measures were evaluated along with the CIP scenario that was selected as the closure alternative for the PAP in 2022 and revised as documented in April 2025 (HDR, 2025).

The results of groundwater flow and transport modeling indicate that there is no significant difference in the time to attain the GWPS in compliance monitoring wells between the three scenarios (**Table 1**). Alternatives 1 and 2 attained the GWPS one year earlier than the CIP scenario. Timeframes to attain GWPS in the groundwater monitoring wells summarized in **Table A** below indicate that 60% of progress is expected to occur within the first five years for all scenarios. Alternatives 1 and 2 show more improvement at 10 years due to the reduced time to attain the GWPS at UD well APW02 compared to CIP. APW04 is the last well predicted to attain the GWPS approximately 30 years after source control is complete.

Table A. Estimated Timeframes to Attain GWPS in Groundwater Monitoring Wells

Scenario	Percentage of Wells Predicted to Attain the GWPS				
	1 year**	5 years**	10 years**	33 years**	34 years**
Baseline (CIP)	40 %	60 %	60 %	80 %	100 %
Alternative 1	40 %	60 %	80 %	100 %	100 %
Alternative 2	40 %	60 %	80 %	100 %	100 %

*: 5 wells were used to estimate time to reach GWPS
**: Years counted starting from completion of source control.

The approximate extraction rates from the trenches in Alternative 1 are initially 10.7 and 0.2 gpm for the eastside and westside trenches, respectively. Extraction rates are predicted to decrease with time such that at the time the GWPS is attained extraction rates have declined to approximately 1.2 and 0.1 gallons per minute (gpm) for eastside and westside trenches, respectively. Placement of the cutoff wall adjacent to the eastside trench resulted in no significant reduction in the estimated extraction rates. The extraction rates for Alternative 2 did not change significantly from Alternative 1 both start at approximately 10.7 gpm and decrease to 1.2 gpm at the time GWPS is attained for eastside trench and 0.2 to 0.1 for westside trench. The construction of a low-permeability cutoff wall did not have a significant impact on the performance of the extraction trenches in terms of reducing the time to reach GWPS as indicated by the unchanged times between scenarios. Therefore, this approach was not further evaluated.

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TABLES

TABLE 1. OBSERVED AND PREDICTED SULFATE CONCENTRATIONS AT PAP MONITORING WELLS AND SIMULATED TIME TO ACHIVE COMPLIANCE
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Well Name	HSU	Number of Samples	mean Sulfate (mg/L)	std Sulfate (mg/L)	min Sulfate (mg/L)	max Sulfate (mg/L)	Earliest Sample Date	Latest Sample Date	CIP (baseline)	Alternative 1	Alternative 2
APW02	UD	8	**2913**	579	1500	**3200**	01/13/2015	07/15/2021	21	6	6
APW03	UD	8	174	9	160	190	01/13/2015	07/15/2021	-	-	-
APW04	UD	8	**933**	43	860	**990**	01/13/2015	07/15/2021	34	33	33
APW05	UA	25	3	4	1	15	12/15/2015	07/15/2021	-	-	-
APW05S	UD	7	**1563**	794	200	**2100**	02/17/2021	07/15/2021	1	1	1
APW06	UA	25	4	3	1	9.9	12/15/2015	07/15/2021	-	-	-
APW07	UA	17	12	20	1	66	12/15/2015	02/10/2021	-	-	-
APW08	UA	17	40	5	30	48	12/15/2015	02/10/2021	-	-	-
APW09	UA	17	19	22	1	62	12/15/2015	02/11/2021	-	-	-
APW10	UA	19	**422**	34	390	**540**	12/16/2015	07/29/2021	1	1	1
APW11	UA	8	266	52	140	300	02/18/2021	07/15/2021	-	-	-
APW12	UD	8	**391**	65	290	**480**	02/17/2021	07/15/2021	5	5	5
APW13	UA	8	216	7	210	230	02/22/2021	07/15/2021	-	-	-
APW14	UA	8	325	9	310	340	02/22/2021	07/15/2021	-	-	-
APW15	UA	8	1	0	1	1	02/23/2021	07/14/2021	-	-	-
APW16	UA	8	1	0	1	1.9	02/23/2021	07/15/2021	-	-	-
APW17	UA	8	35	6	25	41	02/23/2021	07/15/2021	-	-	-
APW18	UA	8	7	9	1	26	02/23/2021	07/15/2021	-	-	-
								Time to Reach GWPS (Year)			
								Minimum	1	1	1
								Maximum	34	33	33

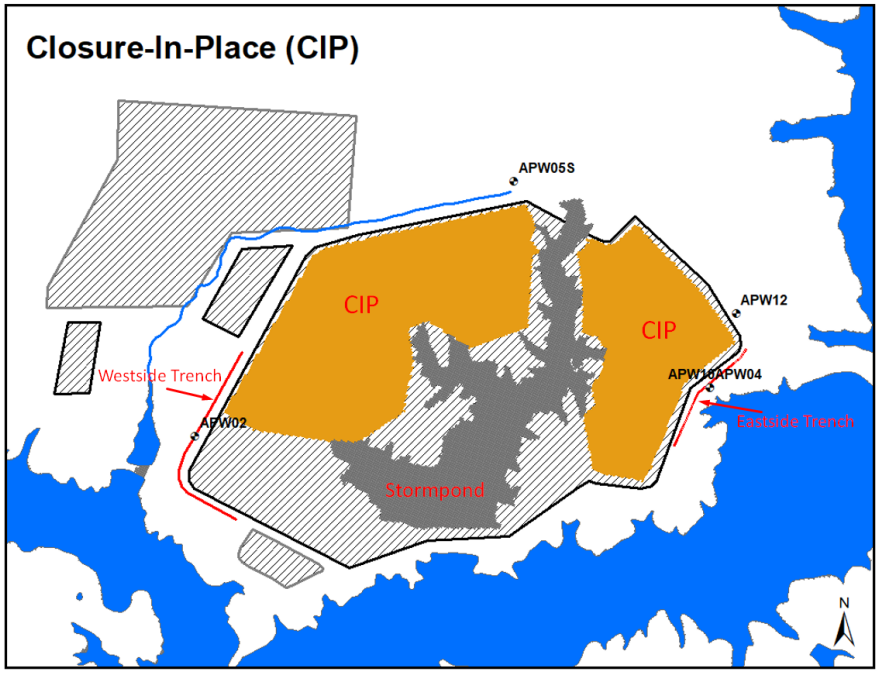
Notes:
Lake head = 504.62 ft
CIP (Baseline): No extraction trench - No cutoff wall
Alternative 1: Eastside extraction trench stage below lake head - Westside extraction trench stage above lake head at 510 ft - No cutoff wall.
Alternative 2: Alternative 1 for Eastside extraction trench and cutoff wall down to layer 6 - Westside extraction trench stage above lake head at 510 ft with no cutoff wall.

TABLE 2. ESTIMATED EXTRACTION TRENCH ELEVATION AND CUTOFF WALL DEPTH
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Scenario	Eastside Drain Stage [ft]	Westside Drain Stage [ft]	Eastside Drain Layer (HSU)	Westside Drain Layer (HSU)	Cutoff Wall Depth [ft]	Cutoff Wall Layer (HSU)	Scenario Description	Minimum (Year)	Maximum (Year)
CIP (baseline)	-	-	-	-	-	-	Baseline scenario (CIP) - No extraction trench - No cutoff wall.	1	34
Alternative 1	503	510	4 (UCU)	2 (UD), 3(UD-PMP & UD-PMP Sand) and 4 (UCU)	-	-	Eastside extraction trench stage below lake head - No cutoff wall. Westside extraction trench stage above lake head at 510 ft - No cutoff wall.	1	33
Alternative 2	503	510	4 (UCU)	2 (UD), 3(UD-PMP & UD-PMP Sand) and 4 (UCU)	473 - 476	6 (UA, UA Sand & Gravel)	Alternative 1 for Eastside extraction trench stage below lake head - With cutoff wall down to Layer 6. Westside extraction trench stage above lake head at 510 ft - No cutoff wall.	1	33

Notes:
Lake head = 504.62 ft
Hydrostratigraphic Unit (HSU)
UD = upper drift
LCU = lower confining unit
UA = uppermost aquifer
UCU = upper confining unit
PMP = potential migration pathway

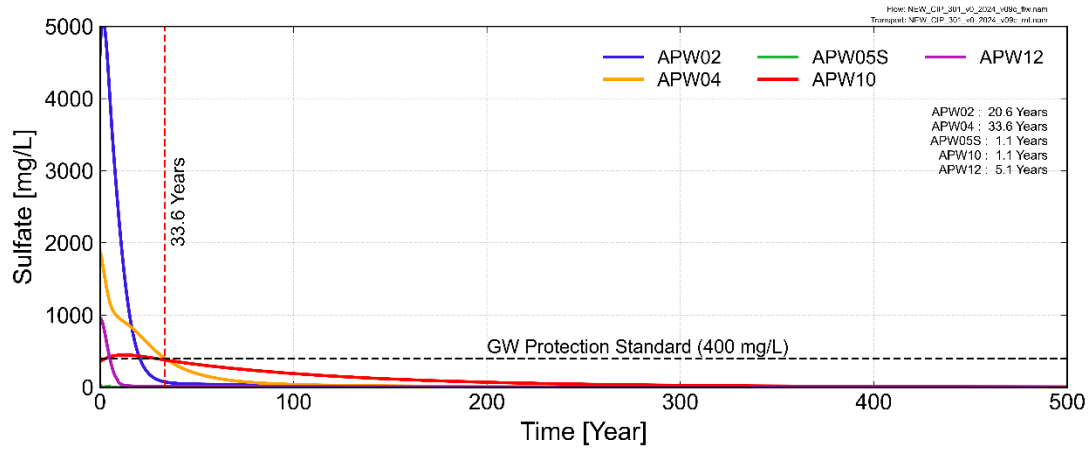
FIGURES



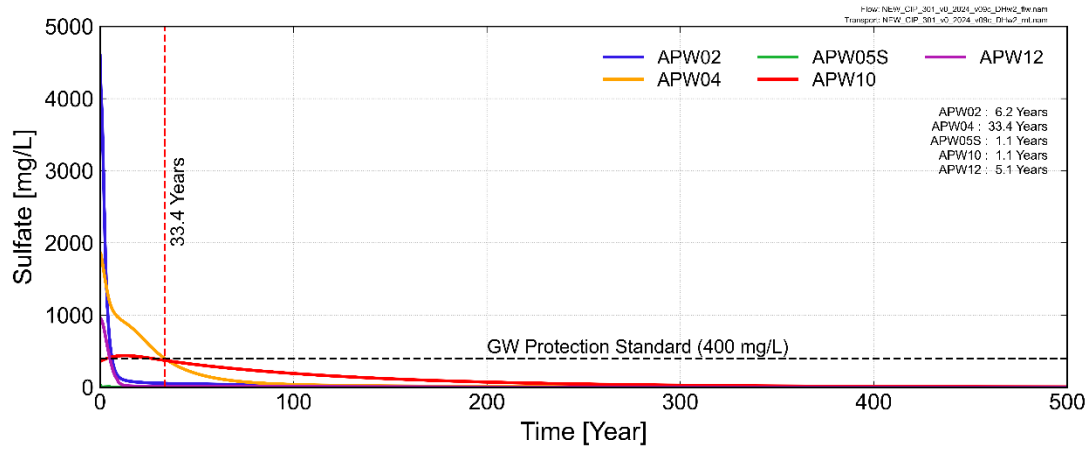
LOCATION OF PROPOSED EXTRACTION TRENCHES AND MONITORING WELLS WITH EXCEEDANCES
GROUNDWATER MODELING TECHNICAL MEMORANDUM
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2

(A) Baseline Simulation of Closure-In-Place (CIP)

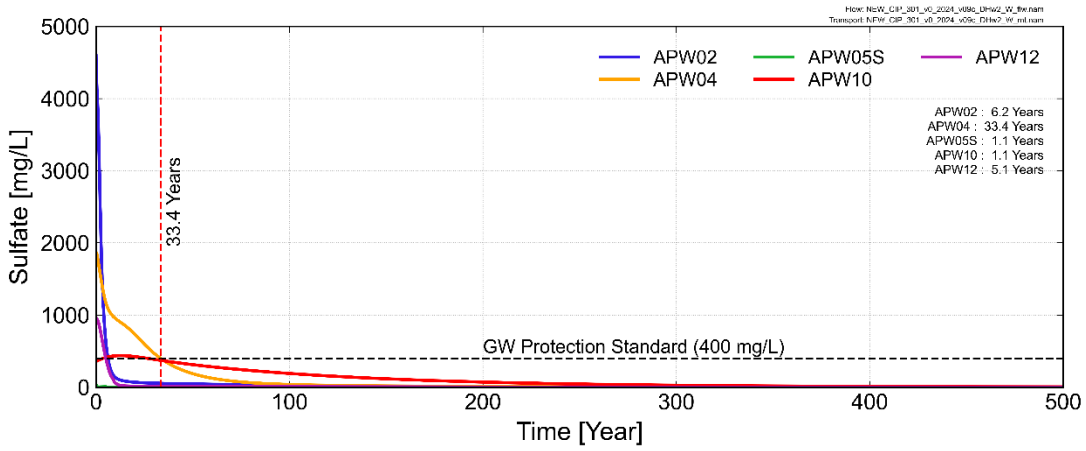


(B) Alternative 1. CIP with Groundwater Extraction Trenches.



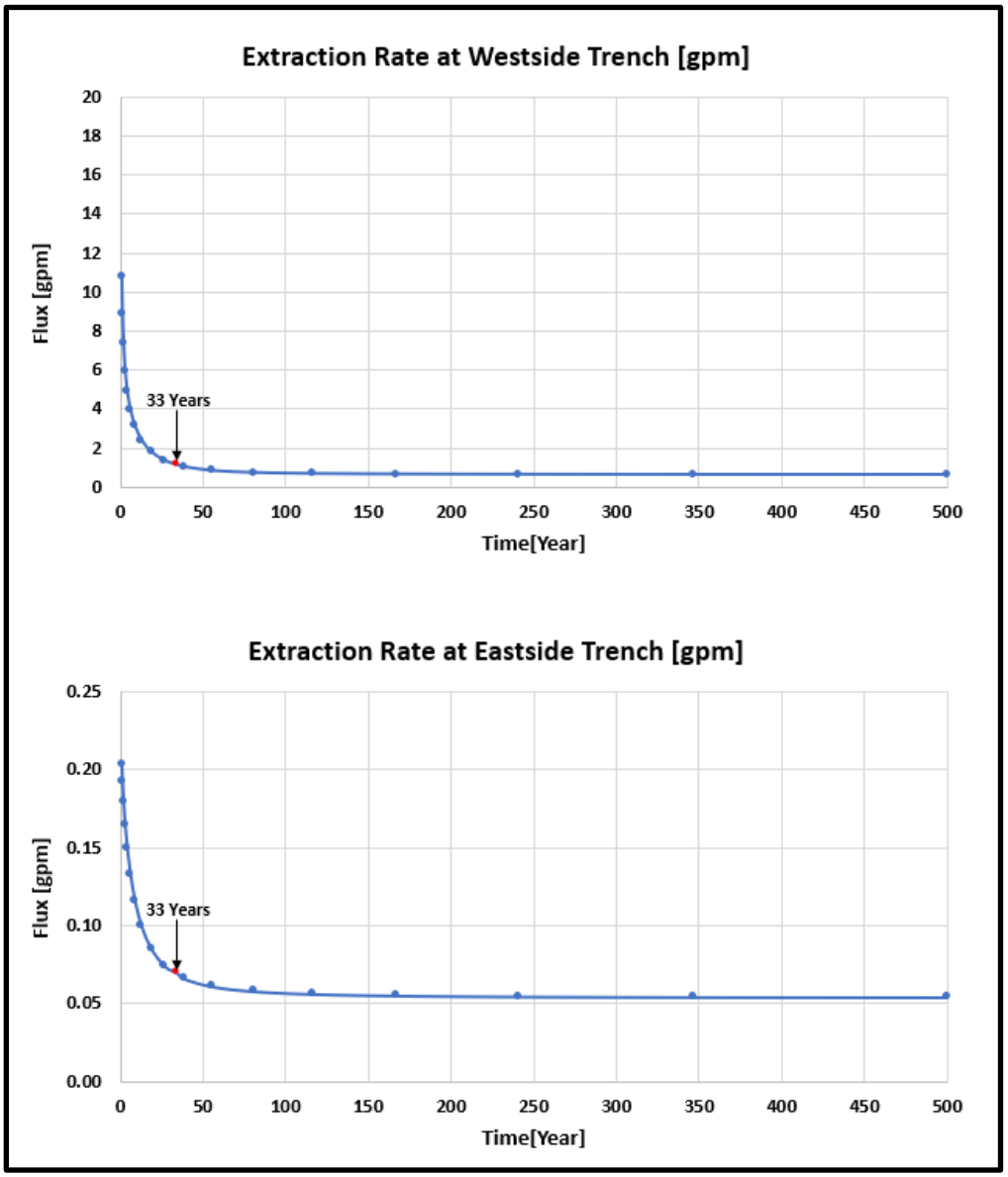
TIME-SERIES OF PREDICTED SULFATE CONCENTRATIONS
GROUNDWATER MODELING TECHNICAL MEMORANDUM
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

(C) Alternative 2. CIP with Groundwater Extraction Trenches and Cutoff Wall



TIME-SERIES OF PREDICTED SULFATE CONCENTRATIONS
GROUNDWATER MODELING TECHNICAL MEMORANDUM
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 3



TIME-SERIES OF EXTRACTION RATES AT TRENCHES
GROUNDWATER MODELING TECHNICAL MEMORANDUM
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

APPENDIX A
MODFLOW AND MT3DMS MODELING FILES

(ELECTRONIC ONLY)

APPENDIX B2
GROUNDWATER MODEL REPORT

Intended for
Illinois Power Generating Company

Date
April 1, 2025

Project No.
1940110241

GROUNDWATER MODELING REPORT REVISION 1

PRIMARY ASH POND

NEWTON POWER PLANT
NEWTON, ILLINOIS

GROUNDWATER MODELING REPORT REVISION 1
NEWTON POWER PLANT PRIMARY ASH POND

Project Name	**Newton Power Plant Primary Ash Pond**
Project No.	**1940110241**
Recipient	**Illinois Power Generating Company**
Document Type	**Groundwater Modeling Report**
Revision	**1 - FINAL**
Date	**April 1, 2025**

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APPENDICES

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Appendix B MODFLOW, MT3DMS, and HELP Model Files (Electronic only)
Appendix C Evaluation of Partition Coefficient Results (Golder Associates USA Inc., 2022b)
Appendix D HELP Model Output Files
Appendix E Flux Evaluation Data

ACRONYMS AND ABBREVIATIONS

%	percent
35 I.A.C.	Title 35 of the Illinois Administrative Code
BCU	bedrock confining unit
CBR	closure-by-removal
CBR-Offsite	Closure-by-Removal with Off-Site CCR Disposal
CBR-Onsite	Closure-by-Removal with On-Site CCR Disposal
CCR	coal combustion residuals
CIP	closure-in-place
cm/s	centimeters per second
CSM	conceptual site model
DEM	Digital Elevation Model
ft/ft	feet per foot
ft^2	square feet
ft/d	feet per day
GHB	general head boundary conditions
GMP	Groundwater Monitoring Plan
GMR	Groundwater Modeling Report
Golder	Golder Associates USA Inc.
Gradient	Gradient Corporation
GWL	groundwater elevation
GWPS	groundwater protection standard(s)
HCR	Hydrogeologic Site Characterization Report
HDR	HDR, Inc.
HELP	Hydrologic Evaluation of Landfill Performance
ID	identification
IEPA	Illinois Environmental Protection Agency
IPGC	Illinois Power Generating Company
ISGS	Illinois State Geological Survey
Kd	distribution coefficient
K_D	linear partition coefficients
K_F	Freundlich partition coefficients
K_L	Langmuir partition coefficients
Kh/Kv	vertical anisotropy
L/kg	liters per kilogram
LCU	lower confining unit
LF1	Phase 1 Landfill
LF2	Phase 2 Landfill
mg/L	milligrams per liter
mL/g	milliliters per gram
NAVD88	North American Vertical Datum of 1988
No.	number
NPP	Newton Power Plant

NRT	Natural Resource Technology, Inc.
NRT/OBG	Natural Resource Technology, Inc., an OBG Company
p	probability
PAP	Primary Ash Pond
PMP	potential migration pathway
R^2	correlation coefficient
Ramboll	Ramboll Americas Engineering Solutions, Inc
Rapps	Rapps Engineering and Applied Science
RMSE	root mean squared error
SSR	sum of squared residuals
TDS	total dissolved solids
TVD	total-variation-diminishing
UA	uppermost aquifer
UCU	upper confining unit
UD	upper drift
USDA/NRCS	United States Department of Agriculture/Natural Resources Conservation Service
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
Vandalia Till	Vandalia Till Member of the Glasford Formation

EXECUTIVE SUMMARY

Ramboll Americas Engineering Solutions, Inc. (Ramboll) has prepared this Groundwater Modeling Report (GMR) on behalf of the Newton Power Plant (NPP), operated by Illinois Power Generating Company (IPGC), in accordance with requirements of Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845: Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments (I.A.C., 2021). This document presents the results of predictive groundwater modeling simulations for proposed closure scenarios for the Primary Ash Pond (PAP), Vistra identification (ID) number (No.) 501, IEPA ID No. W0798070001-01, and National Inventory of Dams No. IL50719.

Revision 1 of this groundwater modeling report was prepared to document groundwater flow and transport simulations of the most current closure-in-place scenario presented in the *Primary Ash Pond Final Closure Plan Revision 1* (HDR, Inc. [HDR], 2025 TBD). The current closure-in-place scenario differs from the previously proposed scenario by removing coal combustion residuals (CCR) from the former drainage channel present in the center of the CCR unit, and consolidating CCR to the east and west sides of the former drainage. The PAP will be closed using a consolidate-and-cap approach consisting of excavating nearly 3.6 million cubic yards of CCR and placing it in a consolidated CCR footprint at an elevation greater than 12 feet above the uppermost aquifer (UA) and above the estimated post-closure water table.

The NPP is located in Jasper County in the southeastern part of central Illinois, approximately seven miles southwest of the town of Newton (**Figure 1-1**). The PAP is located south of the NPP and situated in a predominantly agricultural area. The PAP is surrounded by Newton Lake on the west, south, and east. Beyond the lake is additional agricultural land.

A detailed summary of NPP conditions was provided in the Hydrogeologic Site Characterization Report ([HCR] Ramboll, 2021a). This report integrates existing NPP data and information with the latest hydrogeology and groundwater quality data to generate a conceptual and numerical model of the PAP. The conceptual site model (CSM) includes hydrogeologic and groundwater quality data specific to the PAP, which has been collected between 2015 and 2021. The PAP is a 9,715 acre-feet earthen berm CCR surface impoundment located south of the power plant. In addition to the CCR within the PAP, there are six layers of unlithified material present above the Pennsylvanian-Age bedrock. These materials have been categorized into five hydrostratigraphic units presented below in descending order:

- **Upper Drift (UD)/Potential Migration Pathway (PMP):** The UD is composed of the low permeability silts and clays of the Peoria Silt and Sangamon Soil and the sandier soils of the Hagarstown Member (*i.e.,* PMP).
  - **Hagarstown Member/PMP**: The Hagarstown Member consists of the discontinuous, sandier deposits of the UD where present and overlies the Vandalia Till Member of the Glasford Formation (Vandalia Till).
- **Upper Confining Unit (UCU):** The UCU consists of a thick package of low permeability clays and silts of the Vandalia Till. This unit is a laterally continuous layer between the base of the CCR unit and the top of the UA.
- **Uppermost Aquifer (UA)**: The UA is composed of the Mulberry Grove Member, which has been classified as poorly graded sand, silty sand, clayey sand, and gravel.

- **Lower Confining Unit (LCU)**: The LCU is comprised of low permeability silt and clay of the Smithboro Till Member and the Banner Formation.
- **Bedrock Confining Unit (BCU):** The low permeability bedrock underlying the PAP is the Pennsylvanian-Age Mattoon Formation, which consists of a complex sequence of thin limestones, coals, black fissile shales, underclay, thick gray shales, and several well-developed sandstones. The Mattoon Formation has a maximum thickness of more than 600 feet in the central part of the Illinois Basin in Jasper County.

The Cahokia Formation, described in the regional geology of the HCR, occurs in modern river valleys and floodplains. These deposits (which may contain sand, silt, or clay with wood and shell fragments) are expected to occur along the southeastern boundary of the PAP associated with the east branch of Newton Lake and may be difficult to distinguish from the deposits of the UD and the top of the UCU given the observed heterogeneity in the Cahokia, UD, and UCU.

Groundwater migrates downward through the UD and UCU into the UA. Groundwater in the UA flows from north to south/southwest and converges near a former drainage feature located west of the PAP. Groundwater elevations vary seasonally, although generally less than one foot per year. The surface water elevation at Newton Lake (at location SG02) measured between February 15 and March 9, 2021 ranged from 504.42 to 504.84 feet North American Vertical Datum of 1988 (NAVD88). Groundwater elevations in the UA at downgradient wells were observed around 491 feet NAVD88 (approximately 15 feet lower than the lake elevation). The separation between measured groundwater elevations and lake elevations (and observed downward vertical gradients in wells) indicates groundwater does not flow into Newton Lake from the UA. As indicated by the observed heads and groundwater flow directions in the UA, surface water from Newton Lake is entering the UA. The UA also approaches the former land surface east of the PAP, now beneath Newton Lake, as illustrated in geologic cross section B'-B" (Figure 2-7 of the HCR). The CSM for modeling the PAP is as follows:

- Most hydrostratigraphic layers are laterally continuous across the area. The flat to gently rolling uplands are dissected by deeply incised streams (into the materials of the UD, UCU, and UA) that are tributaries to river systems in the area. Cahokia formation deposits are also located within the incised streams. Newton Lake was created by damming one of these tributary streams for use by the NPP. Increased water levels within Newton Lake induced flow of surface water into the UA through discrete and limited areas north and east of the PAP, creating the potentiometric surface observed beneath the PAP.
- The UA is separated from the bottom of the PAP by a minimum of 14 feet of low-permeability glacial till that comprises the UCU. This laterally continuous confining unit is a barrier to vertical migration of groundwater from the PAP to the UA. Erosion caused by incised streams and deposition of Cahokia formation deposits has occurred along the southeast corner of the PAP.
- Groundwater in the UA flows from north to south/southwest and converges near a former drainage feature located west of the PAP.
- Surface recharge and groundwater migrate vertically through the low permeability sediments of the UD and Cahokia deposits. Groundwater migrates horizontally through the higher permeability sediments of the PMP and the UA.
- The UA is heterogenous, with materials ranging from clayey sand to coarse gravels. The highly transmissive sands and gravel are prominent in close proximity to the PAP.

- The separation between measured groundwater elevations and lake elevations (and observed downward vertical gradients) indicates groundwater does not flow into Newton Lake from the UA. The connection between the UA and Newton Lake is spatially discrete and limited to areas northeast of the PAP.
- The PAP is constructed such that the earthen berm and base are in contact with the UCU.
- The stage within the PAP is managed with minimal (less than 3 feet) variability throughout the year.

Groundwater quality parameters were monitored in the shallow sands of the PMP and UA monitoring wells at the PAP as part of the groundwater quality investigations performed between 2015 and 2021. A review and summary of data collected from 2015 through 2021 for parameters with groundwater protection standards (GWPS) listed in 35 I.A.C. § 845.600 is provided in the HCR (Ramboll, 2021a). Groundwater concentrations presented in Table 4-1 of the HCR and summarized in the History of Potential Exceedances (Ramboll, 2021b) are considered potential exceedances because the methodology used to determine them is proposed in the Groundwater Monitoring Plan (GMP) (Ramboll, 2021c) and is pending approval by IEPA[1]. The parameters currently exceeding the GWPS at compliance groundwater monitoring wells that are attributable to the PAP as of the 2024 Annual Report (Ramboll, 2025a) include lithium, sulfate, and total dissolved solids (TDS).

Multiple lines of evidence that limited potential GWPS exceedances of pH in the PMP are not related to the PAP are provided in the technical memorandum (**Appendix A**), *Evaluation of Potential GWPS Exceedances* (Golder Associates USA Inc. [Golder], 2022a). Statistically significant correlations between sulfate concentrations and concentrations of lithium and TDS indicate sulfate is an acceptable surrogate for lithium and TDS in the groundwater model. Concentrations of these parameters are expected to change along with model predicted sulfate concentrations.

It was assumed that sulfate would not significantly sorb or chemically react with aquifer solids (distribution coefficient [Kd] was set to 0 milliliters per gram [mL/g]), which is a conservative estimate for estimating contaminant transport times in the model. Lithium, sulfate, and TDS transport is likely to be affected by both chemical and physical attenuation mechanisms (*i.e.,* adsorption and/or precipitation reactions as well as dilution and dispersion).

All available hydrological information were used to construct a CSM and numerical model of the PAP. A steady state, 7-layer numerical model was constructed to characterize the long-term groundwater flow conditions at NPP. The hydrostratigraphic units included in the model were the UD, PMP, UCU, UA, and LCU. The BCU was not included in the model. Calibration of the model focused on simulating mean groundwater elevations for 30 wells at NPP by modifying hydraulic parameters for the different hydrostratigraphic units, alongside river and general head boundary conductance. The calibrated model represents a reasonable match to the observed head and sulfate concentration data.

[1] Throughout this document, "exceedance" or "exceedances" is intended to refer only to potential exceedances of proposed applicable background statistics or Groundwater Protection Standards (GWPSs) as described in the proposed groundwater monitoring program, which was submitted to the IEPA on October 31, 2021 as part of IPGC's operating permit application for the PAP. That operating permit application, including the proposed groundwater monitoring program, remains under review by the IEPA and, therefore, IPGC has not identified any actual exceedances.

The calibrated model was used to predict the sulfate concentration for two closure scenarios described in the *Primary Ash Pond Final Closure Plan Revision 1* (HDR, 2025), including:

- **Scenario 1:** closure-in-place (CIP) including excavating nearly 3.6 million cubic yards of CCR and placing it in consolidated CCR footprints at an elevation greater than 12 feet above the uppermost aquifer (UA) and above the estimated post-closure water table, and construction of a cover system over the remaining CCR, and;
- **Scenario 2:** closure-by-removal (CBR) including removal of all CCR and regrading of the removal area.
- Prior to the simulation of these scenarios, a dewatering simulation was included which simulated the removal of liquid from the PAP prior to the implementation of the two scenarios.

Scenario 1 (CIP) is predicted to reduce total flux in and out of the Fill Unit (CCR) by greater than 99%, when simulated post-construction heads in the groundwater monitoring wells are predicted to stabilize. Reduction of post-closure flux of water has improved from 94% in the original closure plan to greater than 99% in the revised plan.

Predictive simulations of pond closure indicate simulated groundwater concentrations in the monitoring wells within the two transport zones, namely the UD/PMP and UA, will achieve the GWPS in 34 years and 14 years for the CIP and CBR closure scenarios, respectively. The model-predicted twenty-year time difference when GWPSs are achieved for CIP (34 years post-closure) and CBR (14 years post-closure) is not significant because the estimated duration of construction activities indicates that CBR will take longer to implement than CIP. Specifically, the timeline for CIP would be 3.2-4.3 years compared to 7.8-9.2 years for Closure-by-Removal with On-Site CCR Disposal (CBR-Onsite) and 22 years for Closure-by-Removal with Off-Site CCR Disposal (CBR-Offsite) as described in Section 2.1 of the Closure Alternative Analysis (Gradient, 2022) and confirmed in the Updated Closure Alternatives Analysis (Gradient, 2025).

The prediction simulations indicate that although the groundwater wells reach the GWPS, sulfate remains within the model beyond 100 years in both CIP and CBR scenarios. This is due to the sulfate mass retained within the thick UCU which underlies the PAP. The low vertical hydraulic conductivity of this thick unit leads to low flow rates through the unit which will require time to release the sulfate mass. However, in both the CIP and CBR scenarios, the plume footprint continues to recede with time and remains within the property boundaries, indicating these closure options are equally protective.

Results of groundwater flow and transport modeling conservatively estimate that groundwater concentrations will attain the GWPS for all constituents within 34 years of closure implementation for either CIP and CBR. Within the property boundary, residual sulfate will be present within the clay confining unit above the GWPS due to the slow release of sulfate from the UCU.

1. INTRODUCTION

1.1 Overview

In accordance with the requirements of 35 I.A.C. § 845 (IEPA, 2021), Ramboll has prepared this GMR on behalf of the NPP, operated by IPGC. This report applies specifically to the CCR unit referred to as the PAP. However, information gathered to evaluate other CCR units in the vicinity regarding geology, hydrogeology, and groundwater quality is included, where appropriate. This GMR presents and evaluates the results of predictive groundwater modeling simulations for two proposed closure scenarios: 1) CIP and 2) CBR.

1.2 Previous Groundwater Reports

Numerous hydrogeologic investigations have been performed at the NPP. The information presented in this GMR includes data collected as part of a 2021 field investigation and previous investigations summarized and presented in the HCR (Ramboll, 2021a) which was provided as an attachment to the initial operating permit application required by 35 I.A.C. § 845.230.

1.3 Site Location and Background

The NPP is located in Jasper County, Illinois approximately 7.5 miles southwest of the town of Newton. The PAP is located in Section 26 and the western half of Section 25, Township 6 North, Range 8 East (**Figure 1-1**). The PAP is located south of the power plant and situated in a predominantly agricultural area. The PAP is surrounded by Newton Lake on the west, south, and east. Beyond the lake is additional agricultural land. The region is characterized by relatively flat to gently rolling topography.

1.4 Site History and CCR Units

Three CCR units are present on the NPP property, including the PAP and two landfills: the Phase 1 Landfill (LF1) is located northwest and west of the PAP, and the Phase 2 Landfill (LF2) is located west of the PAP (**Figure 1-2**). The PAP was constructed in 1977 and has a design capacity of approximately 9,715 acre-feet. There is also a non-CCR 83.6 acre-feet Secondary Pond located immediately south of the PAP. The PAP has a surface area of 404 acres and the Secondary Pond has an area of 9.3 acres. The PAP currently receives stormwater runoff, bottom ash, fly ash, and low-volume wastewater from the plant's two coal-fired boilers. The PAP is operated per National Pollutant Discharge Elimination System Permit No. IL0049191, Outfall 001 (located at the Secondary Pond).

Prior to PAP construction, an incised stream gully existed at the site of the PAP. Areas within the impoundment were excavated during construction for native materials used to build the containment berms (AECOM, 2016).

2. SITE GEOLOGY AND HYDROGEOLOGY

The geology and hydrogeology of the PAP is described in detail in the HCR (Ramboll, 2021a). A short summary is provided below.

2.1 Stratigraphy

The unlithified stratigraphy within and immediately surrounding the PAP consists of the following in descending order: fill material and CCR; silt and clayey silt loess (Peoria Loess); weathered till of the Sangamon Soil; discontinuous gravel and sand (Hagarstown Member), sandy/silty till with discontinuous lenses of sand and gravel (Vandalia Till); sands of the UA (Mulberry Grove Member); and clay till (Smithboro Till and Banner Formation) (Rapps Engineering and Applied Science [Rapps], 1997). The Cahokia Formation, described in the regional geology of the HCR, occurs in modern river valleys and floodplains. These deposits (which may contain sand, silt, or clay with wood and shell fragments) are expected to occur along the southeastern boundary of the PAP associated with the east branch of Newton Lake and may be difficult to distinguish from the deposits of the UD and the top of the UCU given the observed heterogeneity in the Cahokia, UD, and UCU. Unlithified units overlay Pennsylvanian-age shaley bedrock (Mattoon Formation).

CCR is present within most of the PAP at thicknesses between 17 to 19.5 feet thick as observed in porewater wells XPW01 through XPW04. The lowest bottom of ash elevation observed is approximately 486 feet in the center of a former drainage feature oriented north-south through the center of the PAP, whereas ash is potentially highest in elevation at approximately 550 feet along the outer edges of the PAP. The bottom of ash surface appears to mirror the former drainage feature. Comparison of the bottom of ash contours and topographic contours indicate CCR fill may be 40 feet or greater within the former drainage feature.

The Peoria Silt and Sangamon Soils extends from beneath the topsoil to depths ranging from 3 to 46 feet. The Peoria Silt and Sangamon Soils consist predominantly of low permeability lean clay.

The Hagarstown Member of the Pearl Formation underlies the Peoria Silt and Sangamon Soils. This is a discontinuous sandy unit composed of poorly graded sand with silt, with thicknesses up to approximately 7 feet but generally the thickness is less than 2 feet.

The Hagarstown Member is generally underlain by a relatively thick till sequence consisting of the Vandalia Till. The till sequence is encountered at thicknesses up to 59 feet in the area of the PAP, while the average thickness is 26 feet. This thick glacial deposit is laterally continuous beneath the NPP. The Vandalia Till primarily consists of lean clay and silty clay. Alluvial deposits belonging to the Cahokia Formation, which is a Holocene stage deposit in floodplains and channels of modern rivers and streams are expected to occur along the southeastern corner of the PAP. Generally, the Cahokia Formation consists of poorly sorted sand, silt, and clay with wood and shell fragments with local deposits of sandy gravel which is similar in composition to the deposits that comprise the UD and UCU.

The Mulberry Grove Member is a thin to moderately thick (3 to 17 feet) unit composed of silty sand, poorly graded sand with silt and well graded sand with silt. The Mulberry Member generally slopes from approximately 483 feet NAVD88 in the northeast portion of the PAP to 462 feet NAVD88 in the southwest portion of PAP. The maximum observed thickness of this member was 30 feet, while the average thickness is approximately 10 feet.

Till sequences underlying the Mulberry Grove Member consist of clay and silt of the Smithboro Till Member and Banner Formation. These laterally continuous till units are encountered at thicknesses up to 36 feet, while the average thickness is 32 feet. The till sequences are typically composed of lean clay and silty clay.

The Pennsylvanian Age Mattoon Formation consists of a complex sequence of thin limestones, coals, black fissile shales, underclays, thick gray shales, and several well-developed sandstones. The bedrock is dipping to the southwest at NPP.

2.2 Hydrogeology

Five distinct hydrostratigraphic units have been identified at NPP based on stratigraphic relationships and common hydrogeologic characteristics, which are summarized below:

- **UD/PMP:** this unit includes the lower permeability silts and clays of the Peoria Silt and Sangamon Soil, and the sandier soils of the Hagarstown Member (*i.e.,* PMP). These units are hydraulically connected and underlain by a thick till sequence of Vandalia Till.
- **UCU:** underlying the UD till sequence, the laterally continuous low permeability silts and clays of the Vandalia Till and Cahokia Formation are 26 feet thick on average.
- **UA:** this unit consisting of sands and gravels of the Mulberry Grove Formation is on average 10 feet thick and can be up to 30 feet thick. These sandy deposits are the first laterally continuous sands observed beneath the PAP.
- **LCU:** underlying the UA are the low permeability silts and clays of the Smithboro Till and the Banner Formation. This unit is approximately 5 to 36 feet thick.
- **BCU:** The low permeability bedrock underlying the PAP is the Pennsylvanian Age Mattoon Formation, which consists of a complex sequence of thin limestones, coals, black fissile shales, underclays, thick gray shales, and several well-developed sandstones. The Mattoon Formation has a maximum thickness of more than 600 feet in the central part of the Illinois Basin in Jasper County.
- Holocene alluvial deposits of the Cahokia formation are expected to replace UD and UCU deposits along the southeastern boundary of the PAP.

2.2.1 Groundwater Flow

Monitoring well locations are illustrated in **Figure 2-1**. The elevations of water within the PAP (as observed in XPW01 through XPW04 and XSG01) are greater than the surrounding areas (**Figures 2-2** and **2-3**). Note that XPW01 through XPW04 were removed in 2024 to make operational changes within the PAP. The phreatic surface within the PAP between February and August 2021 averaged 542 feet NAVD88, ranging from 546.69 feet NAVD88 in XPW02 (located along the northern portion of the PAP) to 535.40 feet NAVD88 in XSG01 (located along the southern portion of the PAP). Groundwater elevations in PMP wells are above those in the UA and range from approximately 518 feet NAVD88 (APW05S) to 535 feet NAVD88 (APW05S).

Groundwater flow in the UA is generally from north to south. However, the UA wells also display flow converging towards a former surface drainage feature located west of the PAP (**Figure 2-2** and **Figure 2-3**) and an area where the UA has the greatest thickness. Groundwater elevations vary seasonally, generally less than one foot per year, while across the PAP they range from approximately 490 to 530 feet NAVD88, although flow directions are generally consistent.

2.2.2 Hydraulic Properties

Hydraulic field tests were conducted on multiple wells within the CCR, UD, PMP, and UA at NPP and are summarized below:

- Hydraulic properties for the CCR ranged from 1.0×10^{-3} to 2.3×10^{-1} centimeters per second (cm/s) (2.8 to 652 feet per day [ft/d]), with a geometric mean hydraulic conductivity of 2.0×10^{-2} cm/s (56.7 ft/d), based on hydraulic tests on four wells.
- Hydraulic field tests conducted on three wells provided hydraulic properties of the UD unit, which ranged from 5.14×10^{-6} to 4.53×10^{-5} cm/s (0.01 to 128.4 ft/d) with a geometric mean of 1.5×10^{-5} cm/s (0.04 ft/d).
- Hydraulic properties for the PMP ranged from 6.1×10^{-4} to 1.5×10^{-2} cm/s (1.7 to 42.5 ft/d) with a geometric mean hydraulic conductivity of 3.1×10^{-3} cm/s (8.8 ft/d), based on hydraulic tests on two wells.
- Hydraulic properties for the UA ranged from 2.0×10^{-4} to 1.5×10^{-1} cm/s (0.57 to 425.0 ft/d) with a geometric mean of 6.8×10^{-3} cm/s (19.3 ft/d), based on field tests conducted on seven wells.

The absence of wells screened within the UCU, LCU, and BCU at the NPP means that no field based hydraulic data are available for these units.

Additional laboratory analysis of samples from the CCR, UD, PMP, UCU, UA, and LCU provided vertical hydraulic conductivities summarized below:

- Laboratory falling head permeability test results for the six CCR samples indicated a geometric mean vertical hydraulic conductivity of 3.1×10^{-4} cm/s (0.88 ft/d) with a range of 1.6×10^{-5} to 1.3×10^{-3} cm/s (0.05 to 3.7 ft/d).
- Laboratory falling head permeability test results in the UD indicated a geometric mean vertical hydraulic conductivity of 5.9×10^{-8} cm/s (0.0002 ft/d) and ranged from 3.1×10^{-8} to 8.6×10^{-8} cm/s (0.0001 to 0.00024 ft/d). These values are less than previous samples collected in 2017, with a geometric mean hydraulic conductivity of 1.3×10^{-5} cm/s (0.04 ft/d) (Natural Resource Technology, Inc., an OBG Company [NRT/OBG], 2017).
- Laboratory falling head permeability test results from three samples collected from the Hagarstown Member (*i.e.,* PMP) within the UD, indicated a geometric mean vertical hydraulic conductivity of 3.5×10^{-5} cm/s (0.1 ft/d) and ranged from 1.1×10^{-7} to 9.6×10^{-5} cm/s (0.0003 to 0.27 ft/d).
- Laboratory falling head permeability test results from four samples collected from the Vandalia Till indicated that the UCU has a geometric mean vertical hydraulic conductivity of 6.7×10^{-8} cm/s (0.0002 ft/d) and ranged from 3.3×10^{-8} to 9.7×10^{-8} cm/s (0.0001 to 0.0003 ft/d).
- Laboratory falling head permeability test results from five samples collected from the Mulberry Grove Formation indicated that the UA has a geometric mean vertical hydraulic conductivity of 3.2×10^{-4} cm/s (0.9 ft/d) and ranged from 3.5×10^{-6} to 7.2×10^{-4} cm/s (0.01 to 2.04 ft/d) (NRT/OBG, 2017).
- Laboratory falling head permeability test results from eight samples collected from the glacial tills of the Smithboro Till indicated a geometric mean vertical hydraulic conductivity of 9.3×10^{-8} cm/s (0.0003 ft/d) and ranged from 2.4×10^{-8} to 2.7×10^{-7} cm/s (0.0001 to 0.0008 ft/d).

2.2.3 Groundwater Elevation Data

There are 30 wells located around the PAP with most wells located adjacent to the perimeter of the PAP. In most of these wells, water level measurements are available from 2015 to 2021. The well construction details are summarized in **Table 2-1** and groundwater elevation readings are summarized in **Table 2-2**. The observed range in groundwater elevation (GWL) within the PMP wells data set is 17.3 feet and 44.3 feet in the UA wells. For all wells, the mean variation in GWL within each well is 0.8 feet (mean GWL variation), with an observed minimum and maximum variation of 0.2 and 2.5 feet, respectively. The UA approaches the former land surface, now beneath Newton Lake, northeast of the PAP. The UA may intersect the base of Newton Lake allowing groundwater within the UA to mix with surface water from the lake, upgradient of the PAP. Groundwater flow in the UA generally flows southwest across the PAP with potentiometric surface elevations at downgradient wells around 491 feet NAVD88 (approximately 15 feet lower than the Newton Lake elevation). The elevation of water in Newton Lake ranges from 504.42 to 504.84 feet NAVD88. This separation in groundwater and lake elevations (and observed downward vertical gradients) indicates groundwater within the UA does not flow into Newton Lake.

2.2.4 Mining Activity

The areas immediately surrounding the facility have never been mined. Based on the directory of coal mines for Jasper County (Illinois State Geological Survey [ISGS], 2021), the nearest coal mines in the vicinity of the PAP are located approximately 6.7 miles to the northeast.

3. GROUNDWATER QUALITY

3.1 Groundwater Classification

Per 35 I.A.C. § 620.210, groundwater within the UA at the PAP meets the definition of Class I – Potable Resource Groundwater based on the following criteria:

- Groundwater is located more than 10 feet below ground surface and within an unconsolidated silty sand and gravel unit which is five feet or more in thickness.
- Hydraulic conductivity exceeds the 1 x 10^{-4} cm/s criterion.
- Groundwater is not downgradient of or underlying previously mined out areas.

Testing of the unconsolidated materials of the Mulberry Grove Member averaged 21% fines, which is greater than the 12% fines criterion; however, this was not deemed prohibitive of the Class I Classification (Ramboll, 2021a).

3.2 Potential Groundwater Exceedances

There are potential groundwater exceedances of applicable GWPS attributable to the PAP as described below. Groundwater concentrations from 2015 to 2021 are presented in the HCR Table 4-1 (Ramboll, 2021a), were evaluated and summarized in the History of Potential Exceedance tables (Ramboll, 2021b), and are considered potential exceedances because the methodology used to determine them is proposed in the Statistical Analysis Plan (Appendix A to GMP; Ramboll, 2021c), which is pending approval by IEPA. The following GWPS exceedances were determined in 2024 (Ramboll, 2024a; Ramboll, 2024b; Ramboll, 2024c; Ramboll, 2025a):

- Chloride in APW15
- Lithium in APW02
- Sulfate in APW02, APW04, APW05S, and APW10
- TDS in APW02, APW04, APW05S, and APW12

An Alternative Source Demonstration ASD was completed on October 6, 2023 for the chloride GWPS exceedance detected at monitoring well APW15 during the Quarter 2, 2023 sampling event.

4. GROUNDWATER MODEL

4.1 Overview

Data collected at NPP from 2004 to the recent 2021 field investigation were used to construct a groundwater model of the PAP. The model was then used to evaluate how the proposed closure options (CIP and CBR) would achieve compliance with the applicable groundwater standards following the closure construction. The modeling results are summarized and evaluated in this GMR. The associated model files are included as **Appendix B**.

4.2 Conceptual Model

The HCR (Ramboll, 2021a) forms the foundation of the PAP hydrogeological setting. The PAP overlies the recharge area for the underlying transmissive geologic media, which are composed of unlithified deposits.

4.2.1 Hydrogeology

As discussed in **Section 2.2**, groundwater flow around the PAP is generally in a southwest direction. The silts of the UD and sands of the PMP are hydraulically connected. The groundwater flow in the silts and clays of the UD and confining units of the UCU, LCU, and BCU are expected to be primarily vertical. The Hagarstown member PMP and sands of the UA are where the majority of the horizontal migration is expected to occur. The geological conceptual model for NPP consists of the following layers:

- Silts and Clays (UD) – silt and clayey silt of the Peoria Silt and Sangamon Soil which extends beneath the topsoil.
- Discontinuous sands (PMP) - sandier soils of the Hagarstown Member.
- Vandalia Till (UCU) – a thick layer of low permeability till consisting of the Vandalia Till.
- Sands (UA) – sands and gravels of the Mulberry Grove Formation, laterally continuous sand and gravel deposit identified beneath NPP.
- Smithboro Till (LCU) – composed of lean clay Smithboro Till and Banner Formation.
- BCU – lowermost unit identified at NPP and underlies all unlithified deposits. This unit, composed of low permeability shale of the Mattoon Formation.
- Alluvial deposits of the Cahokia formation may replace UD and UCU deposits along the southeastern boundary of the PAP.

Surfaces for each of the six major geological units (Silts/Clays, discontinuous sand, Vandalia Till, shallow sand, Smithboro Till, and Bedrock) were made by interpolating contacts between the units interpreted from boring logs. Alluvial deposits of the Cahokia formation were represented by zones within the horizontal layers of the major geologic units. Boring log information is centered around the pond and CCR units; the surfaces were extended to the full model domain by extrapolation and verified with off-site well logs, where available.

4.2.2 Extent and Boundaries

The United States Geological Survey (USGS) National Map places the NPP within the upper Illinois-Little Wabash watershed subbasin (Hydrologic Unit Code 05120114).

The PAP CSM extent is bounded by a hydrological catchment (watershed) divide to the east based on watershed data from USGS. Along the north, south, and east the model boundary has been placed along known waterbodies as much as possible. As such, it is assumed groundwater inflow from adjacent watersheds is negligible through both the UA and LCU.

The Newton Lake water levels are managed such that they remain at an elevation between 504.23 and 504.82 feet NAVD88. Newton Lake is the receiving body of water for surface water in the area encompassed by the CSM.

Infiltration of precipitation to the groundwater table is applied as recharge at NPP. Groundwater in the UD migrates downward into the discontinuous sands of the Hagarstown Formation. As discussed in **Section 2.2.1**, the Hagarstown Formation is considered a PMP for groundwater adjacent to the PAP. The sands of the UA are separated from the Hagarstown Formation PMP and the base of ash in the PAP by the laterally continuous UCU. The UA receives water from connection with Newton Lake.

4.2.3 Primary Ash Pond

The PAP is constructed with an earthen berm which acts as a low permeability interface between the CCR contained within the PAP and the ambient groundwater system. Findings from the HCR (Ramboll, 2021a) indicate that the PAP does not appear to impact groundwater flow directions in the UA via recharge to groundwater. The PAP does influence the shallower UD/PMP flow system, where there is a component of radial flow from the pond to the thin Hagarstown Formation.

Sulfate was selected for transport modeling. Sulfate is commonly used as an indicator parameter for contaminant transport modeling for CCR because: (i) it is commonly present in coal ash leachate; and (ii) it is mobile and typically not very reactive but conservative (*i.e.*, low rates of sorption or degradation) in groundwater. The surrogates selected for groundwater flow and transport modeling are conservative parameters (*i.e.,* aqueous concentrations are predominantly affected by physical processes such as dilution and dispersion rather than by chemical attenuation mechanisms) and therefore represent the maximum plume extent. The use of a conservative parameter to represent plume extent and clean-up times is consistent with United States Environmental Protection Agency (USEPA) modeling examples intended for evaluating relative remedy effectiveness[2].

4.3 Model Approach

Comparisons of observed lithium and TDS concentrations to sulfate (Figure A and Figure B, respectively, below) indicate statistically significant correlations between these parameters in UD wells where these potential exceedances were observed. Observed concentrations were transformed into Log10 concentrations for evaluation. The correlation coefficient (R2) and probability (p) values (indicator of statistical significance) are also provided on **Figure A** and **Figure B**. Higher R2 values (*i.e.*, closer to 1) indicate stronger correlation between parameters. A correlation is considered statistically significant when the p value is lower than 0.05. Both correlations have p values less than the target of 0.05, indicating correlations are statistically significant. The correlations are strongest between sulfate and TDS. The statistically significant correlations associated with sulfate concentrations indicate sulfate is an acceptable surrogate for

[2] USEPA. 1994. Ground-Water Modeling Compendium. Second Edition. Office of Solid Waste and Emergency Response. 500-B-94-004. July.

lithium and TDS in the groundwater model, and concentrations of these parameters are expected to change along with model predicted sulfate concentrations.

Figure A. Sulfate Correlation with Lithium in UD Wells

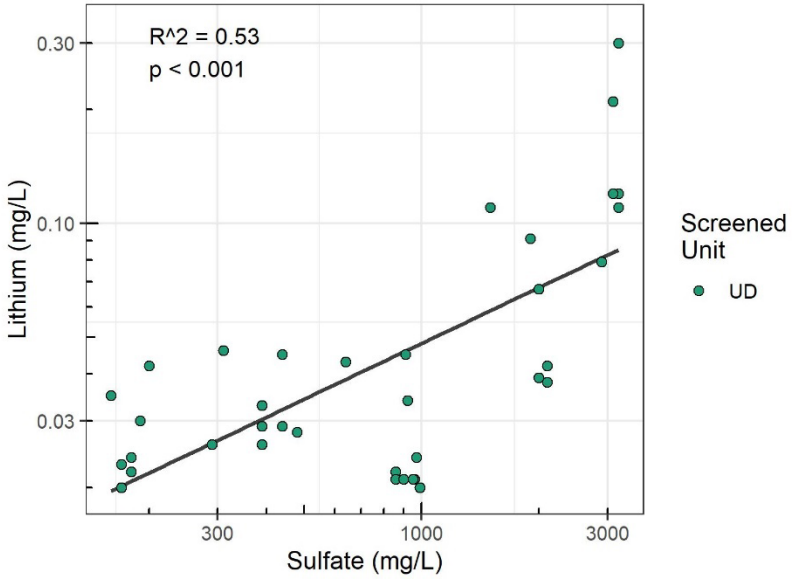
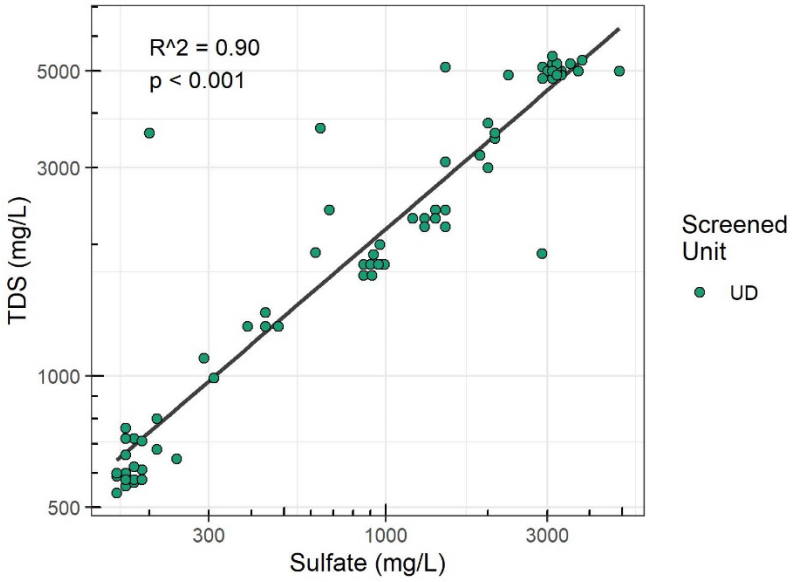


Figure B. Sulfate Correlation with TDS in UD Wells



A three-dimensional groundwater flow model was calibrated to represent the conceptual flow system described above. A steady state model was used to simulate the mean groundwater flow conditions at NPP. The model was calibrated to match mean groundwater elevations observed between 2015 to 2021 (**Table 2-2**). Prediction simulations were then performed to evaluate the

potential impacts to groundwater from CIP as presented in the *Primary Ash Pond Final Closure Plan Revision 1* (HDR, 2025) which is an appendix to the Construction Permit Application to which this report is also attached. **Figure 4-1** shows the calibration and predictive modeling timeline.

Three model codes were used to simulate groundwater flow and contaminant transport:

- Groundwater flow was modeled in three dimensions using MODFLOW 2005.
- Contaminant transport was modeled in three dimensions using MT3DMS.
- Percolation (recharge) was modeled using the results of the Hydrologic Evaluation of Landfill Performance (HELP) model.

5. MODEL SETUP AND CALIBRATION

5.1 Model Descriptions

For the construction and calibration of the numerical groundwater flow model for NPP, Ramboll selected the model code MODFLOW, a publicly-available groundwater flow simulation program developed by the USGS (McDonald and Harbaugh, 1988). MODFLOW is thoroughly documented, widely used by consultants, government agencies and researchers, and is consistently accepted in regulatory and litigation proceedings. MODFLOW uses a finite difference approximation to solve a three-dimensional head distribution in a transient, multi-layer, heterogeneous, anisotropic, variable-gradient, variable-thickness, confined or unconfined flow system—given user-supplied inputs of hydraulic conductivity, aquifer/layer thickness, recharge, wells, and boundary conditions. The program also calculates water balance at wells, rivers, and drains.

MODFLOW was developed by USGS (McDonald and Harbaugh, 1988) and has been updated several times since. Major assumptions of the code are: (i) groundwater flow is governed by Darcy's law; (ii) the formation behaves as a continuous porous medium; (iii) flow is not affected by chemical, temperature, or density gradients; and (iv) hydraulic properties are constant within a grid cell. Other assumptions concerning the finite difference equation can be found in McDonald and Harbaugh (1988). MODFLOW 2005 was used for these simulations with Groundwater Vistas 7 software for model pre- and post- processing tasks (Environmental Simulations, Inc., 2017).

MT3DMS (Zheng and Wang, 1998) is an update of MT3D. It calculates concentration distribution for a single dissolved solute as a function of time and space. Concentration is distributed over a three-dimensional, non-uniform, transient flow field. Solute mass may be input at discrete points (wells, drains, river nodes, constant head cells), or distributed evenly or unevenly over the land surface (recharge).

MT3DMS accounts for advection, dispersion, diffusion, first-order decay, and sorption. Sorption can be calculated using linear, Freundlich, or Langmuir isotherms. First-order decay terms may be differentiated for the adsorbed and dissolved phases.

The program uses the standard finite difference method, the particle-tracking-based Eulerian-Lagrangian methods and the higher-order finite-volume total-variation-diminishing (TVD) method for the solution schemes. The finite difference solution has numerical dispersion for low-dispersivity transport scenarios but conserves good mass balance. The particle-tracking method avoids numerical dispersion but was not accurate in conserving mass. The TVD solution is not subject to significant numerical distribution and adequately conserves mass, but is numerically intensive, particularly for long-term models such as developed for the PAP. The finite difference solution was used for this simulation.

Major assumptions of MT3DMS are: (i) changes in the concentration field do not affect the flow field; (ii) changes in the concentration of one solute do not affect the concentration of another solute; (iii) chemical and hydraulic properties are constant within a grid cell; and (iv) sorption is instantaneous and fully reversible, while decay is not reversible.

The HELP model was developed by the USEPA. HELP is a one-dimensional hydrologic model of water movement across, into, through and out of a landfill or soil column based on precipitation, evapotranspiration, runoff, and the geometry and hydrogeologic properties of a layered soil and

waste profile. For this modeling, results of the HELP model, HELP Version 4.0 (Tolaymat and Krause, 2020) completed for the groundwater model were used to estimate the hydraulic flux from beneath the PAP.

5.2 Flow and Transport Model Setup

The modeled area was approximately 7,900 feet by 9,950 feet (382,955,000 square feet [ft^2]) with the PAP located in the southern quadrant (**Figure 5-1**). The model boundaries along the northern, southern, and eastern edges of the model were selected to maintain sufficient distance from the PAP to reduce boundary interference with model calculations, while not extending too far past the extent of available calibration data. The east and west edges of the model also approximate topographic highs, surface water divides, watershed boundaries.

The MODFLOW model was calibrated to mean groundwater elevation collected from 2015 to 2021 presented in **Table 2-2**. MT3DMS was run on the calibrated flow model and model-simulated concentrations were calibrated to observed sulfate concentration values at the monitoring wells from March to July 2021 presented in **Table 2-2**. Multiple iterations of MODFLOW and MT3DMS calibration were performed to achieve an acceptable match to observed flow and transport data. For the PAP, the calibrated flow and transport models were used in predictive modeling to evaluate the CIP and CBR closure scenarios. Prior to simulation of CIP and CBR, a dewatering phase, which simulated the removal of liquids from the CCR material in the PAP was completed. Closure scenarios were simulated by removing saturated ash cells and using HELP modeled recharge values to simulate changes proposed in the closure scenarios.

5.2.1 Grid and Boundary Conditions

A seven-layer, 451 x 508 node grid was established with a variable grid spacing of between 25 and 100 feet (**Figure 5-2 through Figure 5-8**), with a total number of 1,546,703 active cells. The grid is rotated 25 degrees to the east to align the model boundary with the orientation of Newton Lake and Sandy Creek.

The northern boundaries for layers 1, 2, 3, and 4 are general head boundaries placed to simulate flow in the Peoria Silt, Sangamon Soil, and sandier soils of the Hagarstown Member composing the UD, PMP, and UCU. The general head boundaries along the northern and southern model boundaries for layer 6 represents the regional flow conditions within this unit. The eastern and western edges are no flow boundaries in all model layers.

Newton Lake is represented as a constant head boundary based on a reasonably constant surface water elevation measured from February 15 to March 9, 2021 of between 504.42 to 504.84 feet NAVD88. The constant head boundary was simulated with an elevation equal to 504.6 feet. The lake is in hydraulic connection with multiple layers within the model.

The bottom of the model was also a no-flow boundary. The top of the model was a time-dependent specified flux boundary, with specified flux rates equal to the recharge rate. A specified mass flux boundary was used to simulate downward percolation of solute mass from the PAP. This boundary condition assigns a specified concentration to recharge water entering the cells within the PAP, and the resulting concentration in the PAP cells is a function of the relative rate and concentration of recharge water (water percolating from the impoundments) compared to the rate and concentration of other water entering the node.

Natural (streams) drainage features are present in the modeled area; these are represented as rivers and drains depending on available information in the model.

5.2.2 Flow Model Input Values and Sensitivity

Evaluation of monitoring well data for the PAP has not identified statistically significant seasonal trends in groundwater flow or quality which could affect model applicability for prediction of transport. The MODFLOW model was calibrated to mean groundwater elevations from 2015 to 2021. Multiple iterations of MODFLOW calibration were performed to achieve an acceptable match to observed flow data.

Sensitivity analysis was conducted by changing input values and observing changes in the sum of squared residuals (SSR). Horizontal conductivity, vertical conductivity, and river and general head conductance terms were all varied by one order of magnitude (*i.e.*, between one-tenth and ten times) of the calibrated values. Recharge terms were varied between one-half and two times calibrated values. River stage and drain bottom elevations were obtained from the 10-meter Digital Elevation Model (DEM) from the United States Department of Agriculture/Natural Resources Conservation Service National Geospatial Center of Excellence (USDA/NRCS, 2022). The vertical error of the 10-meter DEM is 0.82 meters (2.7 feet); therefore, the stream stage and drain bases were varied by adding and subtracting 2.7 feet. General head boundary head terms were varied between 90 and 110 % of calibrated values. When the calibrated model was tested, the SSR was 794. Sensitivity test results were categorized into negligible, low, moderate, moderately high, and high sensitivity based on the change in the SSR as summarized in the notes in **Table 5-1**.

5.2.2.1 Layer Top/Bottom

A digital elevation model of the area was used to assign the top of layer one. The elevations for the base of each hydrostratigraphic layer were interpolated from boring log data primarily from logs provided in the HCR (Ramboll, 2021a) utilizing Surfer® software for each of the six distinct water-bearing units described in **Section 2** (excluding the BCU). The resulting surfaces were imported into MODFLOW. The silts, clays, and sands of the UD unit (Peoria Silt, Sangamon Soil and Hagarstown Member) were divided into three layers to accommodate the explicit inclusion of the PAP ash deposits and the PMP. The thick UCU comprised of Vandalia Till was divided into two layers for contaminant transport; the Mulberry Grove Formation and Smithboro Till were represented as single layers within the model. **Figures 5-9** to **Figure 5-15** show the seven model layer elevations. The resulting surfaces were imported as layers into the model to represent the distribution and change in thickness of each water-bearing unit across the model domain. Flow model layer descriptions are summarized in **Table A** below.

Table A. Flow Model Layer Descriptions

Layer	Hydrostratigraphic unit name	Hydrostratigraphic unit used to determine layer thickness	Top Elevation [1]	Bottom Elevation [1]	Thickness (feet)
			Mean (Minimum – Maximum)		
1&2	UD	Silty clay and clay	535.6 (503.71-564.0)	511.1 (472.0-532.5)	24.5 (4.0-76.4)
3	PMP	Sand, silty clay, and clay	511.1 (472.0-532.5)	508.8 (470.0-530.1)	2.3 (2.0-25.56)
4&5	UCU	Silts and lean clays of the Vandalia member	508.8 (470.0-530.1)	472.0 (425.4-486.9)	36.8 (10.7-57.6)
6	UA	Sands and gravels within silty clay	472.0 (425.4-486.9)	465.3 (418.1-483.9)	6.7 (2.0-29.9)
7	LCU	lean clays of the Smithboro Till	465.3 (418.1-483.9)	438.3 (412.2-458.1)	26.9 (5.9-37.8)

Notes:
[1] Elevation is measured in feet, referenced to NAVD88.

5.2.2.2 Hydraulic Conductivity

Hydraulic conductivity values and sensitivity results are summarized in **Table 5-1.** The spatial distribution of the hydraulic conductivities within the UD, UCU, and LCU was considered homogenous. A zone representing the Cahokia deposits was included in UCU layers 4 and 5. The hydraulic properties of this zone are equivalent to those of the rest of the UCU and this zone is discussed further in **Section 5.2.3.5**. In both the PMP and UA layers (model layers 3 and 6, respectively), well log data indicated the presence of silt, sand, and gravel lenses. These were included in the model as zones within these two layers. The spatial extent of these zones was determined using well log data for areas of silt within the PMP, and silt/sand and gravel within the UA. Hydraulic properties within these zones do not vary. **Figures 5-16 through 5-22** show the spatial distribution of the hydrostratigraphic units, PAP, and other units at NPP for each of the seven model layers.

Where available, hydraulic conductivity values were derived from field measured or laboratory tested values reported in the HCR (Ramboll, 2021a) (**Section 2.2.2**). No horizontal anisotropy was assumed. Vertical anisotropy (Kh/Kv) was applied to conductivity zones to simulate preferential flow in the horizontal direction in these materials and is presented in **Table 5-1**.

The model was highly sensitive to changes in horizontal conductivity in UD (zone 1), UD-PMP sand (zone 5), UA (zone 7), UA-gravel (zone 9), and moderately high sensitivity to the sand deposit in the UA (zone 8). The calibrated model has low to moderate sensitivity to horizontal conductivity in the remaining hydrostratigraphic units. The model was highly sensitive to changes in the vertical conductivity in the UD (zone 1), and the UCU and UCU-Cahokia (zone 6 and 11, respectively). The model had a moderately high sensitivity to changes in vertical conductivity in the UA (zone 7) and the sand deposit in the UA (zone 8), and moderate sensitivity to changes in vertical conductivity in UD-PMP sand (zone 5) and UA-gravel (zone 9). The UD fill (zone 2), CCR (zone 3), UD-PMP (zone 4), and LCU (zone 10) exhibited low sensitivity.

5.2.2.3 Recharge

Recharge rates were determined through calibration of the model to observed groundwater elevations. For the calibration model, recharge was applied to the upper most active layer and the rates varied based on different units, namely the PAP, LF1, LF2, Secondary Pond, NPP, and Cooling Pond. Model inputs are summarized in **Table 5-1**. The distribution of recharge is shown in **Figure 5-23**.

The calibrated flow model is highly sensitive to recharge to the PAP, moderately sensitive to recharge to the UD, and has negligible sensitivity to all other zones within the model (**Table 5-1**).

5.2.2.4 Storage and Specific Yield

The flow calibration model did not use these terms because it was run at steady state. For the transport model, which was run as a transient simulation, no field data defining these terms were available so published values were used consistent with Fetter (1988). Specific yield was set to equal effective porosity values described in **Section 5.2.3.3**. The spatial distribution of the storage and specific yield zones were consistent with those of the hydraulic conductivity zones. The sensitivity of these parameters was tested by evaluating their effect on the transport model as described in **Section 5.2.3.4**.

5.2.2.5 General Head Boundary Parameters

General head boundary conditions (GHB) were used along the northern boundary of the model for layer 1 through 4 and layer 6. GHB were also used along the southern boundary for layer 6 only (**Figures 5-2** to **5-7**). The GHB at the northern limit of the model in layers 1 through 4 was used to simulate groundwater flow into the model via the UD, PMP, and UCU. The UCU was included in the GHB due to its hydraulic connection to Newton Lake even though it has a low hydraulic conductivity. The groundwater levels used for the northern boundary of the model in layers 1 through 4 were estimated using the Dupuit equation for steady state flow in an unconfined aquifer with recharge.

The DEM of NPP provided estimates of the surface water levels for Newton Lake on the east of the model domain (504.6 feet) and the Sandy Creek (525 feet) located 6,500 feet west of Newton Lake. The calibrated ambient recharge to the UD was used in the calculation of the groundwater level distribution at the northern boundary. The hydraulic conductivity value K used in the Dupuit equation was estimated during model calibration.

This GHB was only applied to cells along the northern boundary where the base of the cell was below the calculated groundwater head for a given distance from the constant head boundaries, the head was determined by the Dupuit equation. Cell conductance was then calculated using the calibrated hydraulic conductivity and the cells' saturated thickness and cell width.

The CSM for NPP (layer 6) describes a potential hydraulic connection between the UA and either Big Muddy Creek or Newton Lake dam, both of which are located approximately 14,000 feet southwest of the model domain. The elevation of both Big Muddy Creek and Newton Lake dam at this distance is approximately 460 feet. Therefore, the GHB elevation and distance at the southern limits of the model in the UA was set to 460 feet and 14,000 feet. The conductance was determined using the cells calibrated hydraulic conductivity, cell width and thickness (cells were assumed to be fully saturated).

The GHB elevation for northern boundary in the UA was established during calibration (**Table 5-1**). The distance to the GHB head was set to 1, and the GHB conductivity was calculated using the cell width, cell thickness, and calibrated hydraulic conductivity from the model.

The sensitivity to changes in specified head was negligible to moderate for both the northern GHB in layer 1-4, and in the UA (layer 6), and high for the southern GHB in the UA. The flow calibration model had low sensitivity to changes in the conductance for both the northern GHBs (layer 1-4 and layer 6), and high sensitivity in the southern GHB in layer 6 (UA).

5.2.2.6 River Parameters

The Cooling Flume transports water from the Cooling Pond north of the PAP to Newton Lake. The flume consists of three sections, where the surface water elevation is controlled via weirs with decreasing elevation as the flume approaches Newton Lake. The most upstream section is maintained at 530.98 feet, the intermediate section has a surface water elevation of 515.66 feet, and the surface water elevation in the final section is maintained at 499.0 feet. Sandy Creek is the primary natural surface water feature which discharges into Newton Lake west of the PAP. A summary of river and drain boundary lengths and slopes is provided in **Table B** on the next page.

Both the Cooling Flume and Sandy Creek are included in the model as head dependent flux boundaries that required inputs for elevation of the surface water, bottom of the stream, width, bed thickness, and bed hydraulic conductivity (**Table 5-1**). A total of three river reaches are included in the model; in the absence of river geometry information the DEM was used to estimate stream stage at the upstream and downstream limits of each reach. For Sandy Creek the slope of the river was then linearly interpolated along the reach, providing an estimation of stream stage along the length of each reach for each model grid cell though which the river flows. Bed thickness was set at 1 foot and river width was set at 10 feet.

The width of the Cooling Flume (approximately 32 feet) is larger than the grid cell dimensions (25 feet by 25 feet), therefore the conductance term for the Cooling Flume was based on the area of the cells which coincide with the flume. The DEM provided surface water elevation estimations of the three sections of the Cooling Flume, and the bed thickness was set to 1 foot.

River width, bed thickness, and bed hydraulic conductivity parameters were used to calculate a conductance term for the river cells. This conductance term was determined by adjusting hydraulic conductivity during model calibration.

The river boundaries were placed in layers 1 through 4, corresponding with simulated river elevation and base of the river (**Figure 5-2 through Figure 5-5**). The calibrated flow model has negligible sensitivity to changes in either river stage or conductance.

Table B. River and Drain Information

Name	Boundary Type	Length (feet)	Slope (ft/ft)
Cooling Flume	River	7,891.0	-
Sandy Creek	River	13,082.7	-0.0019
Sandy Creek Tributary 1	Drain	2,420.5	-0.0076
Sandy Creek Tributary 2	Drain	6,326.4	-0.0038
Sandy Creek Tributary 3A	Drain	4,359.1	-0.0015
Sandy Creek Tributary 3B	Drain	4,088.8	-0.0058
Landfill Stream	Drain	2,706.7	-0.0057
PAP Stream	Drain	5,658.5	-0.0038
PAP drain north	Drain	2,055.2	-0.0102
Newton Lake Tributary 1	Drain	6,854.6	-0.0057
Newton Lake Tributary 2	Drain	3,414.8	-0.0083
Newton Lake Tributary 3	Drain	2,369.0	-0.0090
Newton Lake Tributary 4	Drain	1,603.0	-0.0029
Newton Lake Tributary 5	Drain	2,448.4	-0.0078
Newton Lake Tributary 6	Drain	2,556.7	-0.0107
Newton Lake Tributary 7	Drain	3,002.7	-0.0061
Tributary South 1	Drain	1,839.0	-0.0021
Tributary South 2	Drain	4,364.0	-0.0041
Tributary South 3	Drain	1,200.9	-0.0083
PAP drain north	Drain	2,051.2	-0.0137

Notes:
ft/ft = feet per foot

5.2.2.7 Drains

The model contains numerous small tributaries which discharge into both Sandy Creek and Newton Lake. Limited hydrological data are available for these surface water features; therefore, it is uncertain how these interact with the groundwater levels. However, these features are all first-order streams (or headwater streams) and therefore it is highly likely that they are fed by a combination of groundwater discharge and surface runoff (Horton, 1945). Therefore, these streams are included in the model as head dependent flux boundaries (drain) that required inputs for elevation of the bottom on the stream, width, bed thickness, and bed hydraulic conductivity (**Table 5-1**). By using the drain head-dependent flux boundary it is assumed that these streams only act as groundwater discharge features and makes the fewest assumptions regarding stream geometry.

A total of 18 drain reaches are included in the model. In the absence of river geometry information, the DEM was used to estimate stream stage at the upstream and downstream limits of each reach. The slope of the river was then linearly interpolated along the reach, which provided an estimate of stream stage along the length of each reach for each model grid cell though which the stream flows. A summary of river and drain boundary lengths and slopes is

summarized in **Table B** above. The drain boundaries were placed in layers 1 through 4 corresponding with simulated drain depth (**Figure 5-2 through Figure 5-5**).

The calibrated flow model has negligible to low sensitivity to both drain elevation and conductance for most drains. Only the Landfill drain (reach 6) had moderate sensitivity to drain elevation.

5.2.3 Transport Model Input Values and Sensitivity

MT3DMS input values are listed in **Table 5-2** and described below. Sensitivity of the transport model is summarized in **Table 5-3**.

Groundwater transport was calibrated to groundwater sulfate concentration ranges at each well as measured from the monitoring wells between 2015 (where available) and 2021. The transport model calibration targets are summarized in **Table 2-2**.

Sensitivity analysis was conducted by changing input values and observing percent change in sulfate concentration at each well from the calibrated model sulfate concentration. Effective porosity was varied by decreasing and increasing calibrated model values by 0.05. Storage values were multiplied and divided by a factor of 10, and specific yield by a factor of 2. Dispersivity in the Cahokia Alluvium was varied by decreasing and increasing calibrated model dispersivity by 50 percent. The transport model had a negligible sensitivity to changes in storage and specific yield (**Table 5-3**). The transport model ranged from negligible to high sensitivity to effective porosity and negligible to moderately high sensitivity to dispersivity as discussed in **Sections 5.2.3.3** and **5.2.3.5**.

5.2.3.1 Initial Concentrations

No initial concentrations were placed in the steady state flow calibration model. The flow model was run as transient, and concentration was added to the model through recharge starting at the same time as flow simulation. Modeling was performed for a sufficient period (45 years) to allow modeled concentrations in the primary transport layer (*i.e.,* UD/PMP and UA) to reach recently observed levels.

5.2.3.2 Source Concentrations

Based on review of CCR placement, initial source concentrations for the pond were set to observed concentrations from porewater samples collected from earlier placement areas (XPW02 and XPW03) with a sulfate concentration of 130 milligrams per liter (mg/L) (**Figure 5-24**). This was applied throughout the pond until 1985, after which discoloration becomes apparent in the CCR deposits and source areas were added using porewater results from XPW01 and XPW04. Three concentration sources in the form of vertical percolation (recharge) through CCR were simulated within the PAP for calibration (**Table 5-2**): (i) percolation through CCR in the northeastern portion of the PAP, (ii) percolation through CCR in the northwestern portion of the PAP, and (iii) percolation through CCR in the remaining area of the PAP (**Figure 5-24**).

Porewater chemistry from within the PAP indicated that the distribution of sulfate concentrations is spatially variable, ranging on average between 19,000 mg/L (XPW01) and 99 mg/L (XPW03). Therefore, zonation of the PAP concentration sources was used to delineate areas with differing sulfate source inputs. The zonation was based on evidence provided by Ramboll (2020) and AECOM's (2016) History of Construction of the PAP. The CCR materials within the PAP shows

zones of discoloration, suggestive of additional chemical processes occurring within the CCR and/or the presence of deposits other than CCR (Burns & McDonnell Engineering Company, Inc., 2020). Analysis of aerial imagery of the PAP indicates that the zones of discoloration around XWP01 and XPW04 are present from 1998 onwards. The CCR around XWP02 and XWP03 shows no discoloration and are located within the oldest CCR deposits. The sulfate concentration in these wells is similar and possibly more indicative of the sulfate concentrations within the CCR in general. Therefore, the CCR sulfate concentration (excluding the 2 zones) was set to the average concentration from XWP02 and XPW03 (130 mg/L).

All three source areas were simulated by assigning concentration to the recharge input. All source concentrations in the transport model were based on sulfate concentration data collected in 2021. The source concentrations applied to the recharge zones and saturated ash cells immediately below the recharge zones have the same concentration values. Because these are the sources of concentration in the model, the model will be highly sensitive to changes in the input values. For that reason, sensitivity testing was not completed for the source values.

5.2.3.3 Effective Porosity

Effective porosity for each modeled hydrostratigraphic unit were obtained from the HCR (Ramboll, 2021a) and based on the porosity and are presented in **Table 5-2**.

The model had a negligible to high sensitivity to changes in porosity values, not including monitoring locations where the calibration concentration was less than 10.0 mg/L (*i.e.*, AWP05, APW06, APW08, APW11, APW15, and APW16) (**Table 5-3**). For wells with calibration concentrations greater than 10.0 mg/L, the greatest sensitivity for porosity was high for the low porosity sensitivity test at monitoring locations APW07, AWP09, APW17, and APW18.

5.2.3.4 Storage and Specific Yield Sensitivity

Estimates of storage and specific yield for each modeled hydrostratigraphic unit were obtained from the HCR (Ramboll, 2021a) and based on the porosity and are presented in **Table 5-2**.

The model had a negligible sensitivity to changes in storage and specific yield values (**Table 5-3**).

5.2.3.5 Dispersivity

Physical attenuation (dilution and dispersion) of contaminants is simulated in MT3DMS. Dispersion in porous media refers to the spreading of contaminants over a greater region than would be predicted solely from the average groundwater velocity vectors (Anderson, 1979 and 1984). Dispersion is caused by both mechanical dispersion, a result of deviations of actual velocity at a microscale from the average groundwater velocity, and molecular diffusion driven by concentration gradients. Molecular diffusion is generally secondary and negligible compared to the effects of mechanical dispersion and only becomes important when groundwater velocity is very low. The sum of mechanical dispersion and molecular diffusion is termed hydrodynamic dispersion, or simply dispersion (Zheng and Wang, 1998).

Dispersivity values were applied to the entire model domain and determined during calibration. Longitudinal dispersivity was set at 1 foot. The transverse and vertical dispersivity were set at 1/10 and 1/100 of longitudinal dispersivity. The Cahokia Alluvial deposits are represented in layer 4 a distinct zone within the UCU, there is no evidence to indicate that the hydraulic properties of

this unit differ from those of the UCU; however, there is evidence that there is preferred transport through this unit. Therefore, this unit (**Figure 5-19** and **5-20**) has been included as an area of increased dispersivity. The calibrated longitudinal dispersivity for the Cahokia Alluvium was 20 feet, with the transverse and vertical dispersivity set at 1/10 and 1/100 of longitudinal dispersivity. Changes in hydraulic conductivity within this zone have negative impacts on the flow calibration in the UA. The increased dispersivity allows for migration of mass to wells where elevated sulfate concentrations have been observed and are coincident with the Cahokia deposits illustrated on Figure 2 of the HCR (Ramboll, 2021a) while preserving flow calibration.

The model had a negligible to moderately high sensitivity to changes in the Cahokia Alluvium dispersivity in wells, not including monitoring locations where the calibrated concentration was less than 10 mg/L. For wells with calibration concentrations greater than 10.0 mg/L, the greatest sensitivity for dispersivity was moderately high for the low dispersivity sensitivity test at monitoring locations APW07, APW09, APW17, and APW18.

5.2.3.6 Retardation

It was assumed that sulfate would not significantly sorb or chemically react with aquifer solids (Kd was set to 0 mL/g), which is a conservative estimate for estimating contaminant transport times. Lithium, sulfate, and TDS transport is likely to be affected by both chemical and physical attenuation mechanisms (*i.e.*, adsorption and/or precipitation reactions as well as dilution and dispersion). Batch adsorption testing was conducted to generate site-specific partition coefficient results for lithium and sulfate (Golder, 2022b, **Appendix C**) for locations APW-04 and APW-14. Results of the testing are summarized below:

- Lithium: Calculated linear partition coefficient (K_D) values for APW-04 and APW-14 were 4.49 and 5.58 liters per kilogram (L/kg) respectively, Langmuir partition coefficient (K_L) values were 6.2×10^7 and 1.6×10^8 L/kg, respectively, and Freundlich partition coefficients (K_F) values were 135 and 230 L/kg, respectively. In Strenge and Peterson (1989), partition coefficients for lithium range from 0 to 0.8 L/kg, depending on pH conditions and the amount of sorbent present.
- Sulfate: Calculated K_D values for APW-04 and APW-14 were 3.58 and -25.6 L/kg, respectively, K_L values were -626 and -2,200 L/kg, respectively, and K_F values were 4.11 and 2.14×10^{11} L/kg, respectively. In Strenge and Peterson (1989), partition coefficients for sulfate are 0.0 L/kg, regardless of pH conditions and the amount of sorbent present.

The results from NPP samples have a high degree of variation and little correlation with the literature values provided for comparison. The potential exceedances identified in groundwater (lithium, sulfate, and TDS) are affected by natural attenuation processes in multiple ways and to varying degrees. Further assessment of these processes and how they may be applied as a potential groundwater remedy will be completed as part of future remedy selection evaluations as necessary. For the purposes of this modeling report, and as mentioned at the beginning of this section, no retardation was applied to sulfate transport in the model *(i.e.,* Kd was set to 0).

5.3 Flow and Transport Model Assumptions and Limitations

Simplifying assumptions were made while developing this model:

- Natural recharge is constant over the long term.
- Fluctuations in lake stage do not affect groundwater flow and transport over the long term.

- Hydraulic conductivity is consistent within hydrostratigraphic units and delineated zones.
- The approximate base of ash surface in the PAP was developed with HDR using soil borings and bathymetric survey results.
- Source concentrations are assumed to remain constant over time.
- Sulfate is not adsorbed and does not decay and mixing and dispersion are the only attenuation mechanisms.

The model is limited by the data used for calibration, which adequately define the local groundwater flow system and the source and extent of the plume. Since data used for calibration are near the PAP, model predictions of transport distant spatially and temporally from the calibrated conditions at the CCR units will not be as reliable as predictions closer to the CCR units and concentrations observed in 2021.

5.4 Calibration Flow Model

The groundwater model was manually calibrated to best approximate the mean groundwater elevations in 30 wells at NPP. The mean elevations used for calibration and locations of wells within the flow model are summarized in **Table 2-2**. Well locations are shown in **Figure 2-1**. This involved modifying the hydraulic conductivities of the different hydrostratigraphic units, recharge rate, and conductance of the drains, rivers, and general head boundaries within the model to minimize the difference between the mean observed groundwater elevation and simulated groundwater elevation. Where possible, the range of the parameter values used during calibration were based on observed values (*i.e.,* for the range in hydraulic conductivity estimates from the HCR). Where this was not possible, such as for the drain and general head boundary conductance, the range of parameter values were based on other site information or inferred from knowledge from similar sites. Where data were limited, the parameter values were less constrained during calibration (*e.g.,* parameter values had wider ranges). The root mean squared error (RMSE) was used as a metric to identify the optimal values for the different parameters.

5.5 Calibration Flow Model Results

Results of the MODFLOW modeling are presented below. The model files accompany this report (**Attachment A**). **Table 5-1** shows the calibrated hydraulic conductivity for the different units shown in **Figures 5-16** to **5-22**.

Groundwater model calibration results are presented in **Figure 5-25** and **Figure 5-26**, which shows the observed GWL and simulated groundwater elevations and the observed GWL versus residuals. The near-linear relationship between observed and simulated values presented on **Figure 5-25** indicates that the model adequately represents the calibration dataset. The RMSE of the GWL across all wells was 5.14 feet. The mass balance error for the flow model was 0.00% and the ratio of the residual standard deviation to the range of heads was 9.2%, which is just below the desired target value of 10%. Another flow model calibration goal is that residuals are evenly distributed such that there is no bias affecting modeled flow. The observed heads are plotted versus the simulated heads in Figure **5-26** and simulated values are evenly distributed above and below observed values. The residual mean was also near zero with a value of 1.12 feet, indicating a small bias towards overestimating the GWL in the calibrated model; this is also illustrated in the observed versus residuals plot in **Figure 5-26**. The simulated groundwater elevations within the UD/PMP (layer 3) and the UA (layer 6) are shown in **Figure 5-27** and **Figure 5-28**.

In general, the model is able to simulate the groundwater flow patterns the UA (**Figure 2-2** and **Figure 2-3**) interpreted from the NPP well data for May and July 2021 respectively. The notable exceptions are 1) those wells located to the north of the PAP, close to the boundary between the UA and UA- sand, and 2) those wells to the east of the PAP close to the boundary between the UA, UA-sand and UA-gravel. The groundwater level is underestimated in both of these areas. The underestimation in groundwater heads suggests that the subsurface heterogeneity (the uppermost aquifer is located in glacial deposits that grade from sand to silt with gravel deposits) is not optimally represented by the zoned layers used in the model. The interpretation of both the UA-sand and UA-gravel areas were based on well log data available near the PAP. These sand and gravel deposits may or may not be present beyond the available well information. Based on the objective of the model to estimate potential impacts from the PAP, and the model's ability to simulate flow within the UA, the zoned representation in hydraulic properties within the UA is suitable.

5.6 Transport Model Results

The range of observed sulfate concentrations for transport calibration locations are summarized in **Table 2-2**. The goals of the transport model calibration were to have predicted concentrations fall within the range of observed concentrations; and, to have predicted concentrations above and below the GWPS for sulfate (400 mg/L) match observed concentrations above or below the standard at each well.

Both these goals were achieved in three of the transport calibration location wells (**Figure 5-29**), and all but two wells achieved the second goal of matching observed concentrations above or below 2 mg/L. Deviations from the observed ranges are discussed below.

- The model over predicts concentration in wells APW02, APW04, and APW12, which are screened in the UD/PMP. The modeled and observed concentration are both above 400 mg/L, so one of the two calibration goals was satisfied.
- The model under predicts concentrations in APW05S, which is screened in the UD/PMP; however, the difference between the lower limit of the range of observed concentrations (200 mg/L) and the predicted concentration of 116.3 mg/L is small. APW05S is located upgradient of the pond and may also be influenced by other factors, notwithstanding the PAP. The modeled and minimum observed concentration are both below 400 mg/L, so one of the two calibration goals was satisfied.
- The model under predicts concentrations in APW03, which is screened in the UD/PMP; however, the difference between the lower limit of the range of observed concentrations (160 mg/L) and the predicted concentration of 128.9 mg/L is small. Both the observed and predicted concentrations are below the GWPS, so one of the two calibration goals was satisfied.
- The model slightly under predicts the concentration in APW10, which is screened in the UA. The minimum observed concentration at APW10 is 390 mg/L and simulated sulfate concentration is 340 mg/L. The modeled and minimum observed concentration are both below 400 mg/L, so one of the two calibration goals was satisfied.
- The model under predicts concentrations in APW05, APW06, APW11, APW13, APW14, APW15 and APW17 which are screened in the UA. The range in observed sulfate concentrations in these wells is very small, with an average range of 35 mg/L. The maximum observed

concentrations in these wells are 15 mg/L, 9.9 mg/L, 300 mg/L, 230 mg/L, 340 mg/L, 1 mg/L and 41 mg/L, respectively. The predicted concentrations are 0.3 mg/L, 0 mg/L, 2.5 mg/L, 85.2 mg/L, 96.8 mg/L, 9 mg/L and 87.6 mg/L for APW05, APW06, APW11, APW13, APW14, APW15 and APW17, respectively. However, observed and predicted concentrations did not exceed the GWPS, satisfying one of the calibration goals.

- The model over predicts the concentration at APW18, which is screened in the UA. The maximum observed sulfate concentration at APW18 is 26 mg/L and the simulated concentration is 87.6 mg/L, which is an overprediction of 61.6 mg/L. However, observed and predicted concentrations did not exceed the GWPS, satisfying one of the calibration goals.

The remaining calibration locations (APW07, APW09, APW16) have predicted concentrations that were within range of the observed sulfate concentration and simulated GWPS exceedances. The UD/PMP well APW02, where the highest concentrations were observed (3,200 mg/L), was also calibrated to the median concentration of the observed values in 2021, indicating the transport calibration model was able to simulate the highest observed concentrations (**Figure 5-29**). The sulfate plume at the end of the transient model simulation of 500 years for the UD/PMP is shown in **Figure 5-30.** There are no simulated exceedances in the UA at the end of the transient model; however, sulfate is approaching the GWPS of 400 mg/L near APW-10 where exceedances of the GWPS have been observed.

6. SIMULATION OF CLOSURE SCENARIOS

6.1 Overview and Prediction Model Development

Prediction simulations were performed to evaluate the effects of Closure (source control measures) for the PAP on groundwater quality. The prediction simulations evaluated changes in groundwater sulfate concentrations from Scenario 1: CIP (excavating nearly 3.6 million cubic yards of CCR and placing it in consolidated CCR footprints at an elevation greater than 12 feet above the uppermost aquifer (UA) and above the estimated post-closure water table and construction of a cover system over the remaining CCR; and, Scenario 2: CBR (removal of all CCR material from the PAP). As discussed in **Section 5.2.3.5** physical attenuation (dilution and dispersion) of contaminants in groundwater is simulated in MT3DMS, which captures the physical process of natural attenuation as part of corrective actions for both closure scenarios simulated. No retardation was applied to sulfate transport in the model (*i.e.,* Kd was set to 0) as discussed in **Section 5.2.3.6**.

Closure scenarios were simulated by initially removing liquids from the CCR material over the course of 1 year by placing constant head cells with an elevation of 520 feet above the base of the CCR material and applying zero recharge to simulate dewatering of the PAP.

HELP-calculated percolation rates, based on removal and final soil backfill grading designs also provided in the *Primary Ash Pond Final Closure Plan Revision 1* (HDR, 2025), were applied for the different closure scenarios. HELP modeling input and output values are summarized in **Table 6-1** and described in detail below.

The CIP and CBR scenarios were simulated for a 500-year period. The following simplifying assumptions were made during the simulations:

- Removal of liquids from CCR takes place prior to the CIP and CBR closure scenarios. Constant head cells were placed within the PAP to simulate the target water elevation within the ponds; and recharge was set to zero.
- In the CIP and CBR closure scenarios, HELP-calculated average annual percolation rates were developed from a 30-year HELP model run. This 30-year HELP-calculated percolation rate remained constant over duration of the closure scenario prediction model runs following CCR dewatering period.
- Changes in recharge resulting from removal of liquid (decrease calibration model recharge rates to zero) and CCR fill removal/ final soil backfill grading (recharge rates are based on HELP-calculated average annual percolation rates) have an instantaneous effect on recharge and percolation through surface materials.
- Sulfate source concentrations were assumed to be negligible (0 mg/L) in CCR removal areas in both the CIP and CBR scenarios. The spatial distribution of CCR concentrations within the consolidation area for the CIP scenario were maintained from the initial transport simulation.
- Cap construction in CIP scenario was assumed to be completed with a cover system consisting of the following (listed from ground surface down): a vegetative cover (6 inches thick), rooting zone (18 inches thick), a 200-mil geocomposite drainage layer and a 40-mil linear low-density polyethylene geomembrane.

- The start of each closure prediction simulation was initiated at the end of the calibration model period of 45 years plus 1 year to complete removal of liquid. For example, the simulation of Scenario 1: CIP begins at 46 years (45 years for calibration plus 1 year). The prediction modeling timeline for each scenario is illustrated in **Figure 4-1**.
- CCR removal areas were assumed to be graded following placement of soil backfill based on the design drawings provided in the *Primary Ash Pond Final Closure Plan Revision 1* (HDR, 2025).
- CCR consolidation/removal areas were assumed to be graded and include proper storm water controls to remove excess water from the surface using the design drawings provided (HDR, 2025).
- The CIP scenario includes the placement of a stormwater pond within the removal area. It includes excavating nearly 3.6 million cubic yards of CCR and placing it in consolidated CCR footprints at an elevation greater than 12 feet above the uppermost aquifer (UA) and above the estimated post-closure water table and construction of a cover system over the remaining CCR. The outflow elevation of this stormwater pond is 506 feet, which will discharge into Newton Lake adjacent to the PAP. This is represented as a drain in the model whose elevation is equal to the stormwater pond outflow elevation.
- All saturated CCR (constant concentration cells) in the transport calibration model were removed instantaneously in all CCR removal areas for all prediction models.
- Local fill materials applied to the prediction models have similar hydraulic properties as the UD materials used in the transport calibration models. However, the local fill materials were assumed to have reduced vertical anisotropy ratios, approaching isotropic, due to reworking of the material as it is placed as backfill (Kh/Kv decreased from measured values of 100 to 1 for reworked material).

6.2 HELP Model Setup and Results

HELP (Version 4.0; Tolaymat and Krause, 2020) was used to estimate percolation through the PAP in areas of CCR removal with soil backfill, and areas of CCR consolidation with final cover system. HELP input and output files are included electronically and attached to this report.

HELP input data and results are provided in **Table 6-1**. All scenarios were modeled for a period of 30 years. Climatic inputs were synthetically generated using default equations developed for Terra Haute, Indiana (the closest weather station included in the HELP database). Precipitation, temperature, and solar radiation was simulated based on the latitude of the PAP. Thickness of soil backfill and soil runoff input parameters were developed for the ash fill removal scenarios using data provided the *Primary Ash Pond Final Closure Plan Revision 1* (HDR, 2025).

HELP model results (**Table 6-1**) indicated 4.38 and 3.75 inches of percolation per year for the PAP CCR removal and soil backfill area in the CBR and CIP scenarios respectively. Percolation of 0.04 and 0.071 inches per year was modeled through the west, and the east/northeast PAP CCR and final cover systems respectively for the CIP scenario. HELP model simulations were also completed to estimate the percolation for the proposed closure of LF2. Model results indicated 0.000003 inches of percolation per year for this area. The differences in HELP model runs for each area included the following parameters: area, soil backfill thickness, slopes, and soil runoff slope length; all other HELP model input parameters were the same for each simulated area.

HELP input data and results are provided electronically in **Appendix B** and summarized in **Appendix D.**

HELP model simulations were completed to demonstrate that the proposed alternate final protective layer will have a lower infiltration rate than the default 35 I.A.C. 845.750(c)(2) soil final cover system as described in the Update to 2022 Proposed Final Cover Layer Equivalency Demonstration (Ramboll 2025b) which is an appendix to the Final Closure Plan to which this report is also attached. Simulation inputs and output results used in the equivalency demonstration are presented in **Appendix D**.

6.3 Simulation of Closure Scenarios

The calibrated model was used to evaluate the effectiveness of the two closure scenarios by adding constant head cells within the PAP, decreasing recharge to simulate removal of liquids within the ash fill prior to removal, and changing recharge rates to simulate ash fill removal areas at the PAP. Removal of source inputs from the ash removal areas was simulated by reducing the sulfate concentrations associated with recharge in the areas to 0 mg/L. Constant concentration cells that represent areas with potentially saturated CCR were also removed from the ash removal areas.

Each prediction scenario was simulated as a continuation of the PAP dewatering simulation which followed the transient calibrated model. The prediction model input values are summarized in **Table 6-2,** and the modifications to the recharge zones and drain placement for the CIP scenario are illustrated in **Figure 6-1**. **Figure 6-2** illustrates the CCR removal area for the CBR at the PAP. The two closure scenarios are discussed in this report based on predicted changes in sulfate concentrations as described below.

6.3.1 Closure-in-Place Model Results

In the CIP scenario, the predicted concentrations in the UD/PMP start to decline once the closure actions are implemented within the prediction model. The reduced recharge rate in the northern area of the PAP leads to an increasing number of saturated ash cells (constant concentration cells) becoming inactive. These inactive cells are no longer contributing sulfate source concentration to the model domain. Sulfate concentration continues to be introduced in the CIP consolidation area via recharge, although only at a low rate. In addition, as a result of removal of liquids and low recharge rate, downward percolation of solute mass from the PAP is reduced.

As previously discussed, the calibrated model over predicts sulfate concentrations in monitoring wells APW02, APW04, and APW12, which are screened in the UD/PMP. The predictive model indicates that these wells will reach the GWPS (400 mg/L) in 21 years, 34 years, and 5 years respectively, after the corrective measures are in place. All UD/PMP groundwater monitoring wells are below the GWPS within 34 years (**Figure 6-3**). Because the model overpredicts the calibrated concentrations at these wells, the simulated times to reach the GWPS will be conservative and may reach the GWPS earlier than simulated. The predicted footprint of the sulfate plume within the UD/PMP (Layer 3) shown in **Figure 6-3** is considerably reduced from that at the end of the transient model simulation (**Figure 5-30**).

The predicted concentrations in UA groundwater monitoring wells increase for various periods of time after corrective measures are implemented (**Figure 6-4**). However, only APW10 exceeds the GWPS following closure. The predicted concentration in APW10 rises for approximately 10

years after closure is completed, after which it declines such that the concentrations fall below the GWPS after 28.5 years.

Most of the UA wells show a delayed response to the implementation of closure, with the concentrations continuing to rise for up to 200 years in the case of APW17 while remaining below the GWPS. This delay can be attributed to the thick layer of UCU materials present between the UA and the CCR. Due to its low vertical hydraulic conductivity (0.0001 ft/d), sulfate will very slowly percolate through the UCU into the UA. The reduced recharge rate in the CIP scenario further reduces the vertical gradient across this unit, thereby slowing the movement of the sulfate within it. This results in the slow rise and fall of sulfate in many of the UA wells.

The predicted footprint of the sulfate plume within the UA (Layer 6) is shown in **Figure 6-4.** Only a small area to the east of the pond (in close proximity to APW10) shows sulfate concentrations above the GWPS.

Evaluations of post-construction water flux through the consolidated and covered Fill Unit (CCR) were completed using data obtained from the Scenario 1 (CIP) prediction model when simulated post-construction heads in the groundwater monitoring wells are predicted to stabilize (once heads stabilized in the model, the post-construction movement of water in and out of the Fill Unit [CCR] were compared to pre-construction conditions). The pre-construction (calibration model) and post-construction Scenario 1 (CIP) prediction model simulated water flux values are summarized in **Appendix E** and discussed below. Data export files used for flux evaluations are found along with model files in **Appendix B**.

Scenario 1 (CIP) was predicted to reduce total flux in and out of the Fill Unit (CCR) by approximately 99.3% and 99.6% respectively, when simulated post-construction heads in the groundwater monitoring wells are predicted to stabilize (approximate hydraulic steady state) as illustrated in **Figure 6-5**. **Figure 6-6** is a plot showing the changes in flux reduction (shown as negative percentage) over time starting from implementation of Scenario 1 (CIP) through approximate hydraulic steady state conditions. Both flux in and flux out are reduced greater than 90% after one year of closure. Following implementation of Scenario 1 (CIP), influx into the CCR unit decreases rapidly as illustrated in **Figure 6-6**. Concurrently, outflux from the CCR unit behaves similarly, decreasing rapidly and stabilizing 6 years post-construction, after which a reduction of outflux is maintained as heads approach hydraulic stabilization (**Figure 6-6**).

6.3.2 Closure-by-Removal Model Results

In the CBR scenario, predicted concentrations in the UD/PMP start to decline once the closure actions are implemented within the prediction model. These declines are due to removal of the CCR and a small reduction in recharge within the PAP. Predicted sulfate concentrations for APW02, APW03, APW04, APW05S, and APW12 are below the GWPS within 14 years (**Figure 6-3**).

As previously discussed, the model over predicts sulfate concentrations in monitoring wells APW02, APW04, and APW12, which are screened in the UD/PMP. The predictive model indicates that these wells will reach the GWPS 14 years, 10 years, and 13 years respectively, after closure. Because the model overpredicts the calibrated concentrations at these wells, the simulated times to reach the GWPS will be conservative and may reach the GWPS earlier than simulated.

Similar to the CIP scenario, the predicted footprint of the sulfate plume for the CBR within the UD/PMP (Layer 3) shown in **Figure 6-3** is considerately reduced from that of the transient model simulation (**Figure 5-30**). In comparison to the CIP scenario, the CBR simulation has a smaller plume at both the eastern boundary and western boundary of the PAP.

The simulated sulfate concentrations in the UA wells display a similar lagged response to closure as observed in the CIP scenario. Only APW10 exceeds the GWPS following closure. The predicted concentrations in APW10 continue to rise approximately 9 years after closure is completed, after which it declines such the concentrations fall below the GWPS after 16 years.

Like the CIP scenario, most of the UA wells show a delayed response to the implementation of closure, the concentrations continue to rise for up to 50 years in the case of APW18 while remaining below the GWPS.

The predicted footprint of the sulfate plume within the UA (Layer 6) is shown in **Figure 6-4**. Only a small area to the east of the pond (in close proximity to APW10) shows sulfate concentrations above the GWPS and is not significantly different from the CIP simulated plume footprint.

6.3.3 Sulfate Composite Plume for CIP and CBR

The maximum footprint of the plume, based on the simulated sulfate concentrations in all model layers 20 years after corrective measures, is shown in **Figure 6-7**. The footprint of the plume includes the sulfate concentrations retained within the UCU and is therefore greater in area than those plumes in either the UD/PMP or UA. As mentioned above, the sulfate within the thick UCU will slowly percolate through the unit, the rate of which is governed by the hydraulic gradient across the unit. **Figure 6-8** shows the maximum plume extent after 100 years for both the CIP and CBR scenarios. The reduced recharge rate in the CIP scenario leads to a larger plume for the CIP scenario than for the CBR scenario.

The maximum plume footprint in both the CIP and CBR scenarios continues to reduce through time and remains within the property boundaries.

7. CONCLUSIONS

This GMR has been prepared to evaluate how proposed CIP and CBR scenarios will achieve compliance with the applicable groundwater standards at the NPP. The MODFLOW and MT3DMS models used in the previous GMR were used to evaluate two scenarios using information provided in the *Primary Ash Pond Final Closure Plan* Revision 1 (HDR, 2025):

- Scenario 1: CIP (CCR consolidation into eastern and western footprints with cover system construction)
- Scenario 2: CBR (CCR is removed)

The original CIP scenario of CCR consolidation into a single northern footprint was replaced with the current consolidation eastern and western footprints (Scenario 1 above). No changes were made to the original CBR scenario.

Scenario 1 (CIP) is predicted to reduce total flux in and out of the Fill Unit (CCR) by greater than 99%, when simulated post-construction heads in the groundwater monitoring wells are predicted to stabilize. Reduction of post-closure flux of water has improved from 94% in the original closure plan to greater than 99% in the revised plan.

Predictive simulations of pond closure indicate simulated groundwater concentrations in the monitoring wells within the two transport zones, namely the UD/PMP and UA, will achieve the GWPS in 34 years and 14 years for the CIP and CBR closure scenarios, respectively. The model predicted twenty-year time difference when GWPSs are achieved for CIP (34 years post-closure) and CBR (14 years post-closure) is not significant because the estimated duration of construction activities indicates that CBR will take longer to implement than CIP (3.2-4.3 years for CIP compared to 7.8-9.2 years for CBR-Onsite and 22 years for CBR-Offsite; Section 2.1 of the Closure Alternative Analysis [Gradient, 2022] and confirmed in the Updated Closure Alternatives Analysis [Gradient, 2025]).

The prediction simulations indicate that although the groundwater wells reach the GWPS, sulfate remains within the model beyond 100 years in both CIP and CBR scenarios. This is due to the sulfate mass retained within the thick UCU which underlies the PAP. The low vertical hydraulic conductivity of this thick unit leads to low flow rates through the unit which will require time to release the sulfate mass. However, in both the CIP and CBR scenarios, the plume footprint continues to recede with time and remains within the property boundaries indicating these closure options are equally protective.

Results of groundwater flow and transport modeling conservatively estimate that groundwater concentrations will attain the GWPS for all constituents within 34 years of closure implementation for either CIP and CBR. Within the property boundary, residual sulfate will be present within the clay confining unit above the GWPS due to the slow release of sulfate from the UCU.

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TABLES

TABLE 2-1. MONITORING WELL LOCATIONS AND CONSTRUCTION DETAILS
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Well Number	HSU	Date Constructed	Top of PVC Elevation (ft)	Measuring Point Elevation (ft)	Measuring Point Description	Ground Elevation (ft)	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Screen Top Elevation (ft)	Screen Bottom Elevation (ft)	Well Depth (ft bgs)	Bottom of Boring Elevation (ft)	Screen Length (ft)	Screen Diameter (inches)	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)
APW02	UD	06/19/2010	533.61	533.61	Top of Riser	529.90	9.70	19.70	520.20	510.20	20.00	509.90	10	2	38.925918	-88.293907
APW03	UD	06/18/2010	532.41	532.41	Top of Riser	528.37	9.70	19.70	518.67	508.67	20.00	508.40	10	2	38.922322	-88.281567
APW04	UD	06/19/2010	525.06	525.06	Top of Riser	521.45	7.70	17.70	513.75	503.75	18.00	503.50	10	2	38.927444	-88.273113
APW05	UA	10/22/2015	544.07	544.07	Top of Riser	541.08	62.64	67.44	478.44	473.64	67.84	473.10	4.8	2	38.933958	-88.280983
APW05S	UD	01/19/2021	543.94	543.94	Top of PVC	541.05	10.00	20.00	531.05	521.05	20.00	518.10	10	2	38.933958	-88.281033
APW06	UA	10/21/2015	546.07	546.07	Top of Riser	542.89	67.67	72.48	475.22	470.41	72.88	468.90	4.8	2	38.933746	-88.286276
APW07	UA	11/05/2015	538.37	538.37	Top of Riser	535.72	77.89	82.70	457.83	453.02	83.10	452.60	4.8	2	38.928233	-88.292076
APW08	UA	10/28/2015	528.97	528.97	Top of Riser	526.26	71.40	81.06	454.86	445.20	81.53	444.30	9.7	2	38.923154	-88.292286
APW09	UA	11/03/2015	531.52	531.52	Top of Riser	528.33	56.66	61.46	471.67	466.87	61.85	466.30	4.8	2	38.922319	-88.281585
APW10	UA	11/06/2015	524.25	524.25	Top of Riser	521.49	40.74	45.54	480.75	475.95	45.94	475.60	4.8	2	38.927435	-88.273127
APW11	UA	01/23/2021	538.63	538.63	Top of PVC	536.05	60.00	65.00	476.05	471.05	65.00	436.10	5	2	38.932811	-88.27545
APW12	UD	02/21/2021	546.29	546.29	Top of PVC	543.33	20.00	30.00	523.33	513.33	30.00	456.30	10	2	38.92975	-88.272058
APW13	UA	01/22/2021	537.99	537.99	Top of PVC	535.16	58.50	63.50	476.66	471.66	63.50	445.20	5	2	38.92566	-88.274416
APW14	UA	01/23/2021	526.29	526.29	Top of PVC	523.85	50.00	55.00	473.85	468.85	55.00	428.90	5	2	38.924057	-88.277994
APW15	UA	01/22/2021	524.69	524.69	Top of PVC	522.06	98.00	103.00	424.06	419.06	103.00	412.10	5	2	38.921593	-88.285226
APW16	UA	01/20/2021	531.18	531.18	Top of PVC	529.16	80.50	85.50	448.66	443.66	85.50	419.20	5	2	38.920317	-88.291291
APW17	UA	01/22/2021	532.52	532.52	Top of PVC	529.84	87.00	92.00	442.84	437.84	92.00	429.80	5	2	38.925916	-88.293928
APW18	UA	01/21/2021	543.27	543.27	Top of PVC	540.55	75.00	80.00	465.55	460.55	80.00	433.60	5	2	38.930979	-88.290122
G48MG	UA	10/20/2015	545.53	545.53	Top of Riser	542.68	71.80	76.65	470.88	466.03	77.06	465.60	4.9	2	38.939248	-88.296012
G202	UA	10/16/1996	539.69	539.69	Top of Riser	536.85	64.00	74.00	472.85	462.85	74.00	462.90	10	2	38.930876	-88.290559
G203	UA	11/15/1996	533.13	533.13	Top of Riser	530.73	62.50	72.50	468.23	458.23	72.50	458.20	10	2	38.928597	-88.292217
G208	UA	10/13/2011	535.03	535.03	Top of Riser	533.19	74.93	94.71	458.26	438.48	94.80	438.20	19.8	2	38.929632	-88.298182
G217S	UD	08/26/1997	537.98	537.98	Top of Riser	535.54	9.00	19.00	526.54	516.54	19.00	510.50	10	2	38.932171	-88.290041

TABLE 2-1. MONITORING WELL LOCATIONS AND CONSTRUCTION DETAILS
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Well Number	HSU	Date Constructed	Top of PVC Elevation (ft)	Measuring Point Elevation (ft)	Measuring Point Description	Ground Elevation (ft)	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Screen Top Elevation (ft)	Screen Bottom Elevation (ft)	Well Depth (ft bgs)	Bottom of Boring Elevation (ft)	Screen Length (ft)	Screen Diameter (inches)	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)
G217D	UA	12/09/2014	537.92	537.92	Top of Riser	535.51	--	--	--	--	69.30	--	--	--	38.932174	-88.29008
G222	UA	10/25/2011	534.32	534.32	Top of Riser	532.38	64.57	79.24	467.81	453.14	79.30	452.40	14.7	2	38.927194	-88.299669
G223	UA	10/11/2011	533.60	533.60	Top of Riser	531.68	79.09	88.75	452.59	442.93	89.10	442.60	9.7	2	38.93016	-88.293451
G224	UA	10/05/2011	534.31	534.31	Top of Riser	532.31	63.51	73.17	468.80	459.14	73.50	458.30	9.7	2	38.931767	-88.292396
R202	UA	--	--	--	--	--	--	--	--	--	--	--	--	--	38.930879	-88.290581
R217D	UA	09/26/2017	538.18	538.18	Top of Riser	535.60	60.10	65.03	475.50	470.57	65.24	470.40	4.9	2	38.932191	-88.290118
XPW01	CCR	01/20/2021	551.76	551.76	Top of PVC	548.62	7.00	17.00	541.62	531.62	17.00	528.60	10	2	38.932212	-88.285525
XPW02	CCR	01/19/2021	554.43	554.43	Top of PVC	551.97	6.00	16.00	545.97	535.97	16.00	532.00	10	2	38.932343	-88.28289
XPW03	CCR	01/19/2021	553.65	553.65	Top of PVC	550.81	10.00	20.00	540.81	530.81	20.00	530.80	10	2	38.931062	-88.27641
XPW04	CCR	01/19/2021	554.51	554.51	Top of PVC	551.90	10.00	20.00	541.90	531.90	20.00	531.90	10	2	38.929888	-88.274073
XSG01	CCR	--	--	536.17	Staff gauge	--	--	--	--	--	--	--	--	--	38.923218	-88.29067
SG02	SW	--	--	506.89	Staff gauge	--	--	--	--	--	--	--	--	--	38.921234	-88.292057

Notes:
All elevation data are presented relative to the North American Vertical Datum 1988 (NAVD88), GEOID 12A
-- = data not available
bgs = below ground surface
CCR = coal combustion residuals
ft = foot or feet
HSU = Hydrostratigraphic Unit
PVC = polyvinyl chloride
SW = surface water
UA = uppermost aquifer
UD = upper drift

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TABLE 2-2. FLOW AND TRANSPORT MODEL CALIBRATION TARGETS
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

				Flow Targets								Transport Targets						
Well Name	Easting	Northing	HSU	Number of Samples	median GWL[1] (ft)	mean GWL[1] (ft)	std GWL[1] (ft)	min GWL[1] (ft)	max GWL[1] (ft)	Earliest Sample Date	Latest Sample Date	Number of Samples	mean Sulfate (mg/L)	std Sulfate (mg/L)	min Sulfate (mg/L)	max Sulfate (mg/L)	Earliest Sample Date	Latest Sample Date
APW02	995466.245	822683.473	UD	34	528.6	528.6	1.0	524.9	530.4	10/07/2015	08/02/2021	8	2913	579	1500	3200	01/13/2015	07/15/2021
APW03	998977.669	821375.539	UD	33	524.4	524.7	1.5	520.8	528.2	10/07/2015	08/02/2021	8	174	9	160	190	01/13/2015	07/15/2021
APW04	1001381.684	823242.504	UD	33	520.1	520.0	0.7	518.2	521.1	10/07/2015	08/02/2021	8	933	43	860	990	01/13/2015	07/15/2021
APW05	999141.384	825613.581	UA	37	529.5	529.5	0.5	528.0	530.8	12/14/2015	08/02/2021	25	3	4	1	15	12/15/2015	07/15/2021
APW05S	999127.161	825613.573	UD	15	533.6	533.1	0.8	531.7	534.4	02/04/2021	07/15/2021	7	1563	794	200	2100	02/17/2021	07/15/2021
APW06	997635.757	825535.544	UA	36	526.5	526.9	1.1	525.4	530.6	12/14/2015	08/02/2021	25	4	3	1	9.9	12/15/2015	07/15/2021
APW07	995986.774	823526.85	UA	29	492.5	492.8	1.4	491.3	497.6	12/14/2015	08/02/2021	17	12	20	1	66	12/15/2015	02/10/2021
APW08	995927.867	821677.002	UA	29	492.2	492.4	0.9	491.3	494.9	12/14/2015	08/02/2021	17	40	5	30	48	12/15/2015	02/10/2021
APW09	998972.548	821374.443	UA	29	505.1	505.7	1.9	503.4	510.9	12/14/2015	08/02/2021	17	19	22	1	62	12/15/2015	02/11/2021
APW10	1001377.703	823239.224	UA	32	506.6	506.8	0.9	505.1	509.4	12/14/2015	08/02/2021	19	422	34	390	540	12/16/2015	07/29/2021
APW11	1000715.588	825196.787	UA	13	514.1	514.2	0.3	513.9	514.7	02/04/2021	07/15/2021	8	266	52	140	300	02/18/2021	07/15/2021
APW12	1001681.255	824082.573	UD	14	532.0	532.0	0.6	531.3	533.1	02/04/2021	07/15/2021	8	391	65	290	480	02/17/2021	07/15/2021
APW13	1001011.414	822592.511	UA	17	505.8	505.8	0.3	505.2	506.5	02/04/2021	07/15/2021	8	216	7	210	230	02/22/2021	07/15/2021
APW14	999993.839	822008.042	UA	16	505.6	505.5	0.3	504.9	506.3	02/04/2021	07/15/2021	8	325	9	310	340	02/22/2021	07/15/2021
APW15	997936.787	821109.457	UA	15	502.4	501.9	0.9	500.5	502.8	02/04/2021	07/14/2021	8	1	0	1	1	02/23/2021	07/14/2021
APW16	996211.429	820643.869	UA	16	491.4	491.4	0.2	491.1	492.1	02/04/2021	07/15/2021	8	1	0	1	1.9	02/23/2021	07/15/2021
APW17	995460.271	822682.742	UA	16	491.7	491.8	0.3	491.4	492.6	02/04/2021	07/15/2021	8	35	6	25	41	02/23/2021	07/15/2021
APW18	996542.186	824527.23	UA	16	491.9	492.0	0.3	491.7	492.7	02/04/2021	07/15/2021	8	7	9	1	26	02/23/2021	07/15/2021
G48MG	994865.387	827538.141	UA	28	526.4	526.6	0.7	525.5	528.5	12/14/2015	08/02/2021	-	-	-	-	-	-	-
G202	996417.888	824489.657	UA	43	492.8	493.1	1.3	491.6	496.7	04/21/2015	07/14/2021	-	-	-	-	-	-	-
G203	995946.602	823659.404	UA	43	492.8	493.2	1.2	491.0	496.4	04/21/2015	08/02/2021	-	-	-	-	-	-	-
G208	994249.502	824035.648	UA	46	509.5	510.1	2.5	504.9	516.0	04/21/2015	08/02/2021	-	-	-	-	-	-	-
G217S	996565.022	824961.379	UD	30	531.5	531.8	1.4	528.6	535.4	04/21/2015	08/02/2021	-	-	-	-	-	-	-
G223	995595.297	824228.508	UA	47	500.4	500.4	1.2	495.6	504.2	04/21/2015	08/02/2021	-	-	-	-	-	-	-
G224	995895.159	824813.927	UA	47	492.7	492.4	1.4	486.5	495.0	04/21/2015	08/02/2021	-	-	-	-	-	-	-
R202	996411.629	824490.747	UA	2	493.1	493.1	0.2	492.9	493.3	05/21/2020	02/08/2021	-	-	-	-	-	-	-
XPW01	997849.684	824976.957	CCR	11	539.6	539.6	0.2	539.3	539.9	02/15/2021	07/14/2021	5	15000	3807.9	11000	19000	02/17/2021	07/14/2021
XPW02	998599.238	825025.074	CCR	12	545.9	545.9	0.6	544.9	546.7	02/04/2021	07/14/2021	5	164	15.2	150	190	02/17/2021	07/14/2021
XPW03	1000442.897	824559.611	CCR	12	544.1	543.9	0.4	543.3	544.4	02/04/2021	07/14/2021	5	99	11.8	92	120	02/17/2021	07/14/2021
XPW04	1001107.994	824132.454	CCR	11	542.2	542.1	0.2	541.8	542.5	02/04/2021	07/14/2021	5	1920	1196.7	600	3800	02/17/2021	07/14/2021

Notes:
[1] Groundwater Elevation (feet)
GWL = groundwater elevation
ft = feet
std = standard deviation from the mean
min = minimum
max = maximum

HSU: Hydrostratigraphic Unit
CCR = coal combustion residual
UD/PMP = upper drift/potential migration pathway
UA = uppermost aquifer

RAMBOLL

TABLE 5-1. FLOW MODEL INPUT AND SENSITIVITY ANALYSIS RESULTS
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Zone	Hydrostratigraphic Unit	Materials	ft/d	cm/s	Kh/Kv	Value Source	Sensitivity[1]
Horizontal Hydraulic Conductivity			**Calibration Model**				
1	UD	clay and silt	0.41	1.45E-04	NA	Calibrated - Within Range of Field Test Results (Ramboll, 2021a)	High
2	UD -Fill (abover riv/drn)	NA	7	2.47E-03	NA	Calibrated - Conductivity Value to Allow Groundwater Flow from UD to Riverand Drain Boundary Conditions	Low
3	CCR	CCR	17.6	6.21E-03	NA	Calibrated - Within Range of Field Test Results (Ramboll, 2021a)	Moderate
4	UD-PMP	clay and silt	1.5	5.29E-04	NA	Calibrated - Within Range of Field Test Results (Ramboll, 2021a)	Low
5	UD-PMP Sand	mixed alluvial deposits in the vicinity of the PAP	28	9.88E-03	NA	Calibrated - Within Range of Field Test Results (Ramboll, 2021a)	High
6	UCU	lean clay/Cahokia alluvium	0.001	3.53E-07	NA	Calibrated - Within Range of Field Test Results (Ramboll, 2021a)	Low
7	UA	clay and silt	3	1.06E-03	NA	Calibrated - Within Range of Field Test Results (Ramboll, 2021a)	High
8	UA-Sand	sand	3	1.06E-03	NA	Calibrated - Within Range of Field Test Results (Ramboll, 2021a)	Moderately High
9	UA-Gravel	gravel	50	1.76E-02	NA	Calibrated - Within Range of Field Test Results (Ramboll, 2021a)	High
10	LCU	lean clay	0.001	3.53E-07	NA	Calibrated - Within Range of Field Test Results (Ramboll, 2021a)	Low
11	UCU-cahokia	alluvial deposits	0.001	3.53E-07	NA	Calibrated - Within Range of Field Test Results (Ramboll, 2021a)	Low
Vertical Hydraulic Conductivity			**Calibration Model**				
1	UD	clay and silt	0.0041	1.45E-06	100	Calibrated - Within Range Laboratory Test Results and near Geomean of Laboratory Test Results (Ramboll, 2021a)	High
2	UD -Fill (abover riv/drn)	NA	7	2.47E-03	1	Calibrated - Conductivity Value to Allow Groundwater Flow from UD to Riverand Drain Boundary Conditions	Low
3	CCR	CCR	0.2750	9.70E-05	64	Calibrated - Within Range Laboratory Test Results and near Geomean of Laboratory Test Results (Ramboll, 2021a)	Low
4	UD-PMP	clay and silt	0.0150	5.29E-06	100	Calibrated - Within Range Laboratory Test Results and near Geomean of Laboratory Test Results (Ramboll, 2021a)	Low
5	UD-PMP Sand	mixed alluvial deposits in the vicinity of the PAP	0.2800	9.88E-05	100	Calibrated - Within Range Laboratory Test Results and near Geomean of Laboratory Test Results (Ramboll, 2021a)	Moderate
6	UCU	lean clay/Cahokia alluvium	0.0001	3.53E-08	10	Calibrated - Within Range Laboratory Test Results and near Geomean of Laboratory Test Results (Ramboll, 2021a)	High
7	UA	clay and silt	0.0010	3.53E-07	10	Calibrated - Within Range Laboratory Test Results and near Geomean of Laboratory Test Results (Ramboll, 2021a)	Moderately High
8	UA-Sand	sand	0.1000	3.53E-05	21	Calibrated - Within Range Laboratory Test Results and near Geomean of Laboratory Test Results (Ramboll, 2021a)	Moderately High
9	UA-Gravel	gravel	0.1000	3.53E-05	208	Calibrated - Within Range Laboratory Test Results and near Geomean of Laboratory Test Results (Ramboll, 2021a)	Moderate
10	LCU	lean clay	0.0001	3.53E-08	10	Calibrated - Within Range Laboratory Test Results and near Geomean of Laboratory Test Results (Ramboll, 2021a)	Low
11	UCU-cahokia	alluvial deposits	0.0001	3.53E-08	10	Calibrated - Within Range Laboratory Test Results and near Geomean of Laboratory Test Results (Ramboll, 2021a)	High

TABLE 5-1. FLOW MODEL INPUT AND SENSITIVITY ANALYSIS RESULTS
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Zone	Hydrostratigraphic Unit	Materials	ft/d	cm/s	Kh/Kv	Value Source	Sensitivity[1]
Recharge			**Calibration Model**				
1	UD	clay and silt	1.15E-04	0.50	NA	Calibrated	Moderate
2	Fill Unit - PAP	CCR	1.80E-03	7.88	NA	Calibrated	High
3	Fill Unit - Newton Phase II North Landfill	CCR	8.00E-05	0.35	NA	Calibrated	Negligible
4	Fill Unit - Newton Phase II West Landfill	CCR	8.00E-05	0.35	NA	Calibrated	Negligible
5	Fill Unit - Secondary Pond	CCR	8.00E-05	0.35	NA	Calibrated	Negligible
6	Fill Unit - PAP pond north	CCR	8.00E-05	0.35	NA	Calibrated	Negligible
7	Fill Unit - North Pond	CCR	8.00E-05	0.35	NA	Calibrated	Negligible
8	Fill Unit - South Pond	CCR	8.00E-05	0.35	NA	Calibrated	Negligible
9	Fill Unit - Cooling Pond	CCR	8.00E-05	0.35	NA	Calibrated	Negligible
10	NPP	Power Plant footprint	1.00E-05	0.04	NA	Calibrated	Negligible
Storage			**Calibration Model**				
1	UD	clay and silt	*Not used in steady-state calibration model*				
2	UD -Fill (abover riv/drn)	NA					
3	CCR	CCR					
4	UD-PMP	clay and silt					
5	UD-PMP Sand	mixed alluvial deposits in the vicinity of the PAP					
6	UCU	lean clay/Cahokia alluvium					
7	UA	clay and silt					
8	UA-Sand	sand					
9	UA-Gravel	gravel					
10	LCU	lean clay					

River Parameters	Relative Location	River Width (feet)	River depth (feet)	Bed Thickness (feet)	Hydraulic Conductivity (ft/d)	Head (feet)	River Boundary Conductance (ft^2/d)
Reach 0	Cooling Flume-0	varaible	5	1	0.9	535.98	5
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	Negligible	Negligible
Reach 1	Cooling Flume-1	varaible	5	1	0.9	520.66	5
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	Negligible	Negligible
Reach 2	Cooling Flume-2	varaible	5	1	0.9	504.60	5
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	Negligible	Negligible
Reach 3	Sandy Creek	10	6	1	7.5	530.0-504.6	2500
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	Negligible	Negligible
Value Source	NA	Calibrated	Calibrated	Calibrated	Calibrated	Estimated based on DEM	Calibrated

TABLE 5-1. FLOW MODEL INPUT AND SENSITIVITY ANALYSIS RESULTS
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Drain Parameters	Name	Drain Width (feet)	Drain depth (feet)	Bed Thickness (feet)	Hydraulic Conductivity (ft/d)	Stage (feet)	Drain Conductance (ft^2/d)
Reach 1	Sandy Creek Trib 1	5	3	1	7.5	525.6-548.9	36.8-5161
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	Negligible	Negligible
Reach 2	Sandy Creek Trib 2	5	3	1	7.5	524.2-548	16.6-4541
Sensitivity[1]		- - -	- - -	- - -	- - -	Negligible	Negligible
Reach 3	Sandy Creek Trib 3A	5	3	1	7.5	521-544	129-3988
Sensitivity[1]		- - -	- - -	- - -	- - -	Negligible	Negligible
Reach 4	Sandy Creek Trib 3B	5	3	1	7.5	516-521	2.5-4037.2
Sensitivity[1]		- - -	- - -	- - -	- - -	Low	Negligible
Reach 5	Landfill Stream	5	3	1	7.5	508.6-511	8.7-1153.3
Sensitivity[1]		- - -	- - -	- - -	- - -	Low	Negligible
Reach 6	Landfill Drain	5	3	1	7.5	511-525.9	58.3-769.4
Sensitivity[1]		- - -	- - -	- - -	- - -	Moderate	Low
Reach 7	PAP Stream	5	3	1	7.5	508.6-530	3.3-1325.3
Sensitivity[1]		- - -	- - -	- - -	- - -	Low	Low
Reach 8	Newton Lake Trib 1	5	3	1	7.5	508.6-548	24.7-2282.3
Sensitivity[1]		- - -	- - -	- - -	- - -	Negligible	Negligible
Reach 9	Newton Lake Trib 2	5	3	1	7.5	508.6-537	5.1-1196.7
Sensitivity[1]		- - -	- - -	- - -	---	Negligible	Negligible
Reach 10	Newton Lake Trib 3	5	3	1	7.5	508.6-529.8	54.8-1982.7
Sensitivity[1]		- - -	- - -	- - -	- - -	Negligible	Negligible
Reach 11	Newton Lake Trib 4	5	3	1	7.5	508.6-518	101.98-2895
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	Negligible	Negligible
Reach 12	Newton Lake Trib 5	5	3	1	7.5	5086.-527.3	20.3-4147.1
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	Negligible	Negligible
Reach 13	Newton Lake Trib 6	5	3	1	7.5	508.6-535.5	212.5-5306.7
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	Negligible	Negligible
Reach 14	Newton Lake Trib 7	5	3	1	7.5	508.6-526.9	196.8-3828.5
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	Low	Low
Reach 15	Trib South 1	5	3	1	7.5	523-526.9	515.9-4076.7
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	Negligible	Negligible
Reach 16	Trib South 2	5	3	1	7.5	514-532	5.6-4441.4
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	Negligible	Negligible
Reach 17	Trib South 3	5	3	1	7.5	519-528.6	607.0-4191.6
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	Negligible	Negligible
Reach 18	PAP North drain	5	3	1	7.5	517-537.6	1.48-1998.7
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	Low	Negligible
Value Source	NA	Calibrated	Calibrated	Calibrated	Calibrated	Estimated based on DEM	Calibrated

TABLE 5-1. FLOW MODEL INPUT AND SENSITIVITY ANALYSIS RESULTS
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

General Head Parameters	Relative Location	Width of General Head Boundary Cell (feet)	Distance to General Head Boundary Head (feet)	Saturated Thickness of Cell (feet)	Hydraulic Conductivity (ft/d)	Head (feet)	General Head Boundary Conductance (ft^2/d)
Reach 0	Northern Model Boundary in UD & PMP	*variable*	1	variable	variable	variable	2.5-18325
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	Negligible	Low
Reach 1	Northern Model Boundary in UA	variable	1	variable	3	490	229-935
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	Moderate	Low
Reach 2	Southern Model Boundary in UA (silt,sand,gravel)	variable	14000	variable	3,3,50	460	0.033-3.4
Sensitivity[1]	NA	- - -	- - -	- - -	- - -	High	High
Value Source	NA	Calibrated	Calibrated	Calibrated	Calibrated	Estimated based on Groundwater Elevation Targets in UD-PMP and UA around the PAP	Calibrated

Notes:
[1] Sensitivity Explanation:
Negligible - SSR changed by less than 1%
Low - SSR change between 1% and 10%
Moderate - SSR change between 10% and 50%
Moderately High - SSR change between 50% and 100%
High - SSR change greater than 100%
SSR = sum of squared residuals
- - - = not tested
CCR = coal combustion residuals
cm/s = centimeters per second
ft/d = feet per day
ft^2/day = feet squared per day
in/yr = inches per year
Kh/Kv = anisotropy ratio
NA = not applicable
PAP = Primary Ash Pond

Hydrostratigraphic Unit
UD = upper drift
LCU = lower confining unit
UA = uppermost aquifer
UCU = upper confining unit
PMP = potential migration pathway

TABLE 5-2. TRANSPORT MODEL INPUT VALUES (CALIBRATION)
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Zone	Hydrostratigraphic Unit	Materials	Calibration Model			
			Sulfate Concentration (mg/L)		Value Source	Sensitivity
Initial Concentration						
Entire Domain	NA	NA	0		NA	- - -
Source Concentration (recharge)						
			pre-1985	**post 1985**		
1	UD	clay and silt	0	0	NA	- - -
2	Fill Unit - PAP	CCR	130	130	Sulfate concentration data from XWP02 and XWP03	- - -
3	Fill Unit - Newton Phase II North Landfill	CCR	0	0	NA	- - -
4	Fill Unit - Newton Phase II West Landfill	CCR	0	0	NA	- - -
5	Fill Unit - Secondary Pond	CCR	0	0	NA	- - -
6	Fill Unit - PAP pond north	CCR	0	0	NA	- - -
7	Fill Unit - North Pond	CCR	0	0	NA	- - -
8	Fill Unit - South Pond	CCR	0	0	NA	- - -
9	Fill Unit - Cooling Pond	CCR	0		NA	- - -
10	NPP	NPP	0	0	NA	- - -
11	Fill Unit - PAP	CCR	130	11,000	Sulfate concentration data from XWP01	- - -
12	Fill Unit - PAP	CCR	130	3,000	Sulfate concentration data from XWP04 - calibrated	- - -

Storage, Specific Yield and Effective Porosity			**Calibration Model**				
Zone	**Hydrostratigraphic Unit**	**Materials**	**Storage**	**Specific Yield**	**Effective Porosity**	**Value Source**	**Sensitivity**
1	UD	clay and silt	0.003	0.18	0.18	Ramboll (2021a) HCR	see Table 5-3
2	UD -Fill (abover riv/drn)	NA	0.003	0.5	0.5	Ramboll (2021a) HCR	see Table 5-3
3	CCR	CCR	0.003	0.21	0.21	Ramboll (2021a) HCR	see Table 5-3
4	UD-PMP	clay and silt	0.003	0.18	0.18	Ramboll (2021a) HCR	see Table 5-3
5	UD-PMP Sand	mixed alluvial deposits in the vicinity of the PAP	0.003	0.18	0.18	Ramboll (2021a) HCR	see Table 5-3
6	UCU	lean clay/Cahokia alluvium	0.003	0.15	0.15	Ramboll (2021a) HCR	see Table 5-3
7	UA	clay and silt	0.003	0.11	0.11	Ramboll (2021a) HCR	see Table 5-3
8	UA-Sand	sand	0.003	0.11	0.11	Ramboll (2021a) HCR	see Table 5-3
9	UA-Gravel	gravel	0.003	0.11	0.11	Ramboll (2021a) HCR	see Table 5-3
10	LCU	lean clay	0.003	0.155	0.155	Ramboll (2021a) HCR	see Table 5-3

Dispersivity							
Applicable Region	**Hydrostratigraphic Unit**	**Materials**	**Longitudinal (feet)**	**Transverse (feet)**	**Vertical (feet)**	**Value Source**	**Sensitivity**
Cahokia Alluvium	UCU	alluvial deposits	20	2	0.2	calibrated	see Table 5-3
Entire Domain	NA	NA	1	0.1	0.01	calibrated	- - -

Notes:
[1] The concentrations from the end of the calibrated transport model were imported as initial concentrations for the prediction model runs.
- - - = not tested
CCR = coal combustion residuals
mg/L = milligrams per liter
NA = not applicable
PAP = Primary Ash Pond

Hydrostratigraphic Unit
UD = upper drift
LCU = lower confining unit
UA = uppermost aquifer
UCU = upper confining unit
PMP = potential migration pathway

TABLE 5-3. TRANSPORT MODEL INPUT SENSITIVITY (CALIBRATION)
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

		Storage and Specific Yield				Effective Porosity				Dispersivity			
Well ID	**Calibration on Concentration (mg/L)**	**Concentration (mg/L)**	**Sensitivity [1]**	**Concentration (mg/L)**	**Sensitivity [1]**	**Concentration (mg/L)**	**Sensitivity [1]**	**Concentration (mg/L)**	**Sensitivity [1]**	**Concentration (mg/L)**	**Sensitivity [1]**	**Concentration (mg/L)**	**Sensitivity [1]**
APW02	3960.7	3960.5	Negligible	3960.8	Negligible	3982.6	Negligible	3947.1	Negligible	3947.1	Negligible	3960.7	Negligible
APW03	128.9	128.9	Negligible	128.9	Negligible	129.1	Negligible	128.7	Negligible	128.7	Negligible	128.7	Negligible
APW04	1676.9	1676.9	Negligible	1677.0	Negligible	1684.9	Negligible	1664.8	Negligible	1664.8	Negligible	1669.8	Negligible
APW05	0.3	0.3	Negligible	0.3	Negligible	0.8	High	0.2	Moderate	0.2	Moderately High	0.3	Negligible
APW05S	116.3	116.4	Negligible	116.3	Negligible	119.5	Low	113.6	Low	113.6	Low	116.3	Negligible
APW06	0.0	0.0	Negligible	0.0	Negligible	0.0	High	0.0	Moderately High	0.0	Moderately High	0.0	Negligible
APW07	15.7	15.7	Negligible	15.7	Negligible	45.5	High	6.9	Moderately High	6.9	Moderately High	15.7	Negligible
APW08	9.9	9.9	Negligible	9.9	Negligible	38.2	High	3.8	Moderately High	3.8	Moderately High	11.7	Moderate
APW09	16.3	16.3	Negligible	16.3	Negligible	54.8	High	7.0	Moderately High	7.0	Moderately High	22.0	Moderate
APW10	340.4	340.3	Negligible	340.3	Negligible	522.1	Moderately High	226.6	Moderate	226.6	Moderate	467.7	Moderate
APW11	2.5	2.5	Negligible	2.5	Negligible	5.8	High	1.2	Moderately High	1.2	Moderately High	2.5	Negligible
APW12	984.8	984.8	Negligible	984.8	Negligible	1205.2	Moderate	733.7	Moderate	733.7	Moderate	954.4	Low
APW13	85.2	85.2	Negligible	85.1	Negligible	150.5	Moderately High	48.8	Moderate	48.8	Moderate	118.5	Moderate
APW14	96.8	96.8	Negligible	96.7	Negligible	165.0	Moderately High	57.1	Moderate	57.1	Moderate	131.5	Moderate
APW15	9.0	9.0	Negligible	9.0	Negligible	37.9	High	2.0	Moderately High	2.0	Moderately High	11.6	Moderate
APW16	1.8	1.8	Negligible	1.8	Negligible	7.7	High	0.8	Moderately High	0.8	Moderately High	2.8	Moderately High
APW17	15.9	15.9	Negligible	15.9	Negligible	51.7	High	6.2	Moderately High	6.2	Moderately High	15.9	Negligible
APW18	87.6	87.6	Negligible	87.6	Negligible	209.9	High	41.0	Moderately High	41.0	Moderately High	87.7	Negligible
		S*0.1 Sy*0.5[2]		S*10 Sy*2[2]		Porosity-0.05		Porosity+0.05		Disp zone 11*0.5		Disp zone 11*1.5	

Notes:
[1] Sensitivity Explanation:
Negligible = concentration changed by less than 1%
Low = concentration change between 1% and 10%
Moderate = concentration change between 10% and 50%
Moderately High = concentration change between 50% and 100%
High = concentration change greater than 100%
[2] sensitivity test used steady state flow and transient transport
ID = identification
mg/L = milligrams per liter
S = storativity
Sy = specific yield
Disp = dispersivity

TABLE 6-1. HELP MODEL INPUT AND OUTPUT VALUES
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Closure Scenario Number (Drainage Length)	Primary and Secondary AP- CBR	CCR Removal & Soil Backfill Area - CIP	West Primary Ash Pond - CIP	East & Northeast Primary Ash Pond - CIP	Notes
Input Parameter					
Climate-General					
City	Newton, IL	Newton, IL	Newton, IL	Newton, IL	Nearby city to the Site within HELP database
Latitude	38.93	38.93	38.93	38.93	Site latitude
Evaporative Zone Depth	18	18	18	18	Estimated based on geographic location (Illinois) and uppermost soil type (Tolaymat, T. and Krause, M 2020)
Maximum Leaf Area Index	4.5	4.5	4.5	4.5	Maximum for geographic location (Illinois) (Tolaymat, T. and Krause, M, 2020)
Growing Season Period, Average Wind Speed, and Quarterly Relative Humidity	Terre Haute, IN	Terre Haute, IN	Terre Haute, IN	Terre Haute, IN	Nearby city to the Newton Ash Pond within HELP database
Number of Years for Synthetic Data Generation	30	30	30	30	
Temperature, Evapotranspiration, and Precipitation	Precipitation, temperature, and solar radiation was simulated based on HELP V4 weather simulation for: Lat/Long: 38.93/-88.28	Precipitation, temperature, and solar radiation was simulated based on HELP V4 weather simulation for: Lat/Long: 38.93/-88.28	Precipitation, temperature, and solar radiation was simulated based on HELP V4 weather simulation for: Lat/Long: 38.93/-88.28	Precipitation, temperature, and solar radiation was simulated based on HELP V4 weather simulation for: Lat/Long: 38.93/-88.28	
Soils-General					
% where runoff possible	100	100	100	100	
Area (acres)	413.3	181.7	141.2	90.4	CBR - Removal area equals the difference between total PAP area and CIP areas; CIP West & CIP East - Consolidation and Cover System Area based on construction drawing for Newton Primary Ash Pond from HDR
Specify Initial Moisture Content	No	No	No	No	
Surface Water/Snow	Model Calculated	Model Calculated	Model Calculated	Model Calculated	
Soils-Layers					
1	Unsaturated UD Material (HELP Final Cover Soil)	Unsaturated UD Material (HELP Final Cover Soil)	Vegetative Soil Layer (HELP Final Cover Soil [topmost layer])	Vegetative Soil Layer (HELP Final Cover Soil [topmost layer])	Layers details for CBR and CIP areas based on grading plans, construction drawings, and cover system design for Newton Primary Ash Pond
2			Protective Soil Layer (HELP Vertical Percolation Layer)	Protective Soil Layer (HELP Vertical Percolation Layer)	
3			Geocomposite Drainage Layer(HELP Geosynthetic Drainage Net)	Geocomposite Drainage Layer(HELP Geosynthetic Drainage Net)	
4			Geomembrane Liner	Geomembrane Liner	
5			Unsaturated CCR Material (HELP Waste)	Unsaturated CCR Material (HELP Waste)	
6			Barrier Soil Liner	Barrier Soil Liner	
Soil Parameters--Layer 1					
Type	1	1	1	1	Vertical Percolation Layer (Cover Soil)

TABLE 6-1. HELP MODEL INPUT AND OUTPUT VALUES
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Closure Scenario Number (Drainage Length)	Primary and Secondary AP- CBR	CCR Removal & Soil Backfill Area - CIP	West Primary Ash Pond - CIP	East & Northeast Primary Ash Pond - CIP	Notes
Thickness (in)	60	216	6	6	For CIP areas, layer 1 thickness is the average thickness of unsaturated backfill material. For CBR area, layer 1 thickness is unsaturated material above 506 ft amsl.
Texture	43	43	10	10	Defaults used
Description	Silty Clay	Silty Clay	Sandy Clay Loam	Sandy Clay Loam	
Saturated Hydraulic Conductivity (cm/s)	1.45E-06	1.45E-06	1.20E-04	1.20E-04	Hydraulic conductivity supplied by HDR construction plans
Soil Parameters--Layer 2					
Type	--	--	1	1	Vertical Percolation Layer (PAP) and Cover Soil (Landfill)
Thickness (in)	--	--	18	18	design thickness
Texture	--	--	43	43	Custom for Ash Pond - CIP Consolidation and Cover System Area and default for landfill
Description	--	--	Sandy Silty Clay	Sandy Silty Clay	
Saturated Hydraulic Conductivity (cm/s)	--	--	1.00E-05	1.00E-05	Custom for PAP and default for landfill
Soil Parameters--Layer 3					
Type	--	--	2	2	Lateral Drainage Layer
Thickness (in)	--	--	0.2	0.2	design thickness
Texture	--	--	20	20	Defaults used
Description	--	--	Drainage Net (0.5cm)	Drainage Net (0.5cm)	
Saturated Hydraulic Conductivity (cm/s)	--	--	1.00E+01	1.00E+01	Defaults used
Soil Parameters--Layer 4					
Type	--	--	4	4	Flexible Membrane Liner
Thickness (in)	--	--	0.04	0.04	design thickness
Texture	--	--	36	36	Defaults used
Description	--	--	LDPE Membrane	LDPE Membrane	
Saturated Hydraulic Conductivity (cm/s)			4.00E -13	4.00E -13	Defaults used
Soil Parameters--Layer 5					
Type	--	--	1	1	Vertical Percolation Layer (Waste)
Thickness (in)	--	--	252	168	design thickness above historic topos
Texture	--	--	30	30	Defaults used
Description	--	--	High-Density Electric Plant Coal Fly Ash	High-Density Electric Plant Coal Fly Ash	
Saturated Hydraulic Conductivity (cm/s)			5.00E-05	5.00E-05	defaults used
Soil Parameters--Layer 6					
Type	--	--	1	1	Drainage Liner
Thickness (in)	--	--	60	60	5' of water separation

TABLE 6-1. HELP MODEL INPUT AND OUTPUT VALUES
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Closure Scenario Number (Drainage Length)	Primary and Secondary AP- CBR	CCR Removal & Soil Backfill Area - CIP	West Primary Ash Pond - CIP	East & Northeast Primary Ash Pond - CIP	Notes
Texture	--	--	43	43	Defaults used
Description	--	--	Silty Clay	Silty Clay	
Saturated Hydraulic Conductivity (cm/s)			1.45E-06	1.45E-06	Defaults used
Soils--Runoff					
Runoff Curve Number	88.7	90.2	84.5	84.1	HELP-computed curve number
Slope	1.00%	6.00%	2.00%	2.00%	Estimated from construction design drawings
Length (ft)	3600	450	1450	2250	estimated maximum flow path
Vegetation	fair	fair	fair	fair	fai rindicating fair stand of grass on sruface of soil backfill
Execution Parameters					
Years	30	30	30	30	
Report Daily	No	No	No	No	
Report Monthly	No	No	No	No	
Report Annual	Yes	Yes	Yes	Yes	
Output Parameter					
Unsaturated Percolation Rate (in/yr)	**4.38**	**3.75**	**0.04**	**0.071**	

Notes:
% = percent
ft = feet
HELP = Hydrologic Evaluation of Landfill Performance
in = inches
in/yr = inches per year
Lat = latitude
Long = longitude
CBR = Closure By Removal
CIP = Closure In Place
HCR = Hydrogeologic Characterization Report

References:
Tolaymat, T. and Krause, M, 2020. Hydrologic Evaluation of Landfill Performance: HELP 4.0 User Manual . United States Environmental Protection Agency, Washington, DC, EPA/600/B 20/219.
Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2021. Hydrogeologic Site Characterization Report. Newton Primary Ash Pond. Newton Power Plant. Newton, Illinois.

TABLE 6-2. PREDICTION MODEL INPUT VALUES
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Hydrostratigraphic Unit/Recharge Area	Notes	Recharge Zone	Sulfate Concentration (mg/L)	Recharge (ft/day)	Recharge (inches/yr)	Constant Concentration Layer	Constant Concentration (mg/L)
Scenario 1: CIP							
Fill Unit - PAP (West)	CCR	2	130	9.13E-06	0.040	-	-
Fill Unit - PAP (Northeast)	CCR	14	130	1.62E-05	0.071	-	-
Fill Unit - PAP (East)	CCR	12	3,000	1.62E-05	0.071	-	-
Removal Area - PAP	FILL	13	0	8.56E-04	3.75	-	-
Scenario 2: CBR							
Removal Area - PAP	FILL	2	0	1.00E-03	4.38	-	-
Removal Area - PAP	FILL	3	0	8.00E-05	0.35	-	-
Removal Area - PAP	FILL	4	0	8.00E-05	0.35	-	-

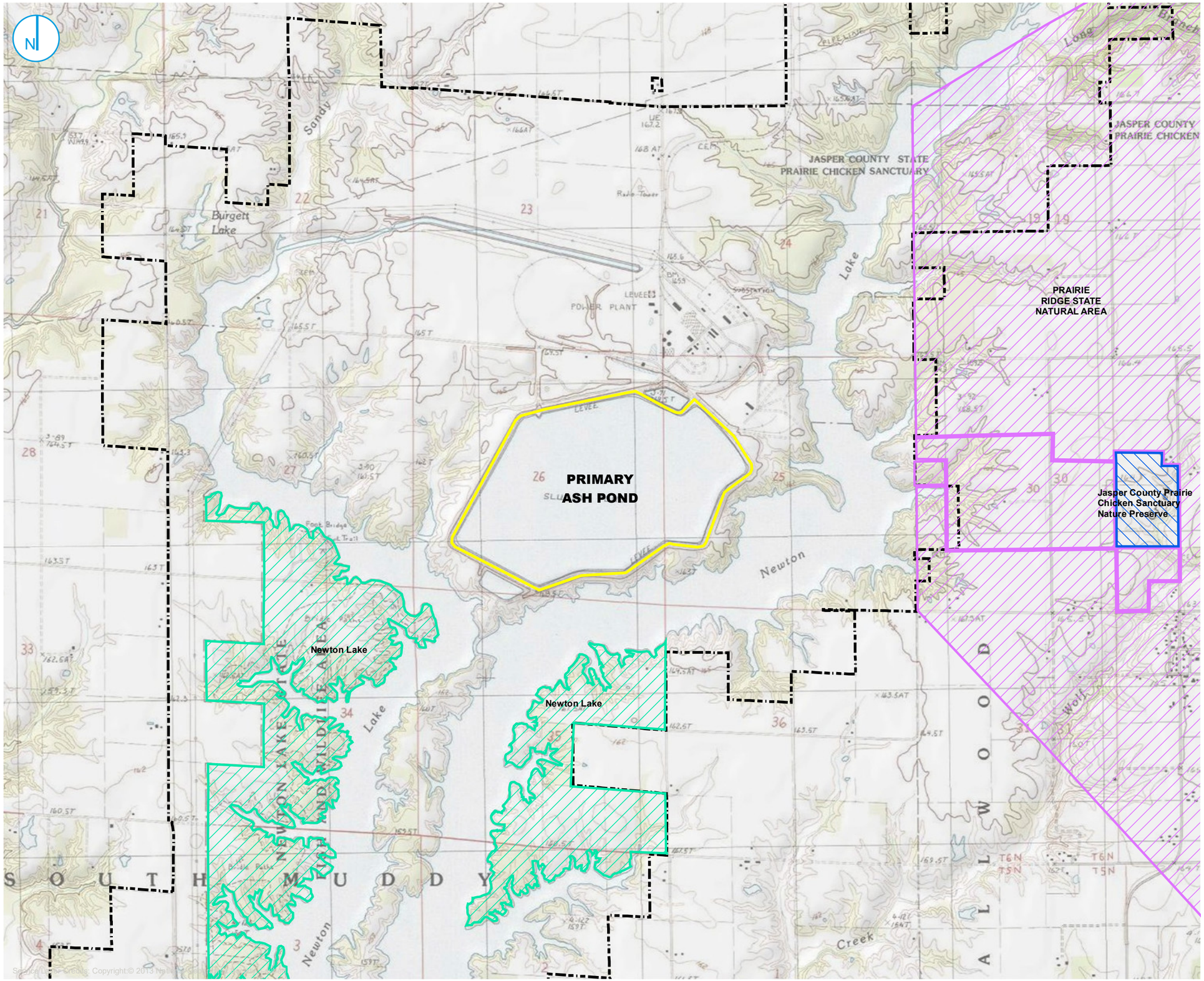
[O: PR 01/20/25; C: KM 03/27/2025]

Notes:
CCR = coal combustion residuals
CPAP = Primary Ash Pond

HSU: Hydrostratigraphic Unit
CCR = coal combustion residual
UD/PMP = upper drift/primary migration pathway
UA = upper aquifer

FIGURES

Y:\Mapping\Projects\222285\MXD\645_Operating_Permit\Newton\Figure 1-1_Site Location Map.mxd



PART 845 REGULATED UNIT FACILITY BOUNDARY

JASPER COUNTY PRAIRIE CHICKEN SANCTUARY NATURE PRESERVE

NEWTON LAKE STATE FISH AND WILDLIFE AREA

PRAIRIE RIDGE STATE NATURAL AREA

PROPERTY BOUNDARY

0 1,000 2,000 Feet

SITE LOCATION MAP

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 1-1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: 1940101010-007 | DATED: 4/11/2022 | DESIGNER: STOLZSD

Source Layer Credits: Copyright© 2013 Na

PART 845 REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
PROPERTY BOUNDARY

0 500 1,000
Feet

SITE MAP

GROUNDWATER MODELLING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 1-2

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\22851\MXD\Model_Figures\Newton\Groundwater_Modelling_Report_2022\Figure 1_Site Map.mxd

PROJECT: 1940101010-007 | DATED: 3/29/2022 | DESIGNER: galarmmc

PORE WATER WELL
MONITORING WELL
STAFF GAGE, CCR UNIT
STAFF GAGE, RIVER
PART 845 REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE

0 400 800
Feet

MONITORING WELL LOCATION MAP

GROUNDWATER MODELLING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

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Y:\Mapping\Projects\22\22851MXD\Model_Figures\Newton\Groundwater_Modelling_Report_2022\Figure 3_Monitoring Well Location Map.mxd
PROJECT: 194010101-007 | DATED: 3/29/2022 | DESIGNER: galarnmc

Y:\Mapping\Projects\22\2285\MXD\845_Operating_Permit\Newton\Figure 3-3_GWE_Contours_20210427.mxd

BACKGROUND WELL
MONITORING WELL
SOURCE SAMPLE LOCATION
STAFF GAGE
GROUNDWATER ELEVATION CONTOUR (5-FT CONTOUR INTERVAL, NAVD88)
INFERRED GROUNDWATER ELEVATION CONTOUR
GROUNDWATER FLOW DIRECTION
PART 845 REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE

NOTES:

1.ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
2. NM = NOT MEASURED
3. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988

0 400 800
Feet

UPPERMOST AQUIFER GROUNDWATER ELEVATION CONTOURS APRIL 27, 2021

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-2

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: 1940101010-007 | DATED: 10/19/2021 | DESIGNER: STOLZSD

Y:\Mapping\Projects\222285\MXD\845_Operating_Permit\Newton\Figure 3-4_GWE_Contours_20210714.mxd

- BACKGROUND WELL
- MONITORING WELL
- SOURCE SAMPLE LOCATION
- STAFF GAGE
- GROUNDWATER ELEVATION CONTOUR (5-FT CONTOUR INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- PART 845 REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE

NOTES:

1.ELEVATIONS IN PARENTHESIS WERE NOT USED FOR CONTOURING.

2. NM = NOT MEASURED

3. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988

0 400 800
Feet

UPPERMOST AQUIFER GROUNDWATER ELEVATION CONTOURS JULY 14, 2021

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

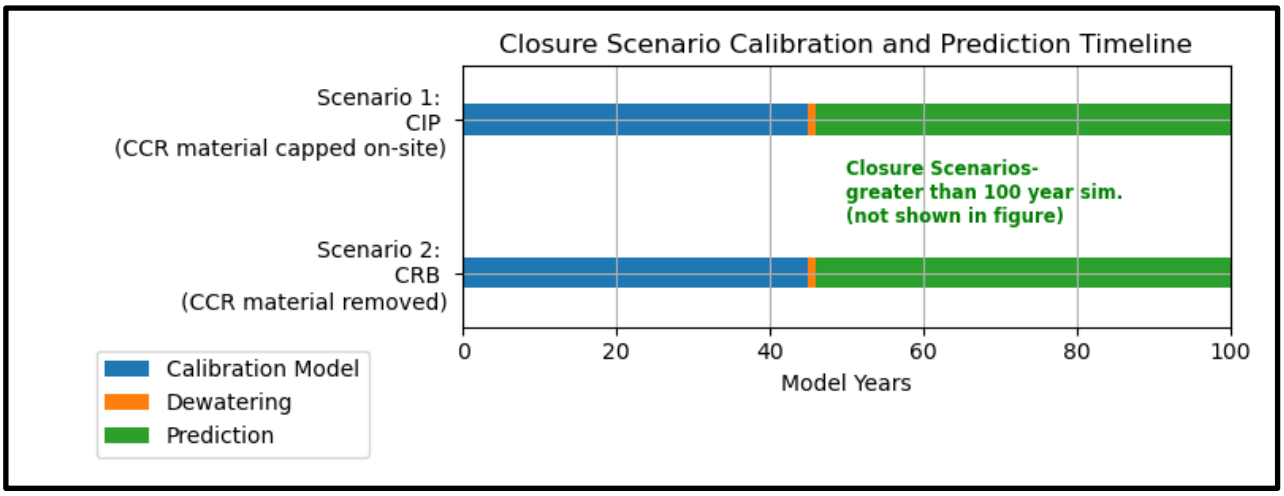
FIGURE 2-3

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: 1940101010-007 | DATED: 10/19/2021 | DESIGNER: STOLZSD

FIGURE 4-1



CLOSURE SCENARIO CALIBRATION AND PREDICTION MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTOWN POWER PLANT
NEWTOWN, ILLINOIS

RAMBOLL

CCR
UD
UA
RIVER
LAKE
COOLING FLUME
MODEL DOMAIN
PART 845 REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE

0 0.25 0.5 Miles

MODEL AREA MAP

GROUNDWATER MODELLING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

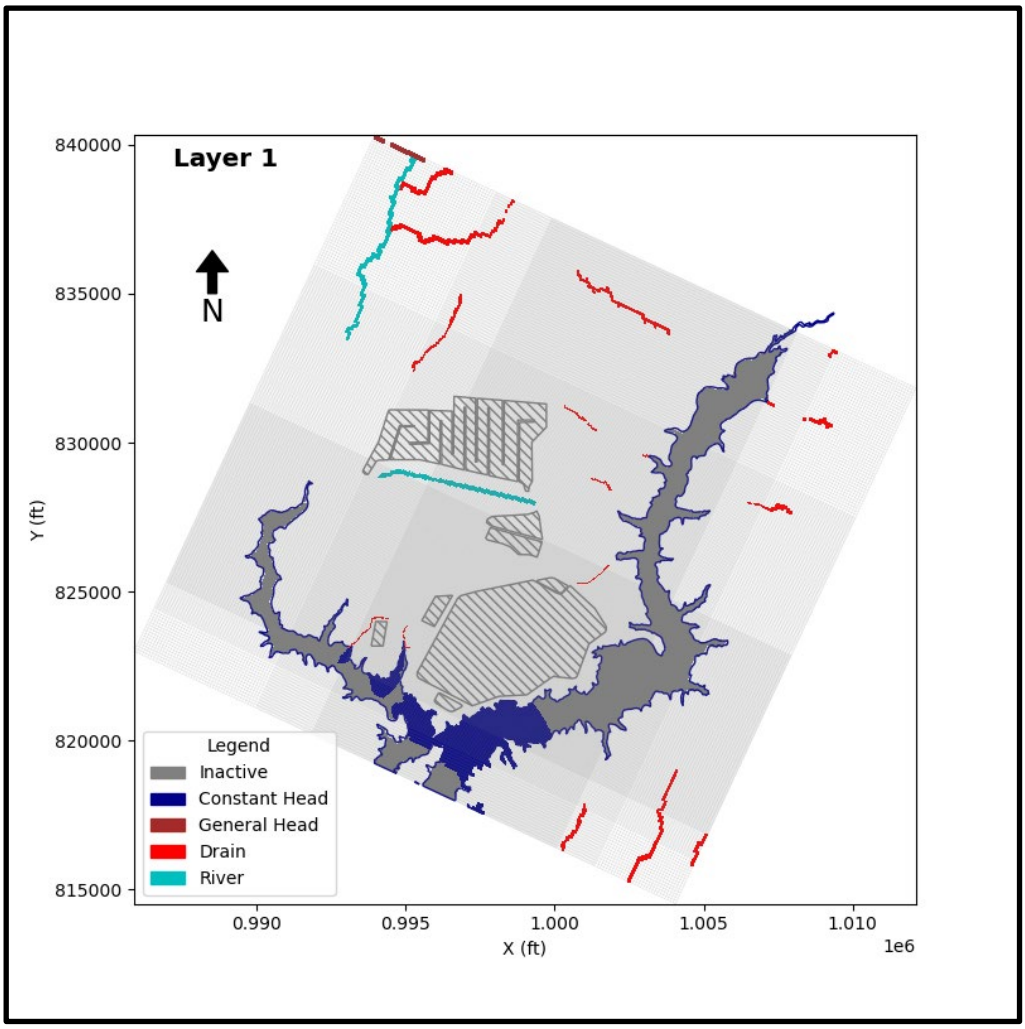
FIGURE 5-1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\22851\MXD\Model_Figures\Newton\Groundwater_Modelling_Report_2022\Figure 4_Model Domain.mxd

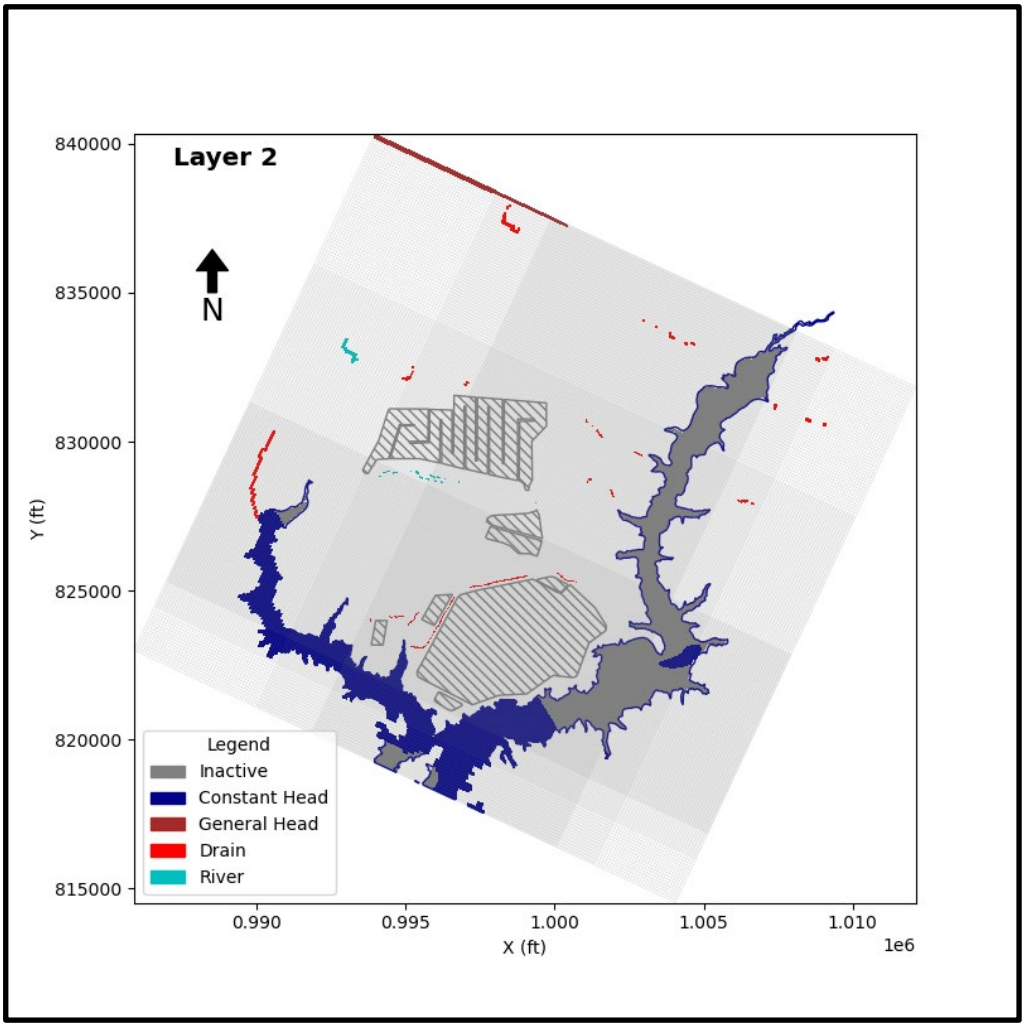
PROJECT: 1940101010-007 | DATED: 3/29/2022 | DESIGNER: galammc



BOUNDARY CONDITIONS FOR LAYER 1 OF THE CALIBRATED NUMERICAL MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

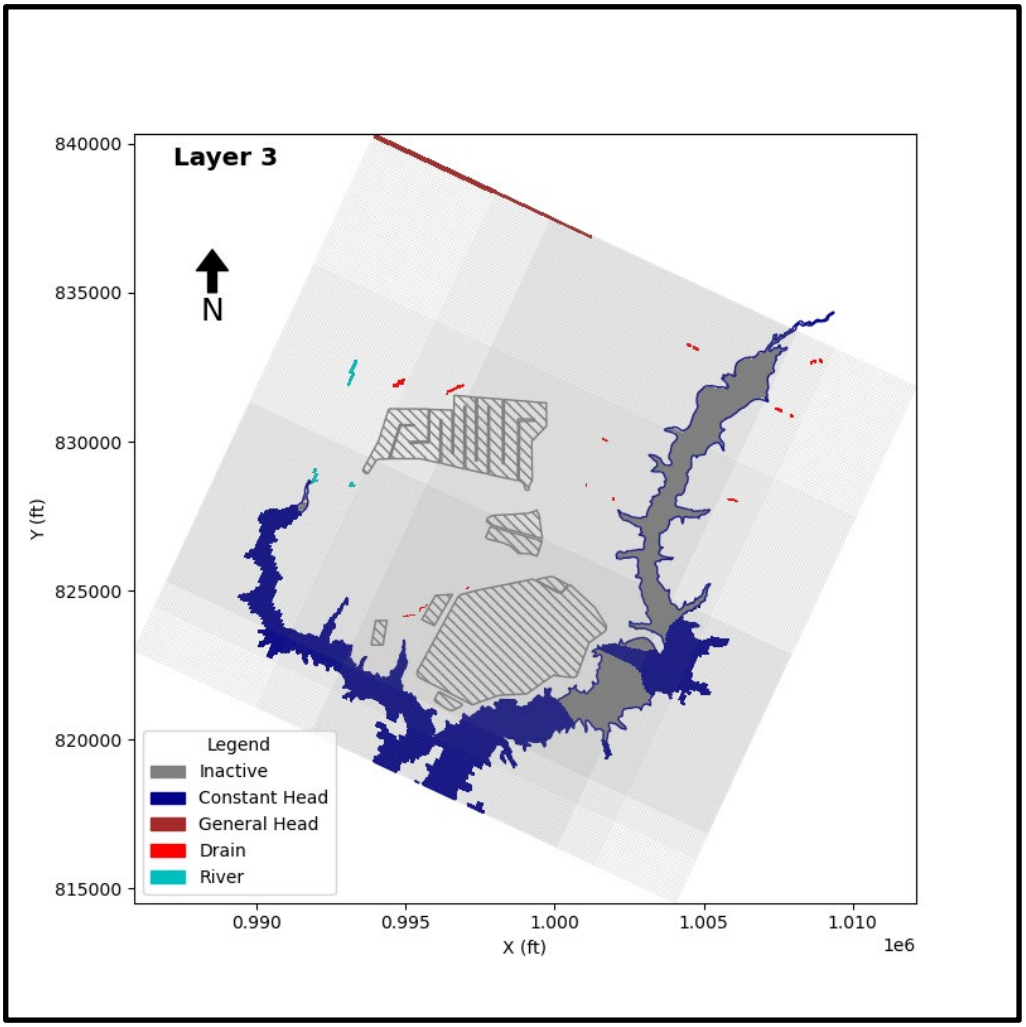
RAMBOLL



BOUNDARY CONDITIONS FOR LAYER 2 OF THE CALIBRATED NUMERICAL MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

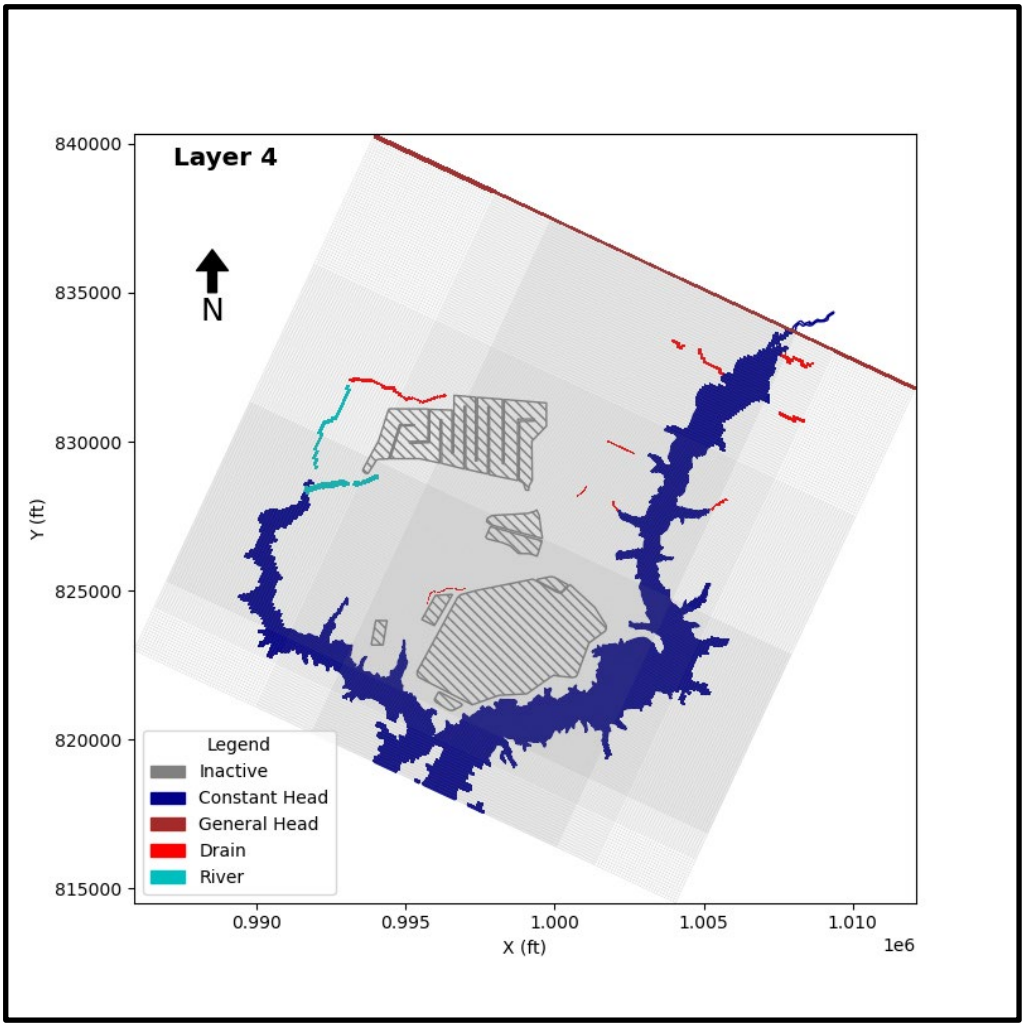
RAMBOLL



BOUNDARY CONDITIONS FOR LAYER 3 OF THE CALIBRATED NUMERICAL MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

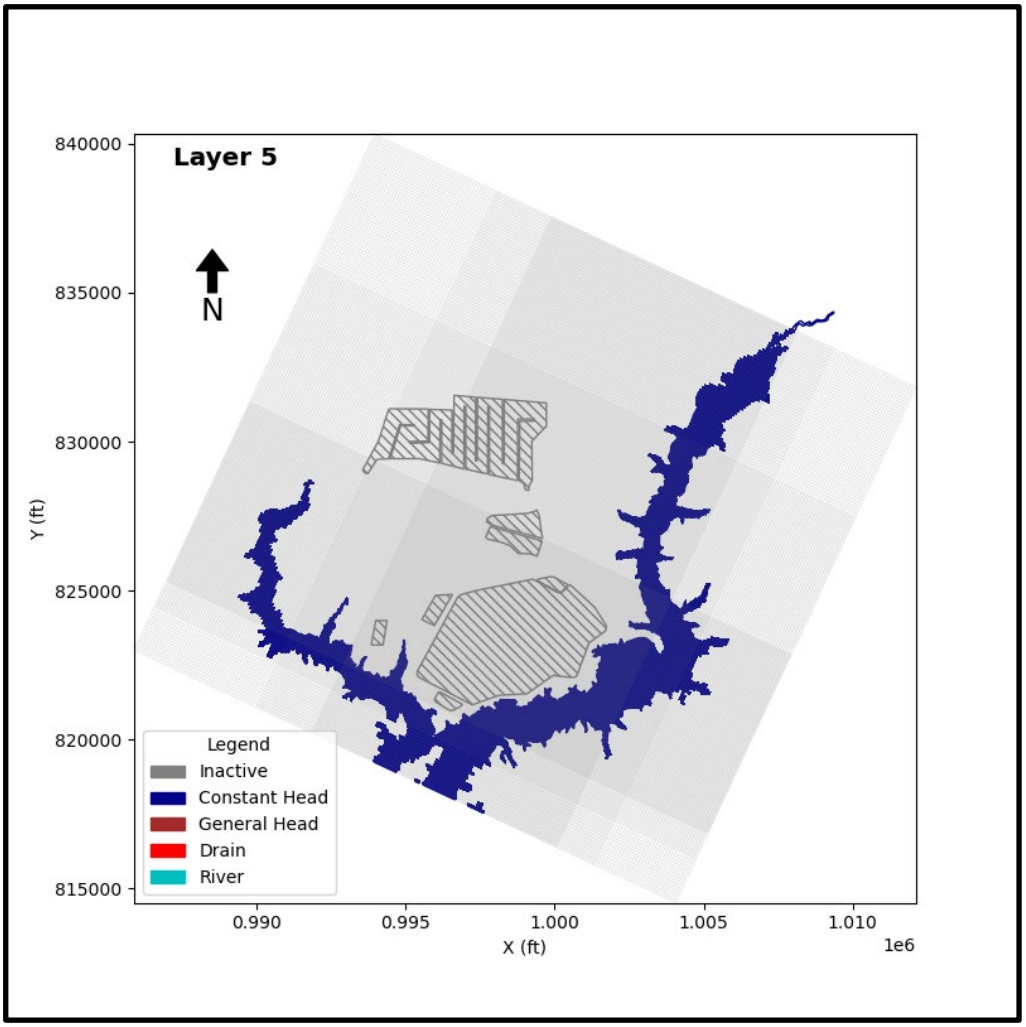
RAMBOLL



BOUNDARY CONDITIONS FOR LAYER 4 OF THE CALIBRATED NUMERICAL MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

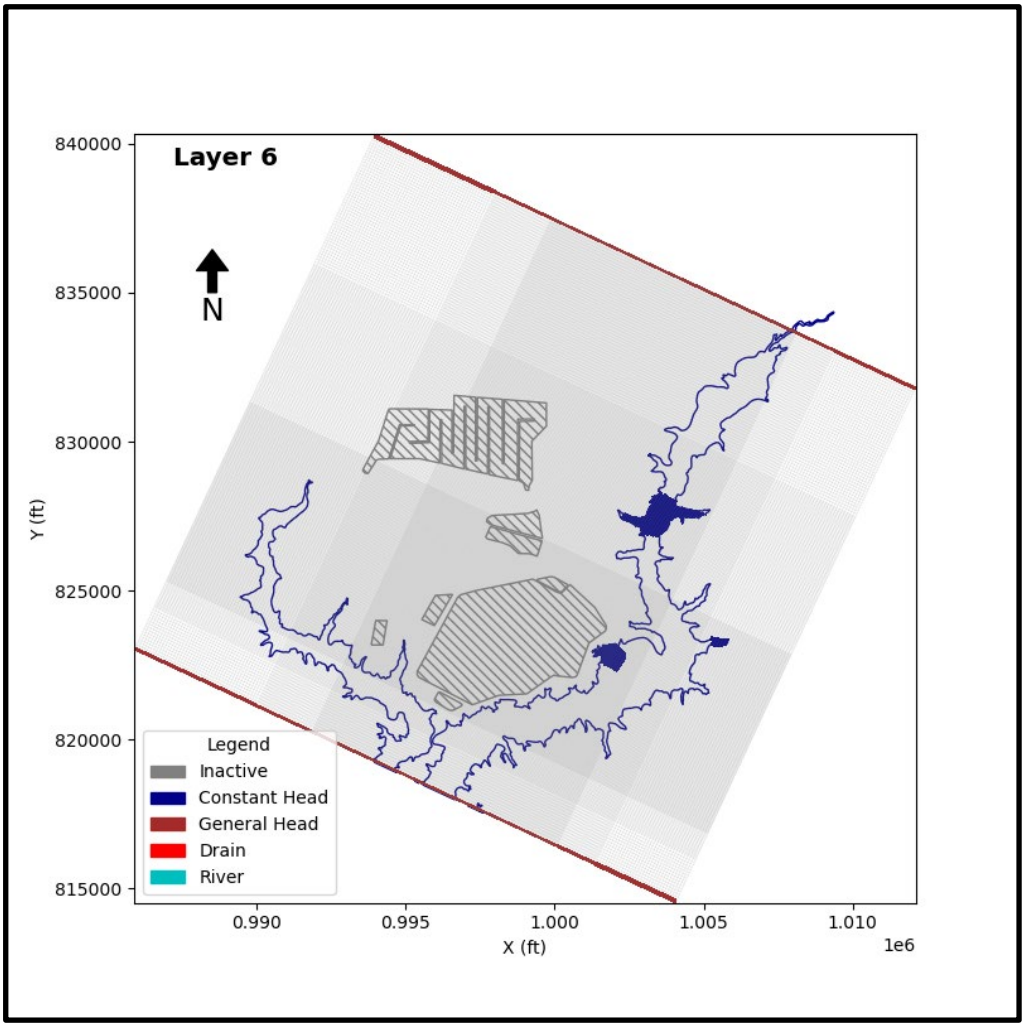
RAMBOLL



BOUNDARY CONDITIONS FOR LAYER 5 OF THE CALIBRATED NUMERICAL MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

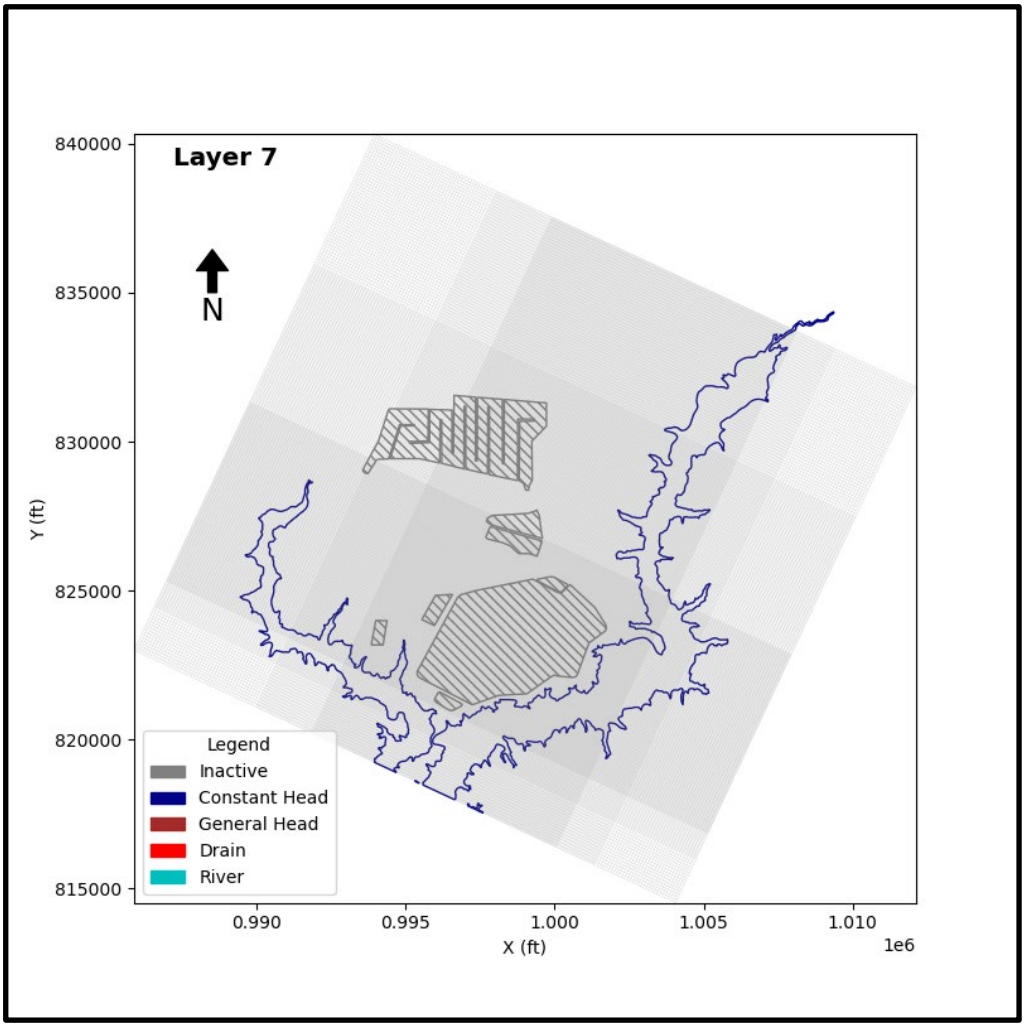
RAMBOLL



BOUNDARY CONDITIONS FOR LAYER 6 OF THE CALIBRATED NUMERICAL MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

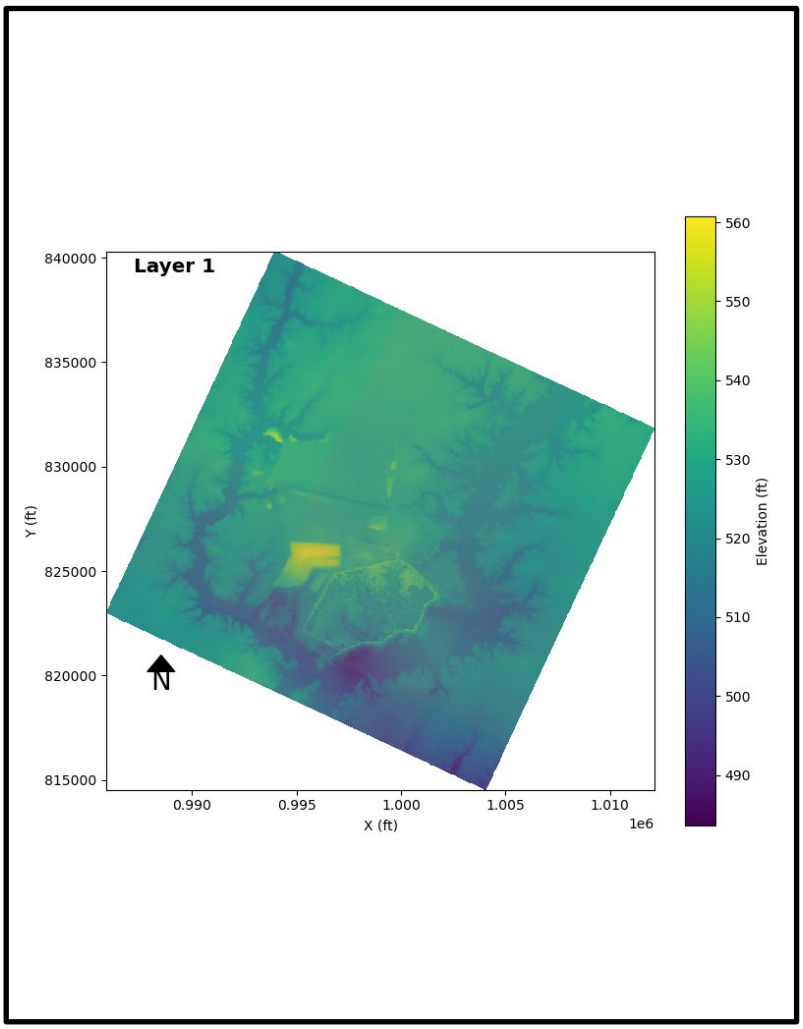
RAMBOLL



BOUNDARY CONDITIONS FOR LAYER 7 OF THE CALIBRATED NUMERICAL MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

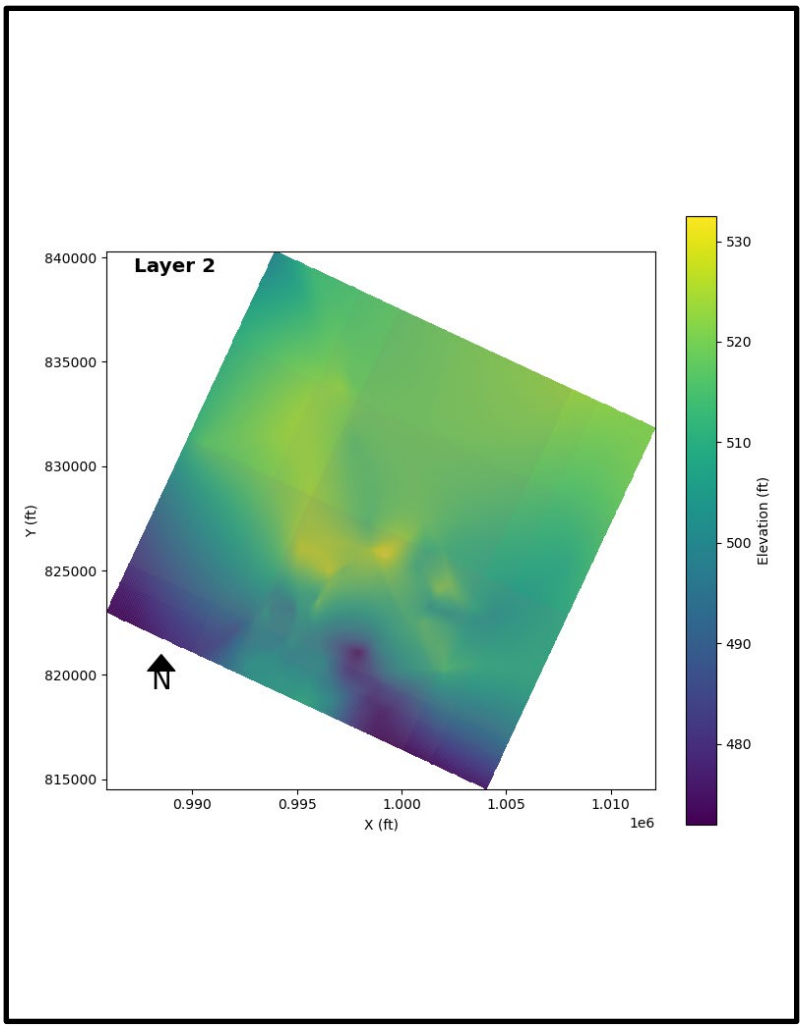
RAMBOLL



BASE OF MODEL LAYER 1

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

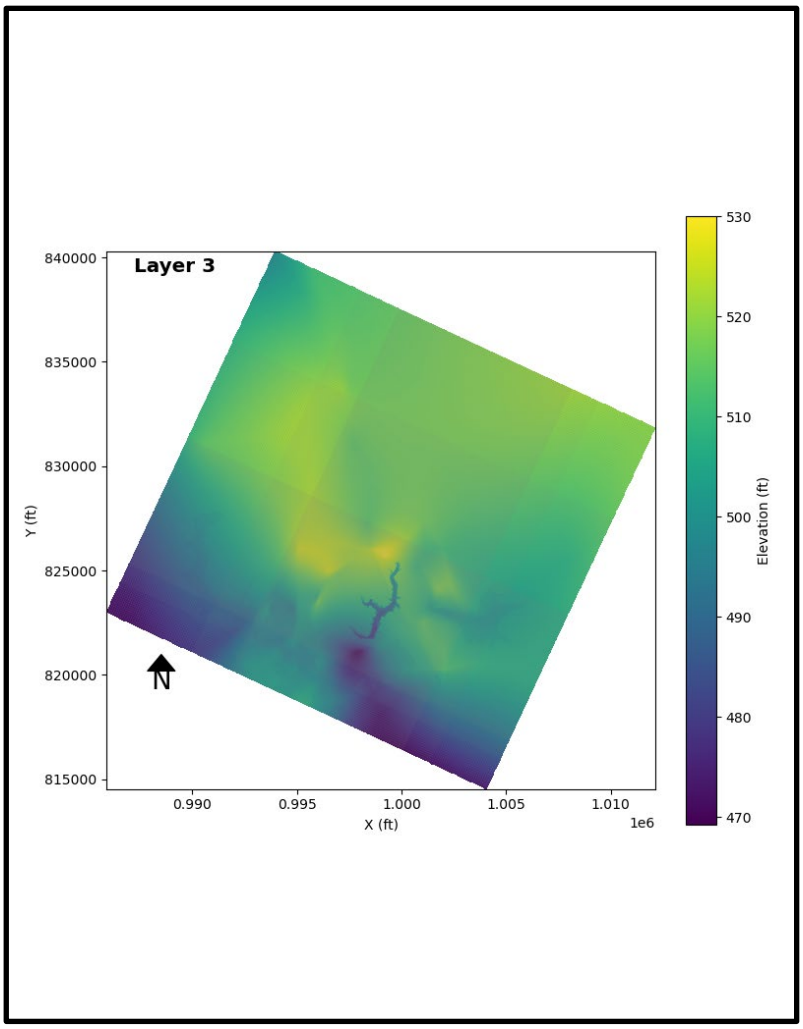
RAMBOLL



BASE OF MODEL LAYER 2

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

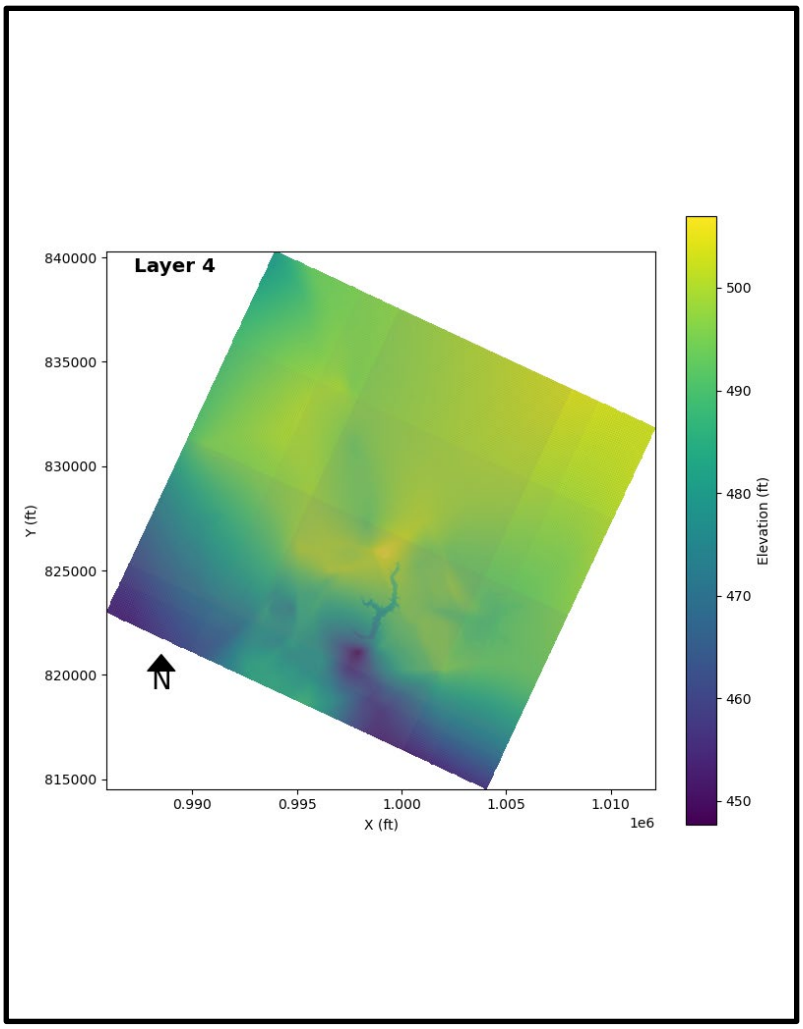
RAMBOLL



BASE OF MODEL LAYER 3

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

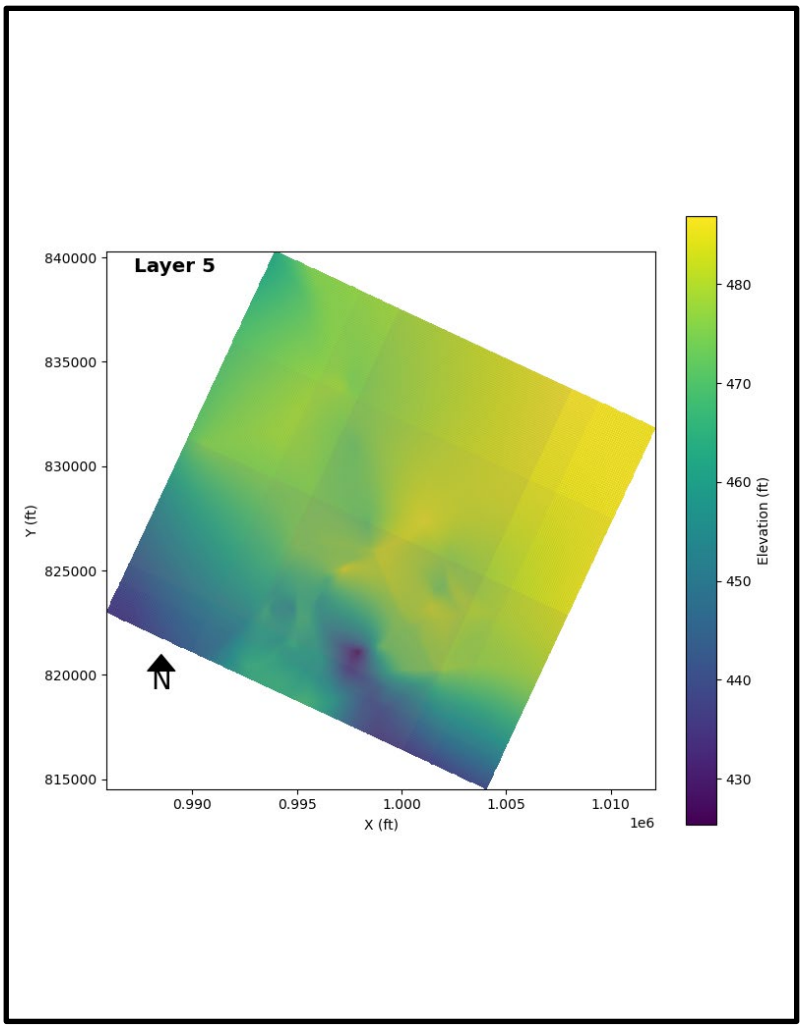
RAMBOLL



BASE OF MODEL LAYER 4

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

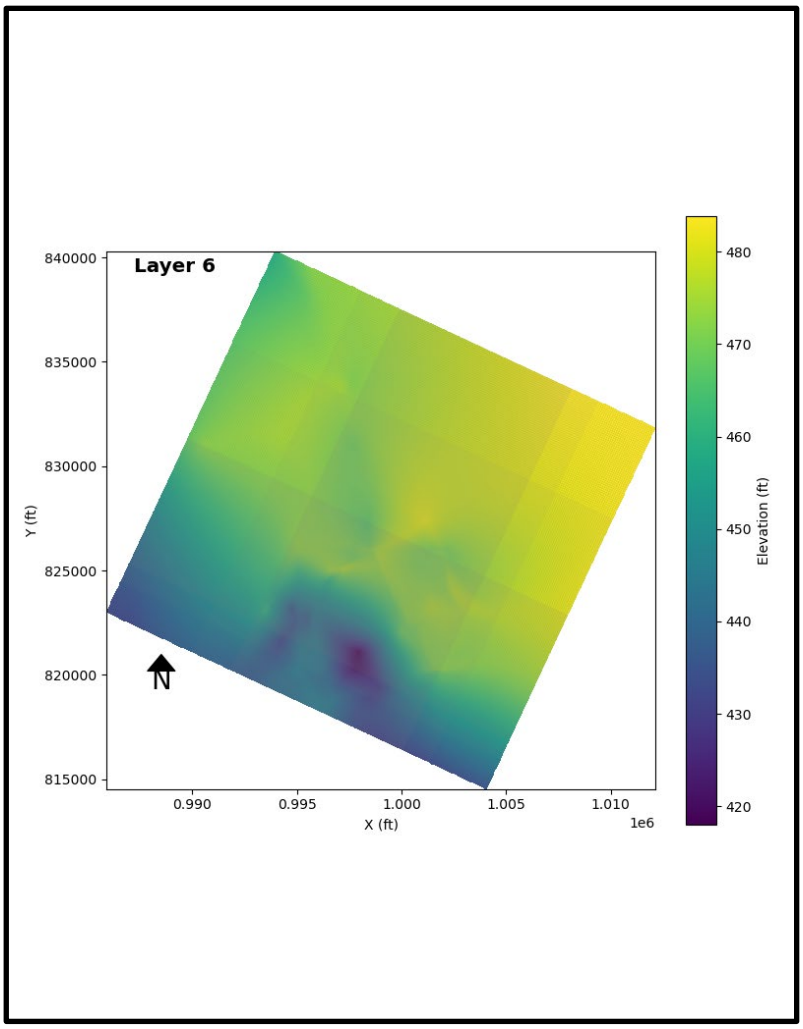
RAMBOLL



BASE OF MODEL LAYER 5

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

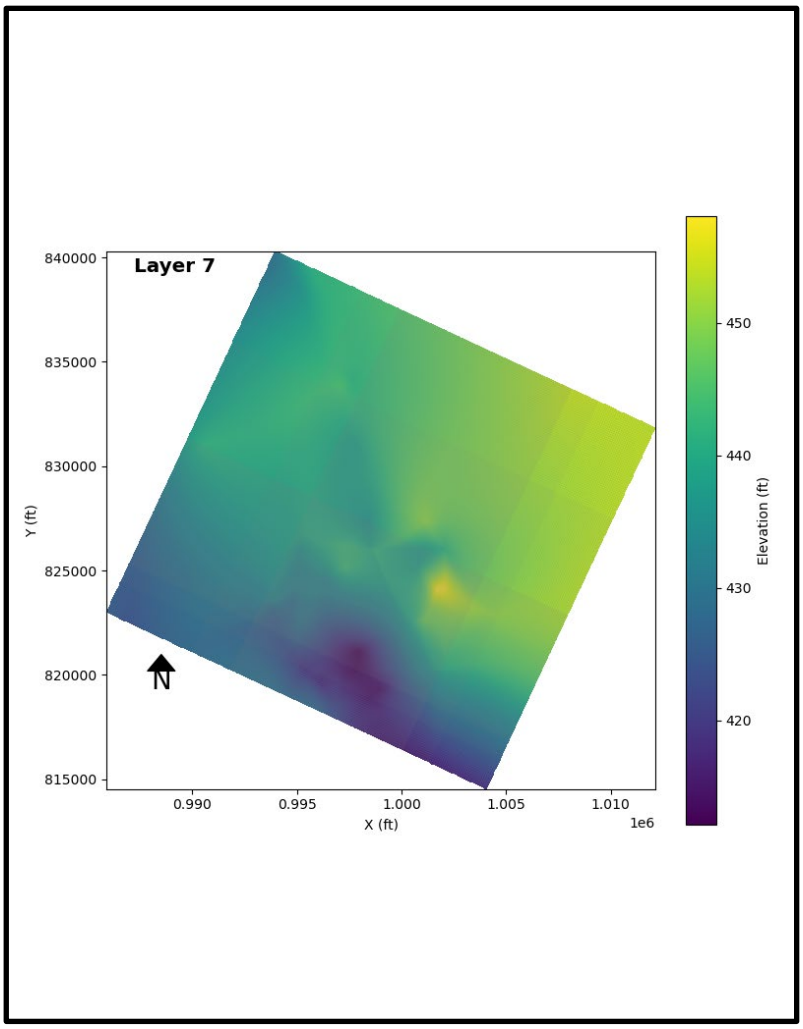
RAMBOLL



BASE OF MODEL LAYER 6

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

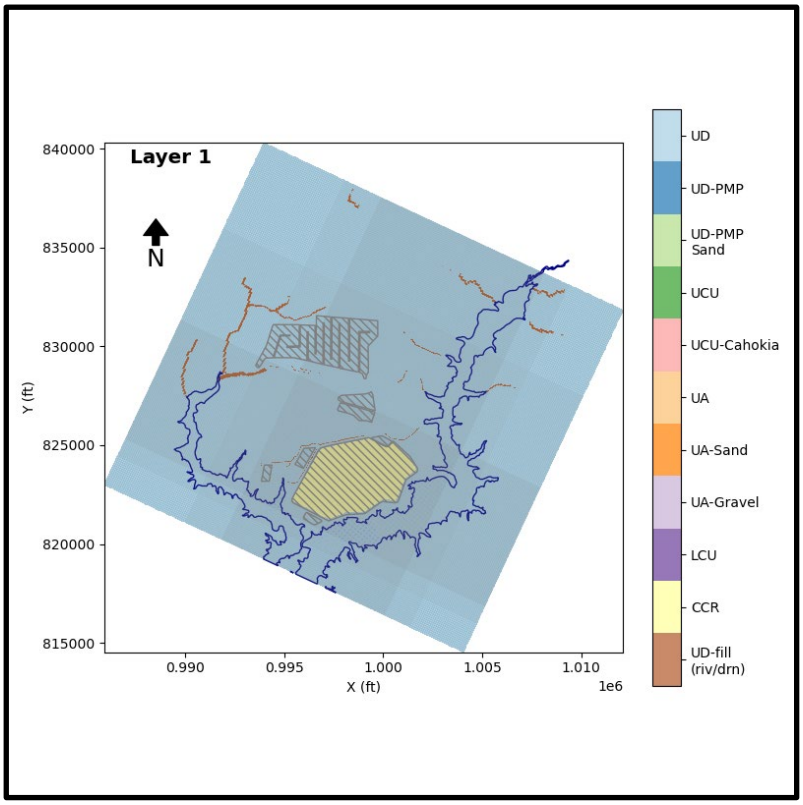
RAMBOLL



BASE OF MODEL LAYER 7

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

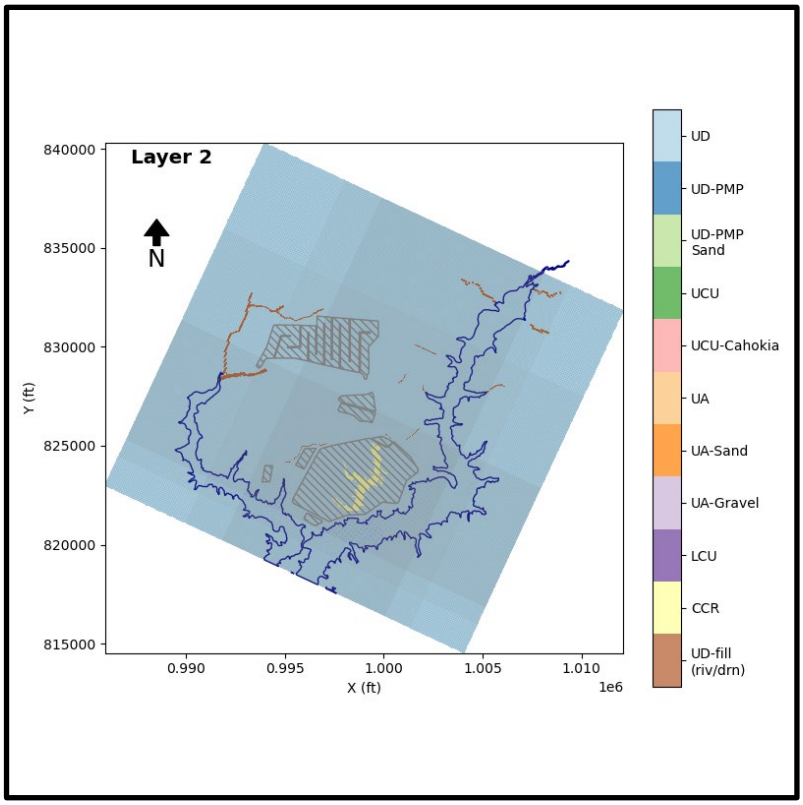
RAMBOLL



SPATIAL DISTRIBUTION OF HYDROSTRATIGRAPHIC LAYERS FOR LAYER 1 IN THE NUMERICAL MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

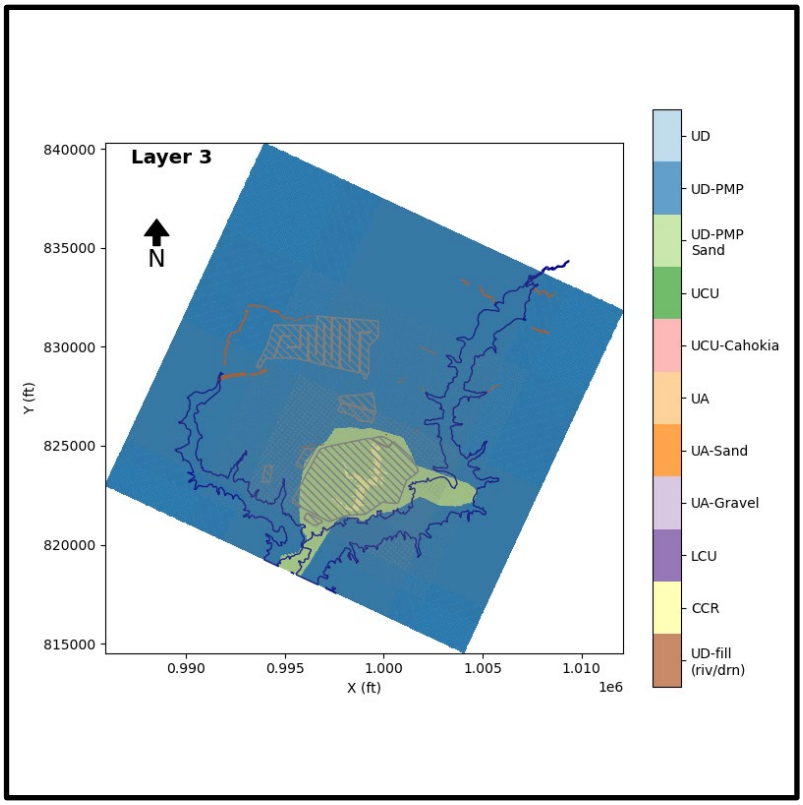
RAMBOLL



SPATIAL DISTRIBUTION OF HYDROSTRATIGRAPHIC LAYERS FOR LAYER 2 IN THE NUMERICAL MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

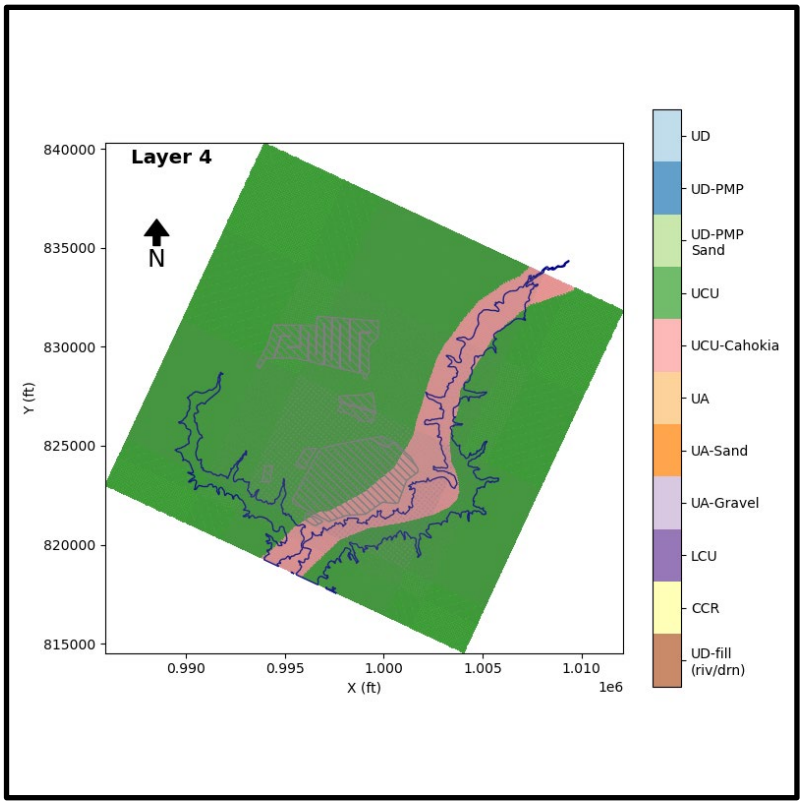
RAMBOLL



SPATIAL DISTRIBUTION OF HYDROSTRATIGRAPHIC LAYERS FOR LAYER 3 IN THE NUMERICAL MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

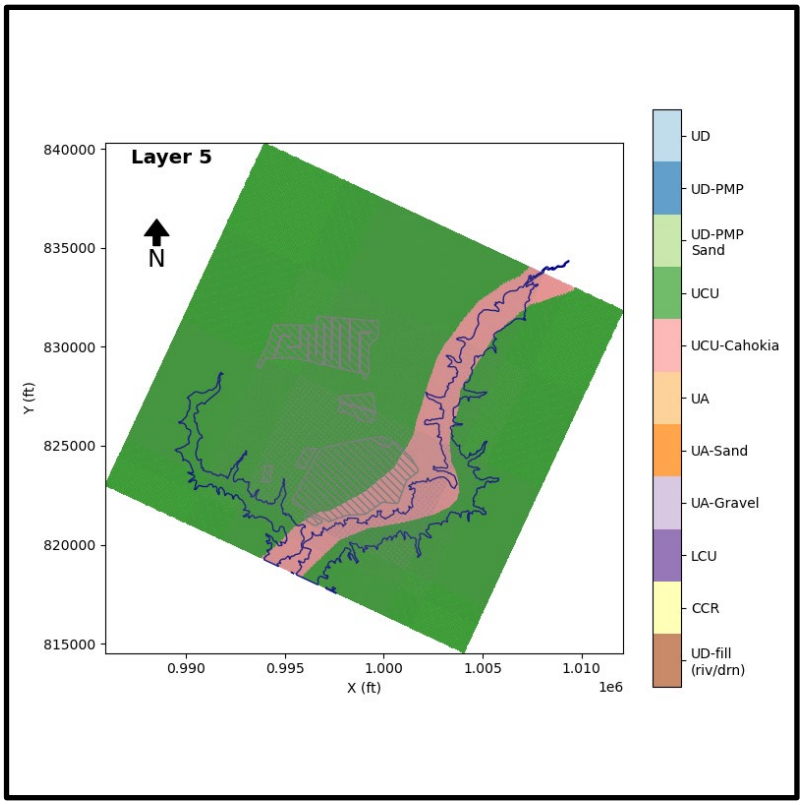
RAMBOLL



SPATIAL DISTRIBUTION OF HYDROSTRATIGRAPHIC LAYERS FOR LAYER 4 IN THE NUMERICAL MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

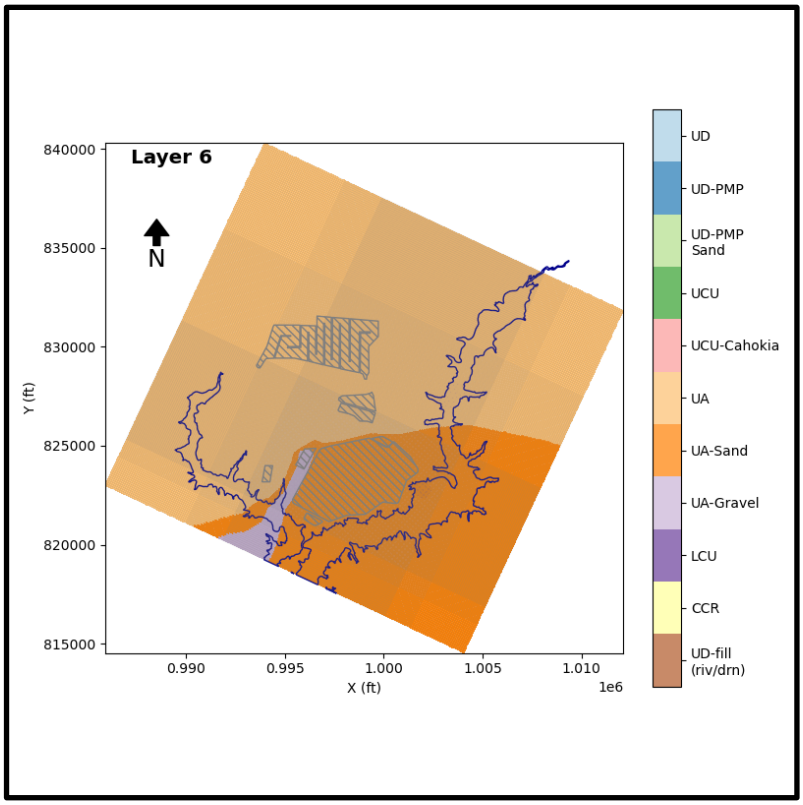
RAMBOLL



SPATIAL DISTRIBUTION OF HYDROSTRATIGRAPHIC LAYERS FOR LAYER 5 IN THE NUMERICAL MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

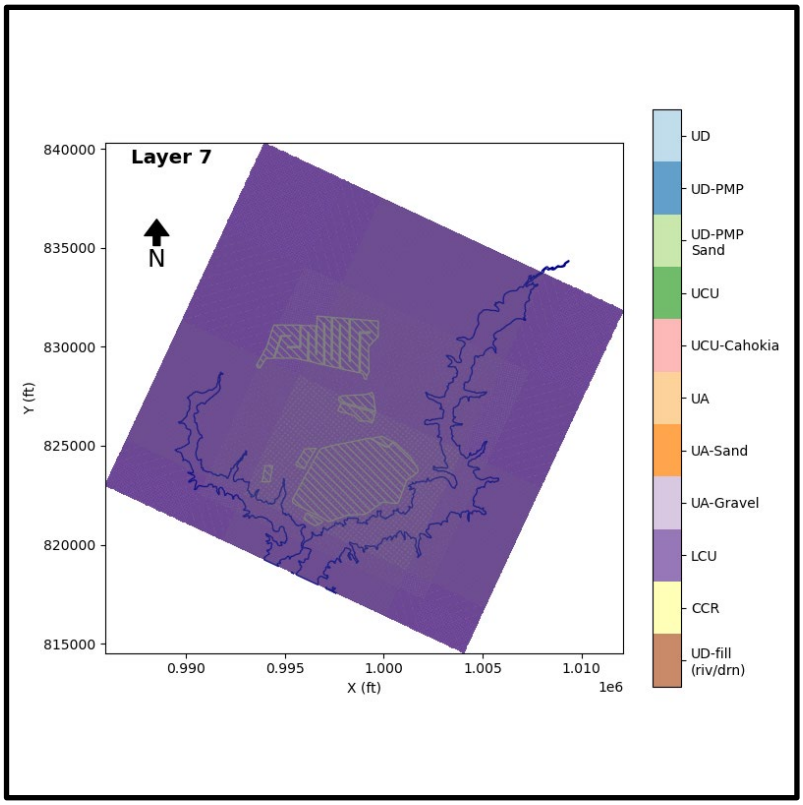
RAMBOLL



SPATIAL DISTRIBUTION OF HYDROSTRATIGRAPHIC LAYERS FOR LAYER 6 IN THE NUMERICAL MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

RAMBOLL

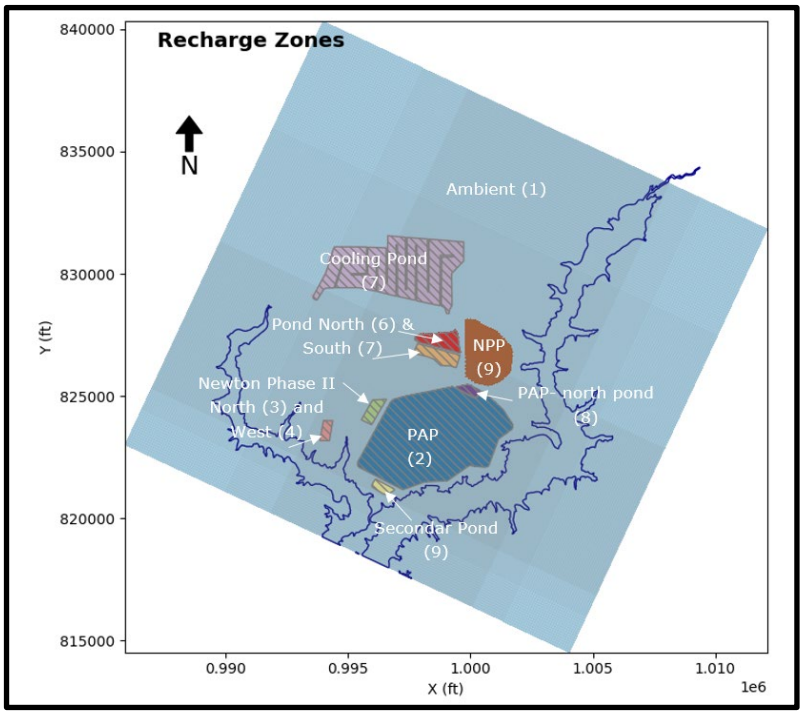


SPATIAL DISTRIBUTION OF HYDROSTRATIGRAPHIC LAYERS FOR LAYER 7 IN THE NUMERICAL MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

RAMBOLL

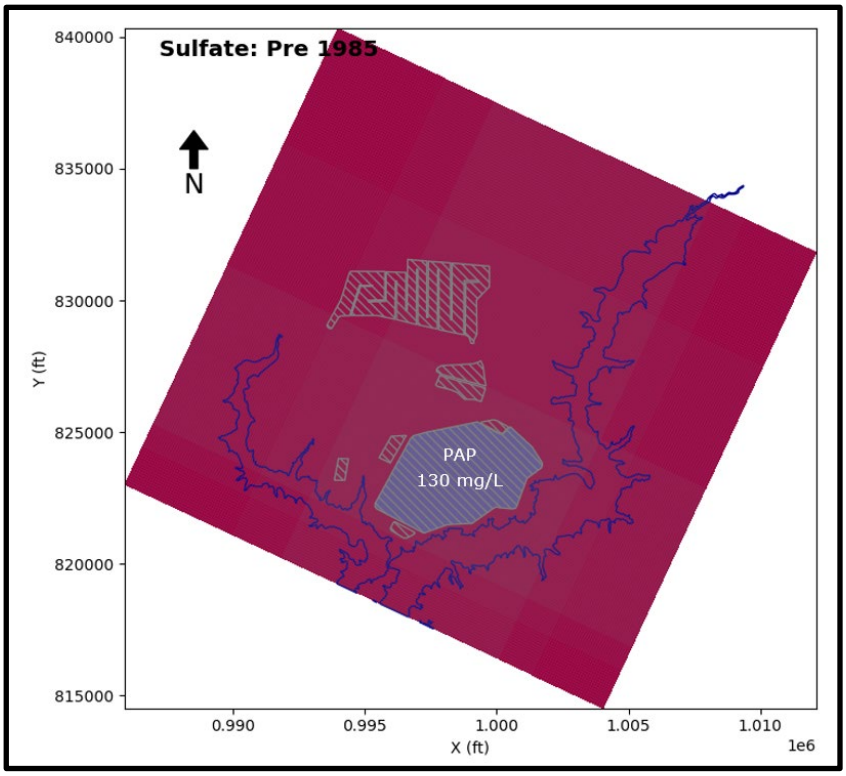
FIGURE 5-23

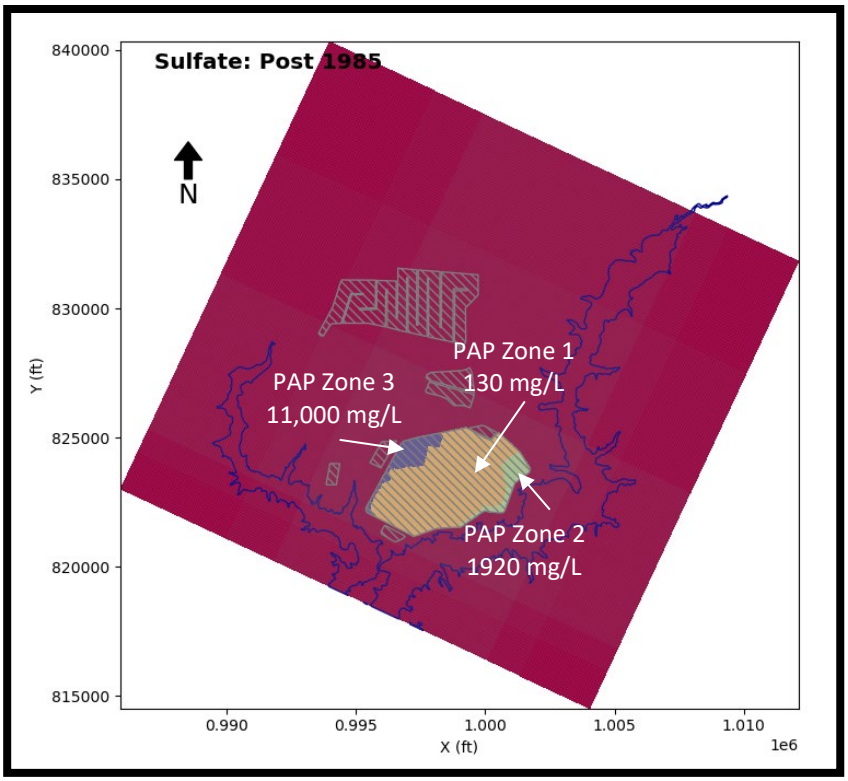


MODEL RECHARGE DISTRIBUTION (STEADY STATE CALIBRATION MODEL)

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

RAMBOLL

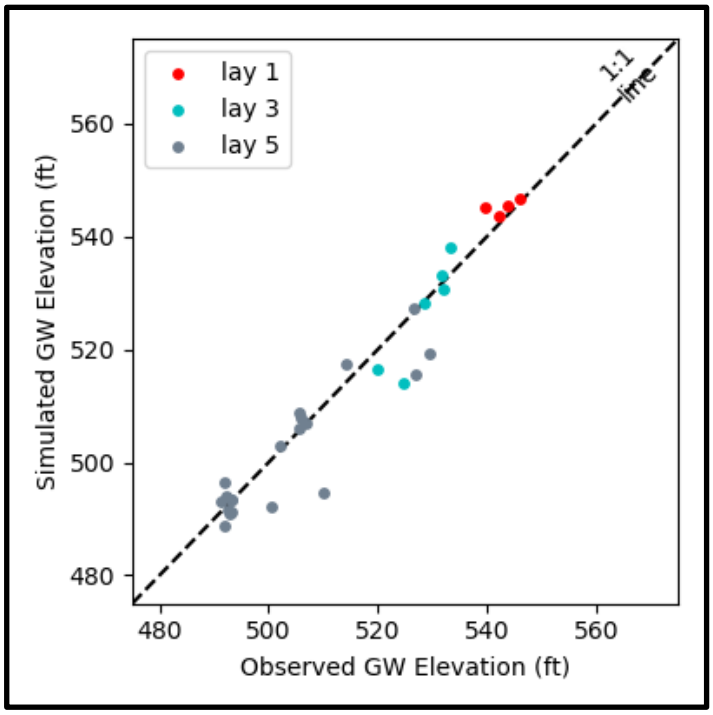




MODEL RECHARGE DISTRIBUTION FOR TRANSPORT MODEL FOR PRE AND POST 1985

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

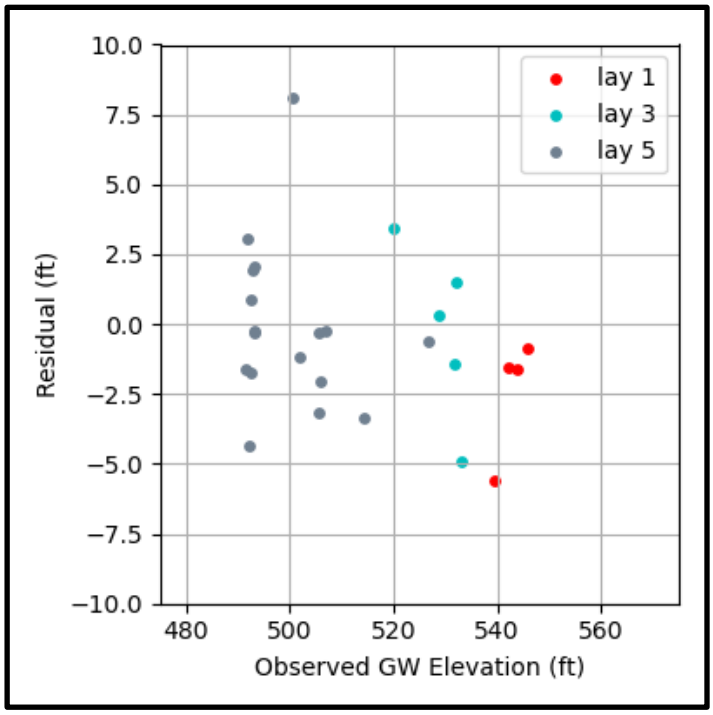
RAMBOLL



OBSERVED VERSUS SIMULATED STEADY STATE GROUNDWATER LEVELS FROM THE CALIBRATION MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

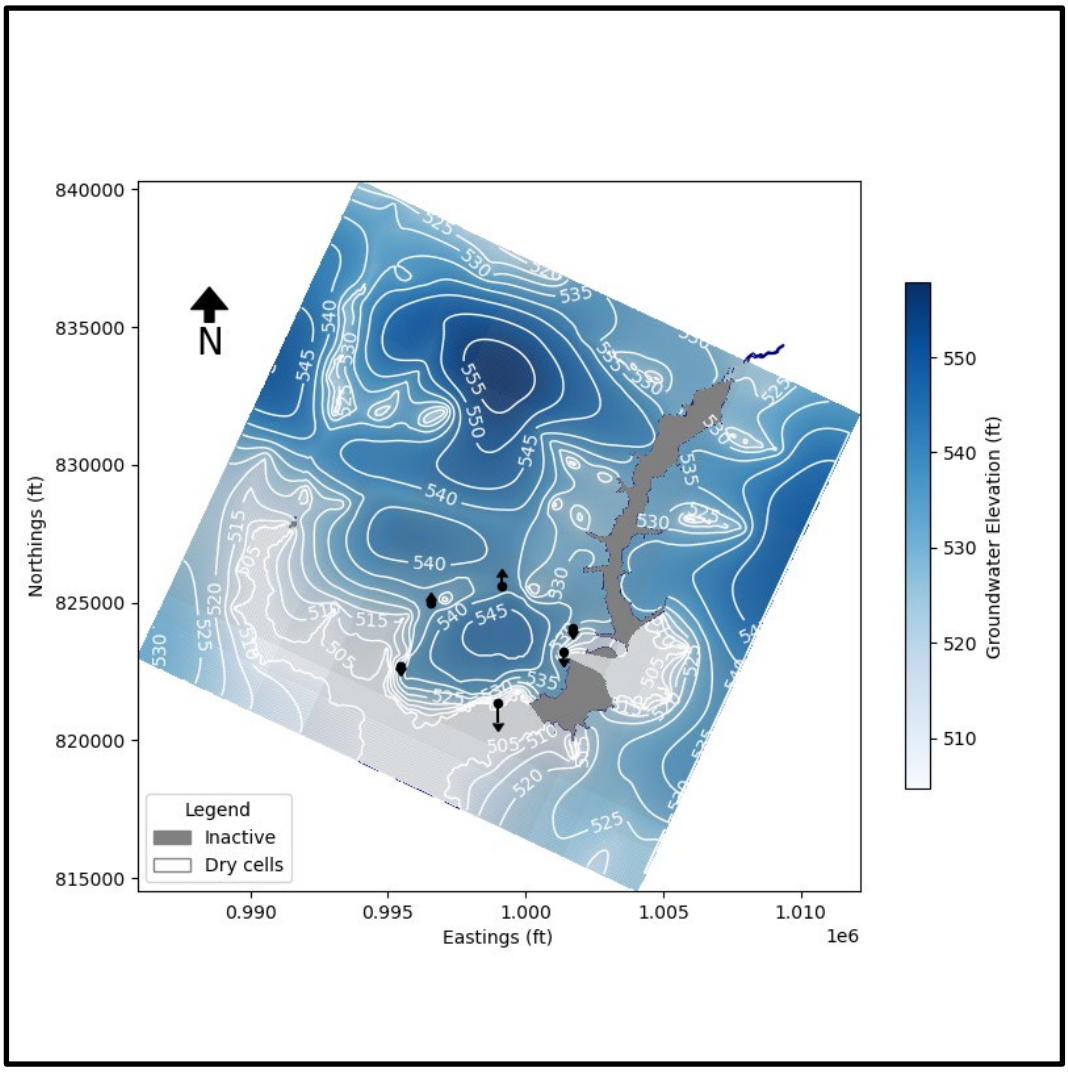
RAMBOLL



SIMULATED GROUNDWATER LEVEL RESIDUALS FROM THE CALIBRATED MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

RAMBOLL

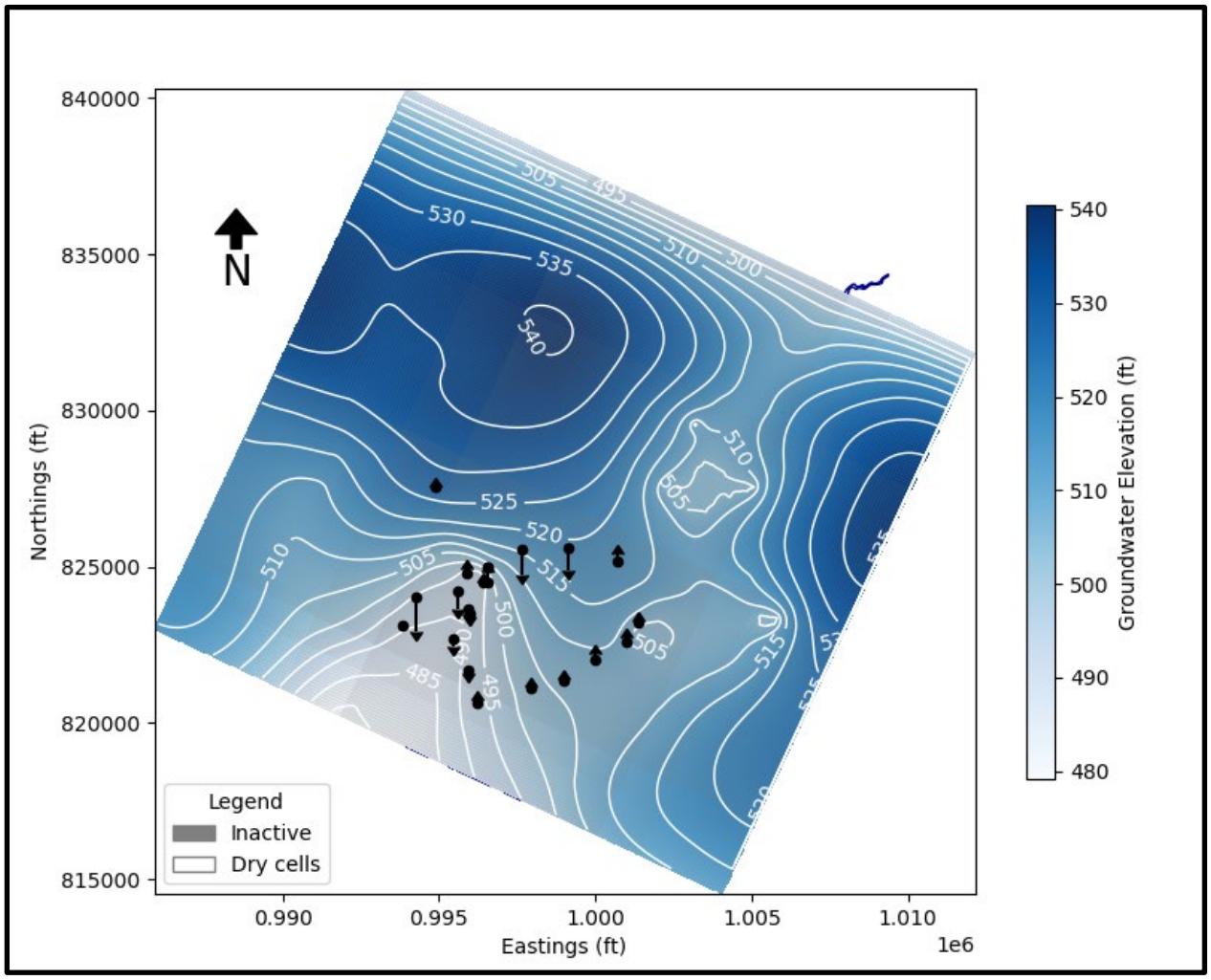


NOTE: BLACK DOTS INDICATE WELLS AND ARROW DIRECTION INDICATES BIAS IN SIMULATED GROUNDWATER LEVEL (NORTH ARROW = OVERESTIMATION, SOUTH ARROW = UNDERESTIMATION)

SIMULATED STEADY STATE GROUNDWATER LEVEL CONTOURS FROM UD/PMP (LAYER 3) FROM THE CALIBRATED MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

RAMBOLL



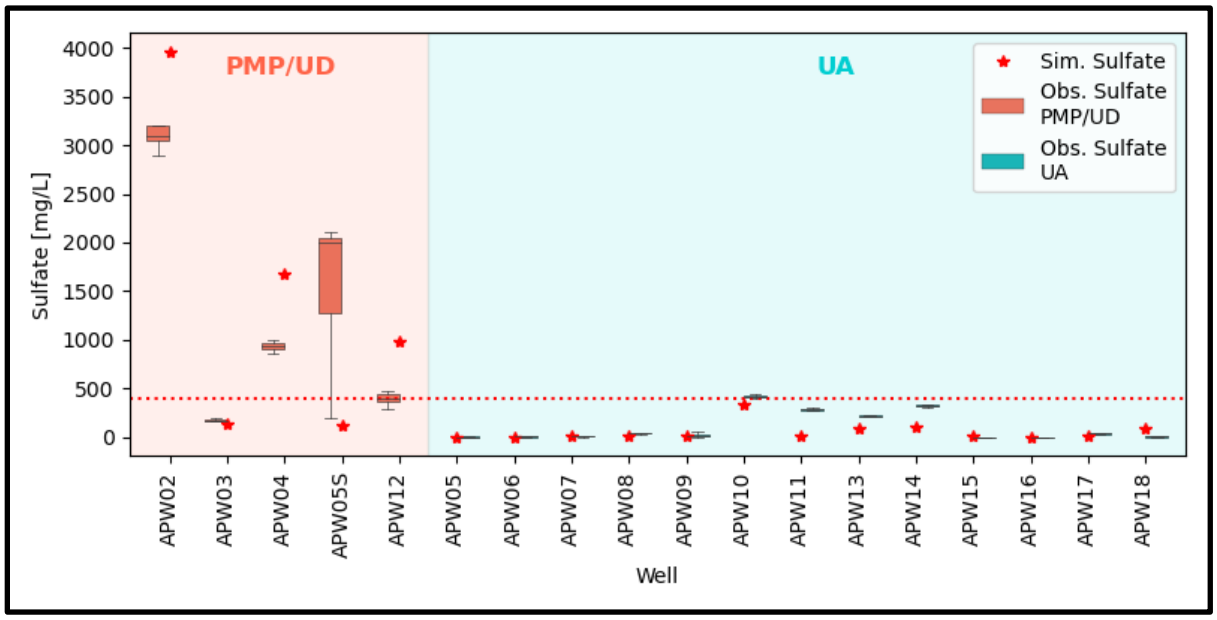
NOTE: BLACK DOTS INDICATE WELLS AND ARROW DIRECTION INDICATES BIAS IN SIMULATED GROUNDWATER LEVEL (NORTH ARROW = OVERESTIMATION, SOUTH ARROW = UNDERESTIMATION)

SIMULATED STEADY STATE GROUNDWATER LEVEL CONTOURS FROM UA (LAYER 6) FROM THE CALIBRATED MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

RAMBOLL

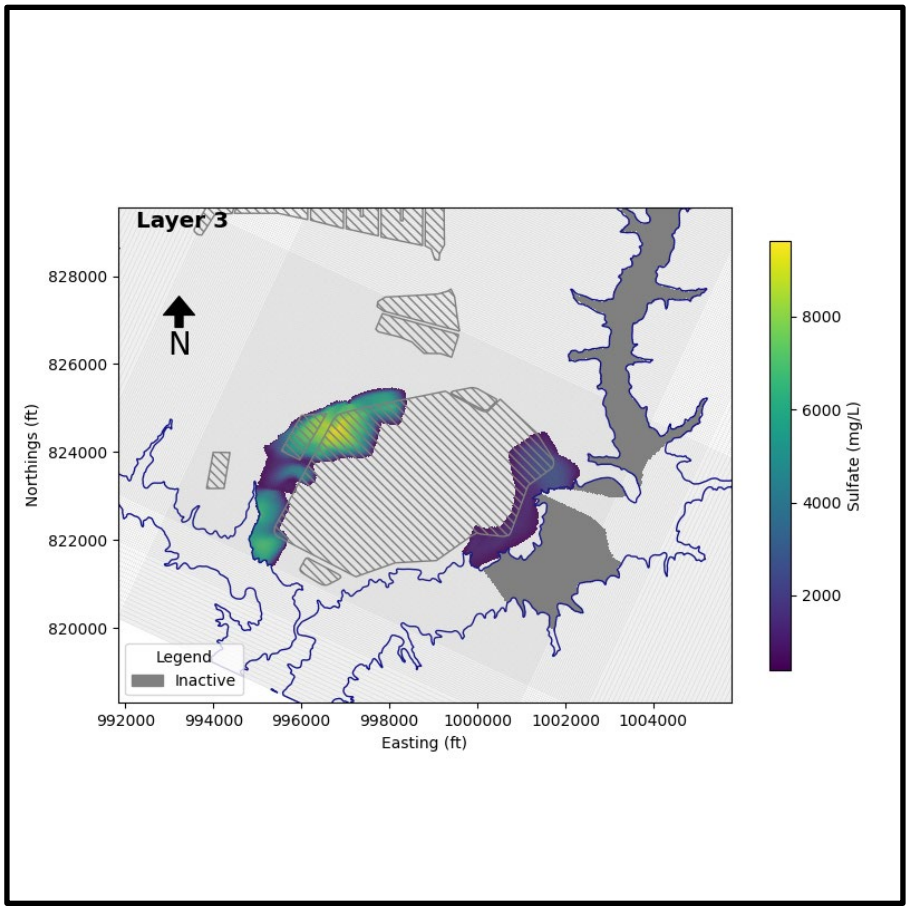
FIGURE 5-29



OBSERVED VERSUS SIMULATED SULFATE CONCENTRATIONS (mg/L)
(Obs. = Observed and Sim. = Simulated)

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

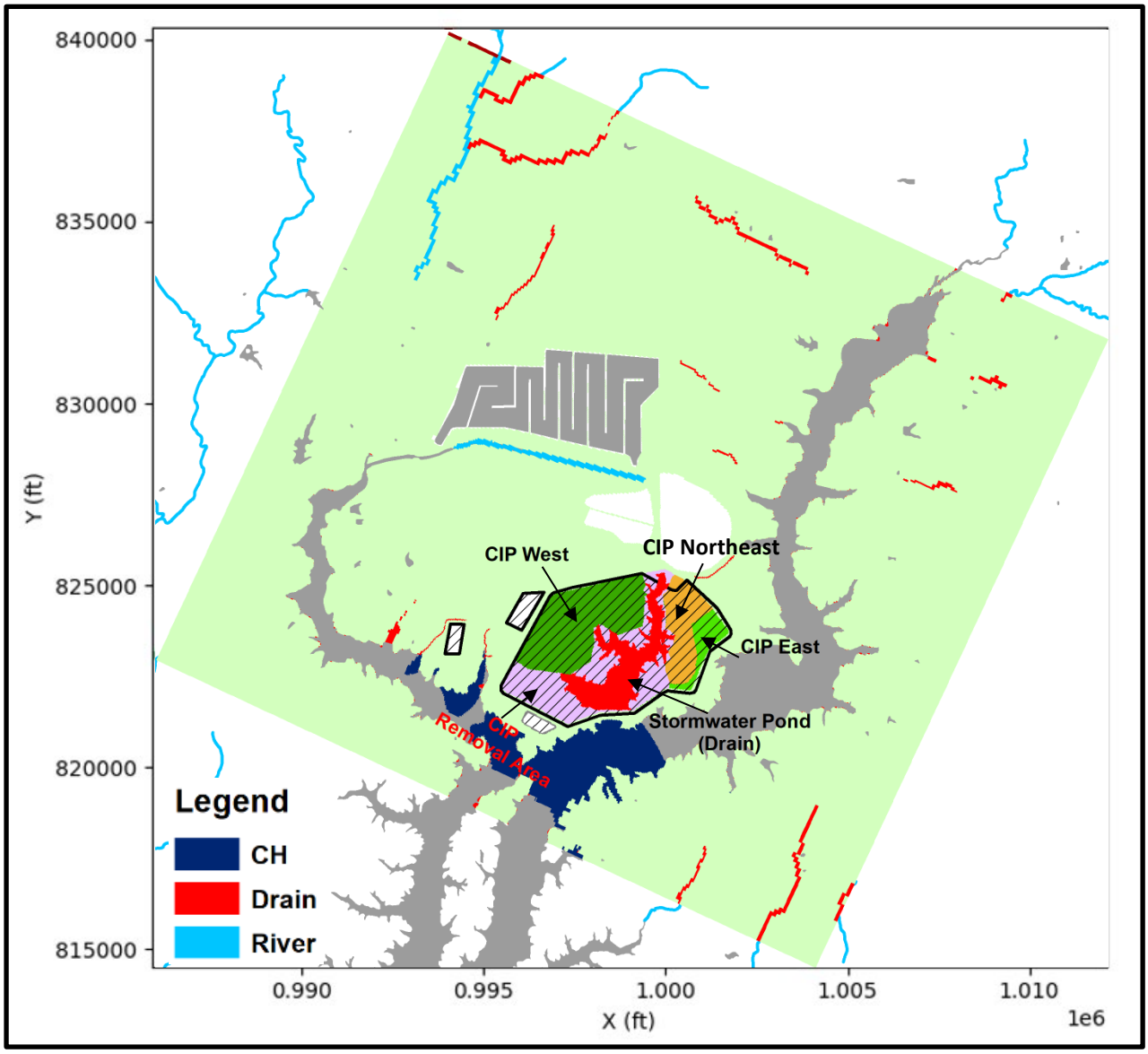
RAMBOLL



SIMULATED SULFATE PLUME OF THE UD/PMP FROM THE TRANSIENT MODEL

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

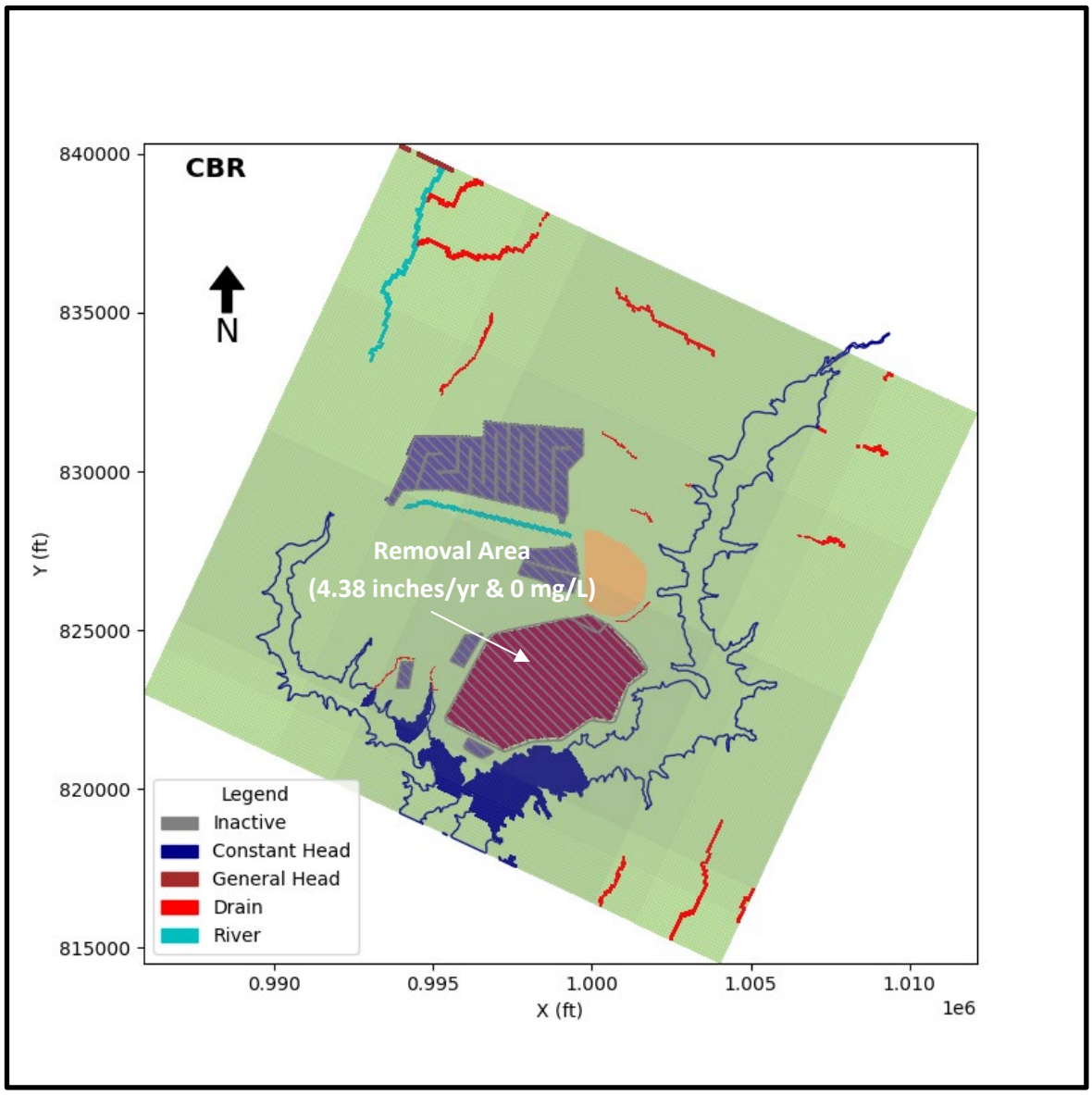
RAMBOLL



CIP RECHARGE AND STORMWATER POND MODIFICATIONS

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTOWN POWER PLANT
NEWTOWN, ILLINOIS

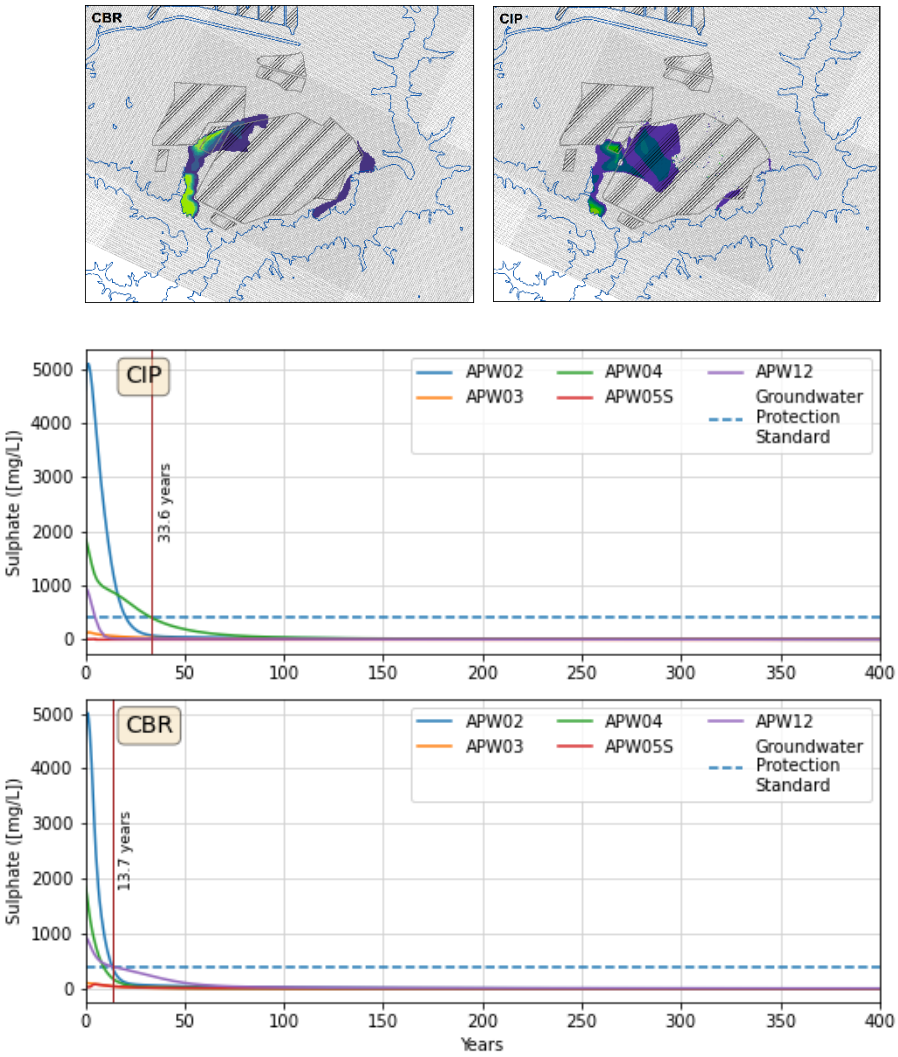
RAMBOLL



CBR RECHARGE MODIFICATIONS AND REMOVAL AREA

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

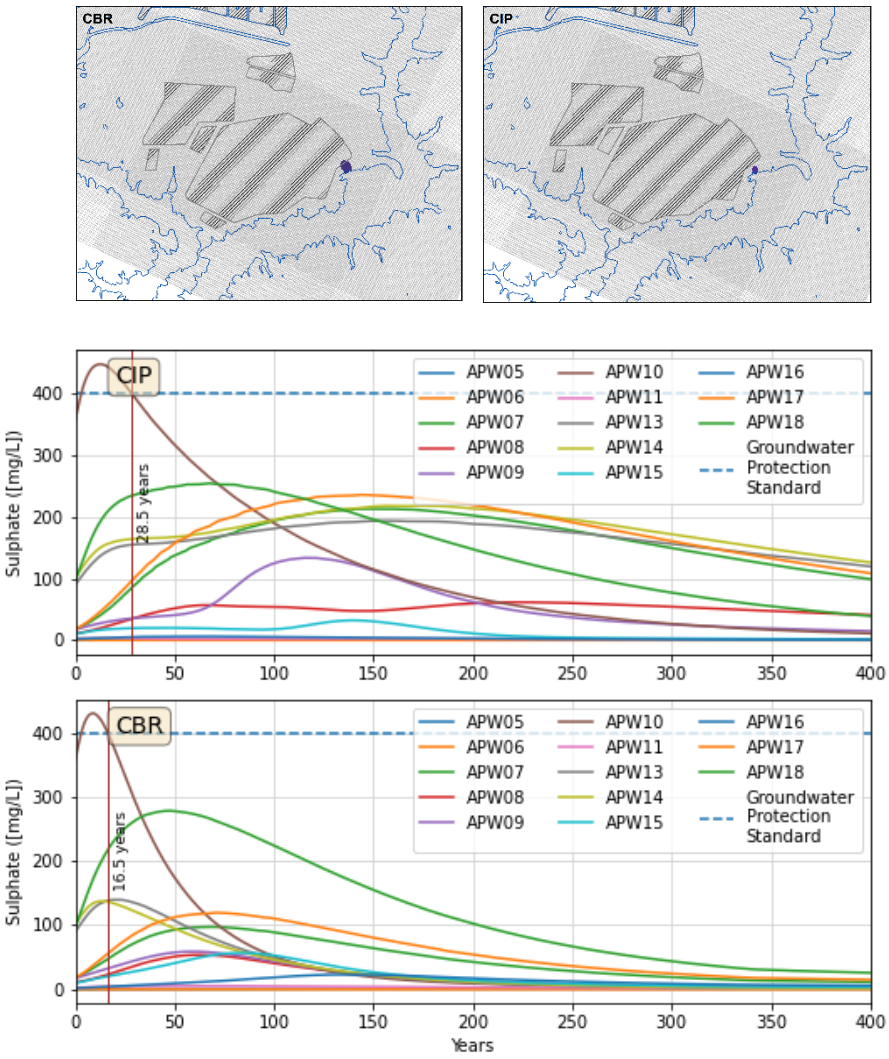
UD/PMP: 14 and 34 Years



SIMULATED SULFATE PLUME OF THE UD/PMP FOR THE CBR AND CIP SCENARIOS AFTER 14 and 34 YEARS

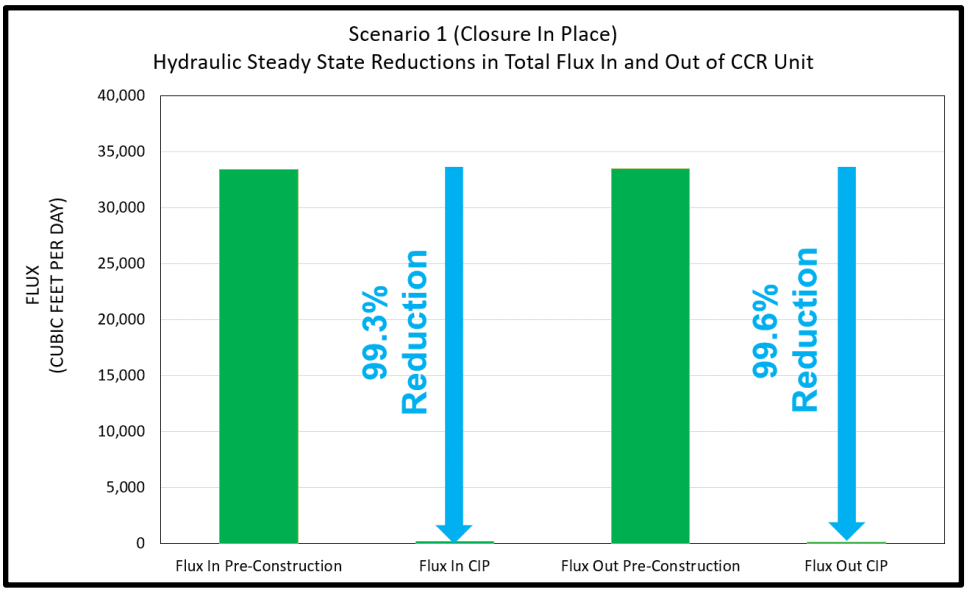
GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

UA: 16.5 and 28.5 Years



SIMULATED SULFATE PLUME OF THE UA FOR THE CBR AND CIP SCENARIOS AFTER 16.5 and 28.5 YEARS

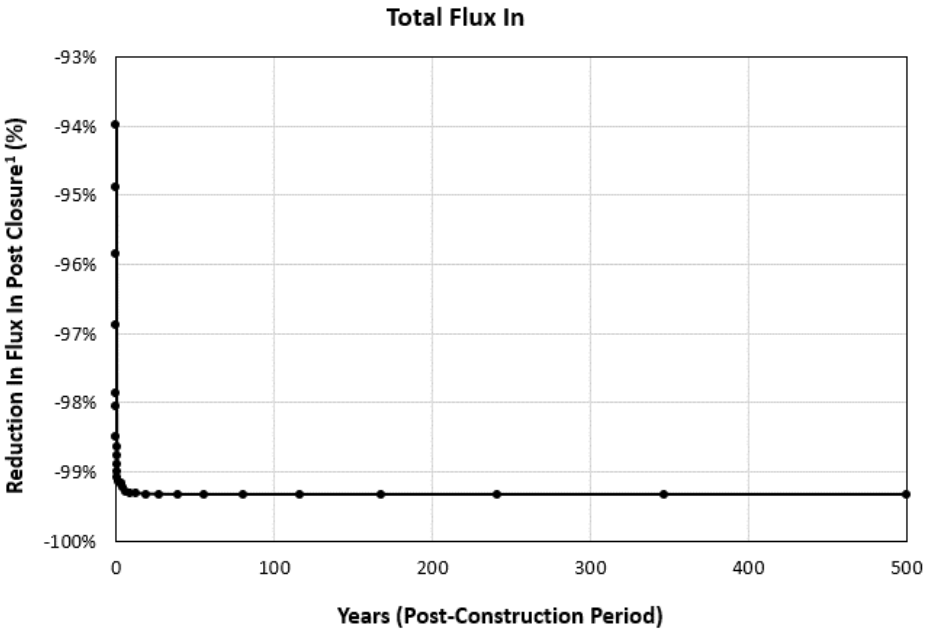
GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

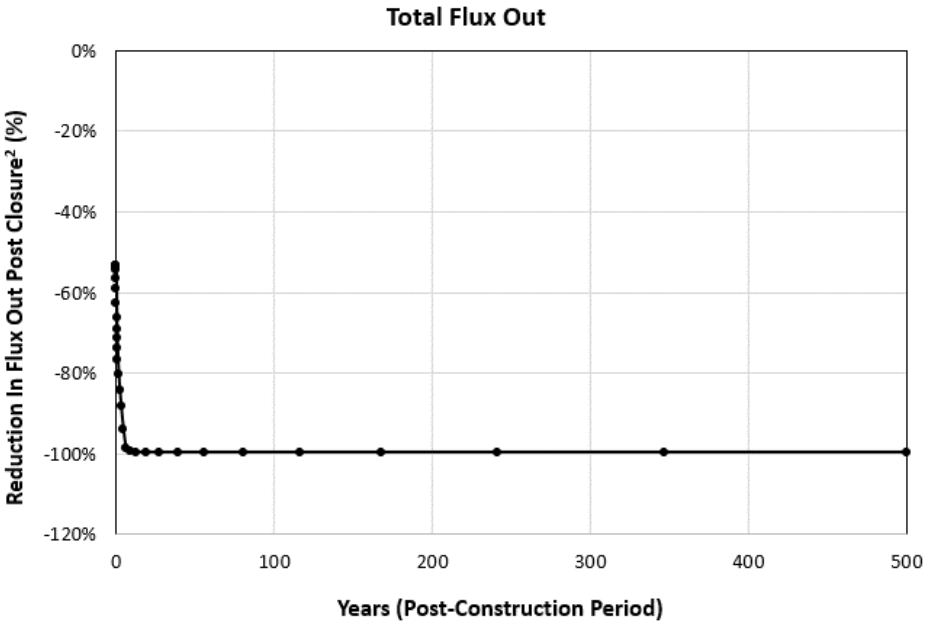


SCENARIO 1 (CIP) –
HYDRAULIC STEADY STATE REDUCTIONS IN TOTAL FLUX IN AND OUT OF FILL UNIT (CCR)

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

RAMBOLL





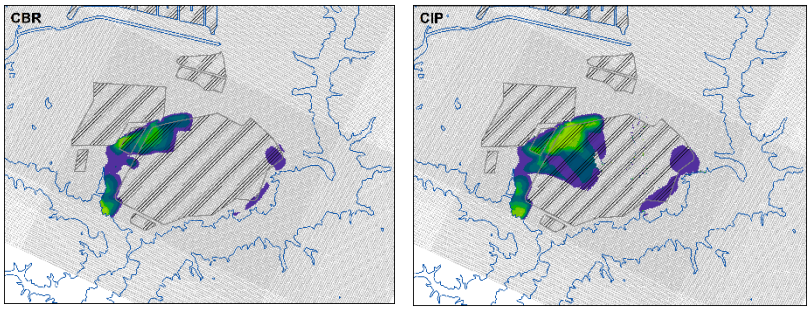
[1] Reduction in flux in compared to flux in at the end of the calibration model (model period of 45 years). Reduction in flux in are expressed as negative percentages to illustrate decreases in flux over time.

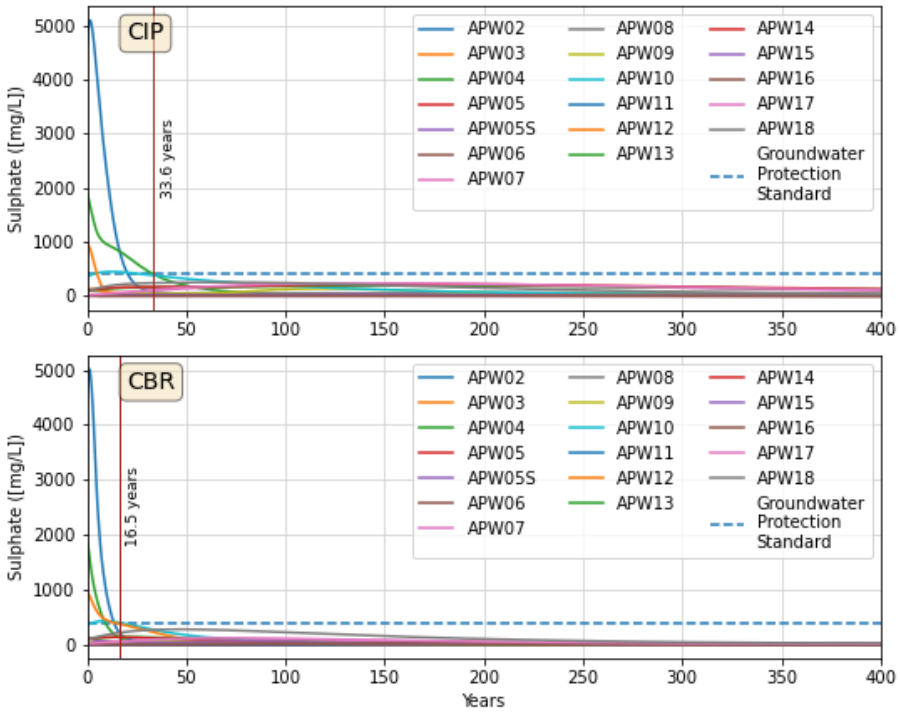
[2] Reduction in flux out compared to flux out at the end of the calibration model (model period of 45 years). Reduction in flux out are expressed as negative percentages to illustrate decreases in flux over time.

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

RAMBOLL

Composite Plume: 34 Years



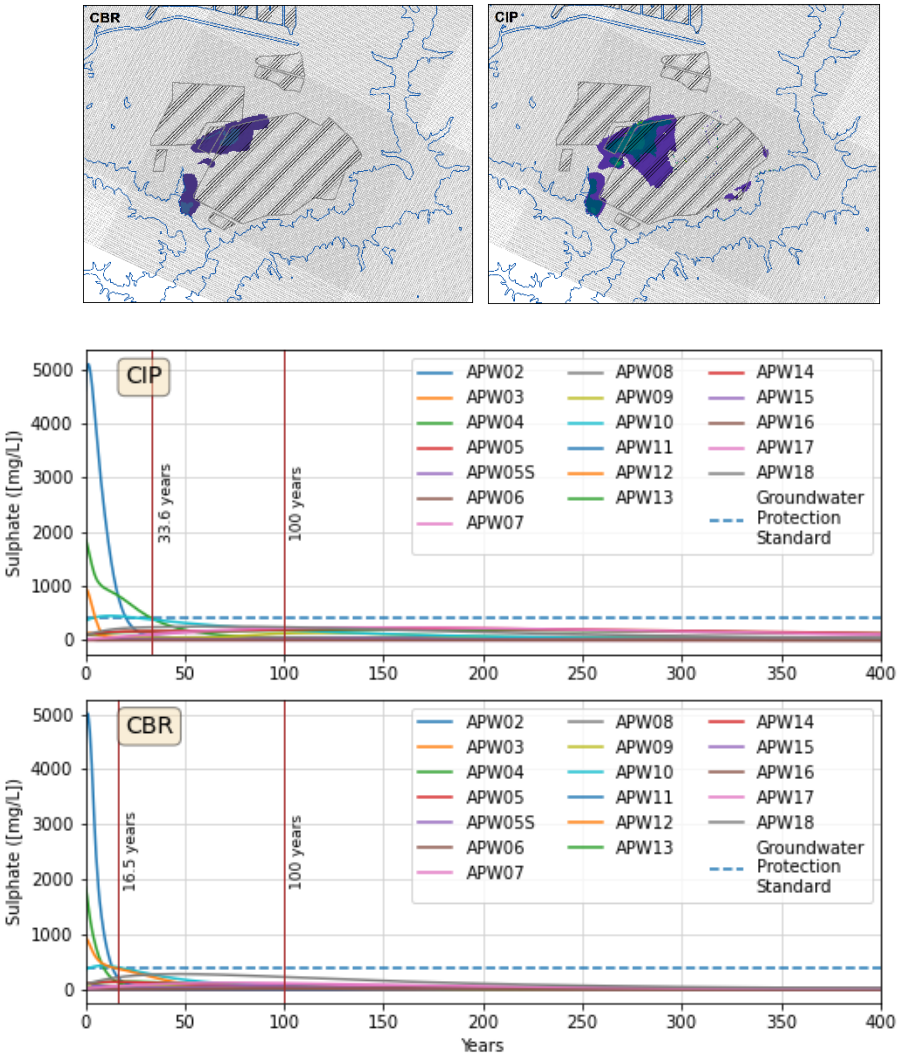


MAXIMUM EXTENT OF THE SULFATE PLUME FOR THE CBR AND CIP SCENARIOS AFTER 34 YEARS

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

RAMBOLL

Composite Plume: 100 Years



MAXIMUM EXTENT OF THE SULFATE PLUME FOR THE CIP AND CBR SCENARIOS AFTER 100 YEARS

GROUNDWATER MODELING REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

RAMBOLL

APPENDICES

APPENDIX A
EVALUATION OF POTENTIAL GWPS EXCEEDANCES

TECHNICAL MEMORANDUM

DATE	April 15, 2022	21454831
TO	David Mitchell, Stu Cravens, Vic Modeer Illinois Power Generating Company	
CC	Brian Hennings - Ramboll	
FROM	Roberta Russell, Jeffrey Ingram, Pat Behling - Golder	**EMAIL jingram@golder.com**

EVALUATION OF POTENTIAL GWPS EXCEEDANCES, PRIMARY ASH POND, NEWTON POWER PLANT, JASPER COUNTY, ILLINOIS

1.0 INTRODUCTION

Illinois Power Generating Company (IPGC) currently operates the Newton Power Plant (NPP or Site) located in Jasper County, Illinois. The Primary Ash Pond (PAP, Illinois Environmental Protection Agency [IEPA] ID No. W0798070001-01) is a surface impoundment used to manage coal combustion residuals (CCRs) at the NPP. The PAP is regulated under Part 845 *"Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments"* (State CCR Rule or Part 845) which was promulgated by the Illinois Pollution Control Board (IPCB) on April 21, 2021.

IPGC is currently preparing a Construction Permit application for the PAP as required under Section 845.220 which requires groundwater modelling be completed for the known potential exceedances of groundwater protection standards (GWPS) as outlined in the Operating Permit application (Burns and McDonnell 2021). In October 2021, Ramboll Americas Engineering Solutions, Inc. (Ramboll) identified potential GWPS exceedances for pH in certain monitoring wells in the vicinity of the PAP (Ramboll 2021a). This Technical Memorandum was developed to further evaluate these potential GWPS exceedances.

1.1 Site Setting

The NPP is located in Jasper County Illinois, approximately 20 miles southeast of Effingham and 7 miles southwest of Newton, in Section 26 and 25, Township 6 North, Range 8 East. The NPP has one CCR surface impoundment (the PAP) with a surface area of 404 acres and a non-CCR Secondary Pond with a surface area of 9.3 acres. The PAP currently receives bottom ash, fly ash, and low-volume wastewater from the plant's two coal-fired boilers.

The NPP is situated in a predominantly agricultural area with fields located on the north, west and southern boarders of the property. The eastern border of the property is the Prairie Ridge State Natural Area. The PAP is adjacent to Newton Lake on the southern and eastern sides, with the NPP generating station located to the north of the PAP, and the site's Utility Waste Landfills located to the west.

Six hydrogeologic units are present at the NPP. They are described as follows in the Hydrogeologic Site Characterization Report (Ramboll 2021b), in downward order:

- **CCR:** CCR, consisting mostly of bottom and fly ash. CCR is present from the surface (approximately 545 to 555 feet above mean sea level (ft MSL) down to approximately 475 feet msl at its deepest portions.
- **Upper Drift (UD) / Potential Migration Pathway (PMP):** The UD consists of low-permeability silts and clays of the Peoria Silt and Sangamon Soil units. In some areas, discontinuous lenses of the sandier Hagarstown Member are also present, making up the PMP.
- **Upper Confining Unit (UCU):** the UCU comprises a thick sequence of low-permeability clays and silts of the Vandalia Till Unit. This unit is laterally continuous and is present from the base of the PAP down to the top of the uppermost aquifer.
- **Uppermost Aquifer (UA):** the UA comprises the Mulberry Grove Formation and generally consists of fine to coarse, poorly- to well-graded sands, with occasional clayey sand layers and gravels.
- **Lower Confining Unit (LCU):** This unit consists of the Smithboro Till Member and is generally made up of compact glacial till consisting of low-permeability silty clays and clayey silts with trace sand and gravel.
- **Bedrock Confining Unit (BCU):** Bedrock below the unconsolidated deposits, consisting of shale of the Mattoon Formation.

Groundwater elevations within the PAP are high when compared to the surrounding aquifer, creating a downward gradient between the PAP and the surrounding aquifer. Below the PAP, groundwater migrates downward and laterally through the UD and UCU into the UA. Additionally, as displayed in **Figure 1**, groundwater in the UA flows from the north to the southeast in the eastern portion of the pond and to the south/southwest in the western portion of the pond (Ramboll 2021a).

2.0 POTENTIAL GWPS EXCEEDANCES AND MONITORING WELL DETAILS

As required by Section 845.230 (d)(2)(M), an evaluation of the history of potential GWPS exceedances was completed for the Operating Permit application (Burns and McDonnell 2021; Ramboll 2021b). Data collected since 2015 from the PAP monitoring well network were evaluated using statistical methods described in the Statistical Analysis Plan included in the Operating Permit application (Appendix I, Ramboll 2021c). The following monitoring wells and potential exceedances of the GWPSs are evaluated in this Technical Memorandum:

- **pH at APW04:** For pH, a lower confidence limit (LCL) of 6.1 (in Standard Units; SU) was calculated below the lower GWPS of 6.4. APW04 is located to the east/southeast of the PAP, downgradient of the PAP based on typical flow directions within the UD and UCU. The well is screened in sandy clays of the UD (PMP) from 7.7 to 17.7 FT BGS (513.75 to 503.75 FT MSL).
- **pH at APW12:** For pH, a lower confidence limit (LCL) of 6.2 was calculated below the lower GWPS of 6.4. APW12 is located to the east/northeast of the PAP, typically upgradient of the general groundwater flow direction within the UD and PMP. The well is screened in a mixture of silty clays and sands of the UD (PMP) from 20.0 to 30.0 FT BGS (523.33 to 513.33 FT MSL).

3.0 EVIDENCE THAT POTENTIAL GWPS EXCEEDANCES ARE NOT RELATED TO THE PAP

Groundwater data for monitoring wells that exhibited potential pH GWPS exceedances, background monitoring wells and porewater samples from the PAP were evaluated. The review of these data indicates that the GWPS exceedances are not related to the PAP, as described in the following line of evidence.

- **The pH of CCR porewater is significantly higher than the pH in monitoring wells APW12 and APW04 and the pH ranges recorded in the PMP are likely naturally occurring.**

The pH of porewater within the PAP ranges from approximately 8.6 to 12.2 with an average of 10.7, while pH in all PMP wells (APW02, APW03, APW04, APW5S, APW12) ranges from 6.0 to 7.2, with an average of 6.7 (Table 1). The pH of groundwater in background wells within the UA ranges from 6.4 to 7.8. Due to the high pH values within the PAP, it would be expected that any releases from the PAP would increase the pH in downgradient wells. However, as demonstrated in **Table** 1, downgradient wells within the PMP report pH values significantly lower than in the PAP.

	Background Wells	Upper Drift Wells	PAP Porewater
pH Average	7.5	6.7	10.7
pH Min	6.4	6.0	8.6
pH Max	7.8	7.2	12.4

Table 1. Summary of average, minimum and maximum pH values (in SU) in background wells (APW05, APW06), UD wells (APW02, APW03, APW04, APW05S and APW12) and the PAP.

In addition, pH is consistently slightly lower in all PMP wells compared to background wells (Tables 1 and 2). The average pH values across the PMP wells are similar, i.e. within 0.5 SU of one another. Given the consistency of average pH values across the PMP, it is likely that the slightly lower pH is naturally occurring in the PMP.

Sample Date	APW05	APW06	APW02	APW03	APW04	APW05S	APW12
Well Formation	UA	UA	UD/PMP	UD/PMP	UD/PMP	UD/PMP	UD/PMP
2/17/2021	7.20	6.40	6.60	6.70	6.50	6.60	6.20
3/10/2021	7.70	7.70	7.00	7.20	6.90	7.00	6.50
3/30/2021	7.20	7.10	6.60	6.30	6.10	--	6.00
4/28/2021	7.49	7.69	6.68	7.00	6.86	6.84	6.40
5/25/2021	7.54	7.71	6.67	7.05	6.90	6.86	6.54
6/17/2021	7.73	7.69	6.62	6.98	6.81	6.82	6.45
6/30/2021	7.55	7.61	6.58	7.03	6.80	6.73	6.29
7/15/2021	7.78	7.49	6.55	6.93	6.76	6.77	6.54
Average	**7.52**	**7.42**	**6.66**	**6.90**	**6.70**	**6.80**	**6.37**

Table 2. pH data (in SU) for 2021 sampling events for background wells (APW05, APW06) and PMP wells (APW02, APW03, APW04, APW05S, APW12).

Therefore, the CCR unit is not the cause of the pH values statistically below the lower pH GWPS at APW12 and APW04.

4.0 CLOSING

Golder appreciates the opportunity to serve as your consultant on this project. If you have any questions concerning this Technical Memorandum or need additional information, please contact the undersigned.

Golder Associates USA Inc.

Roberta Russell
Senior Consultant, Geologist

Patrick J. Behling
Principal, Practice Leader

JSI/RR/PJB

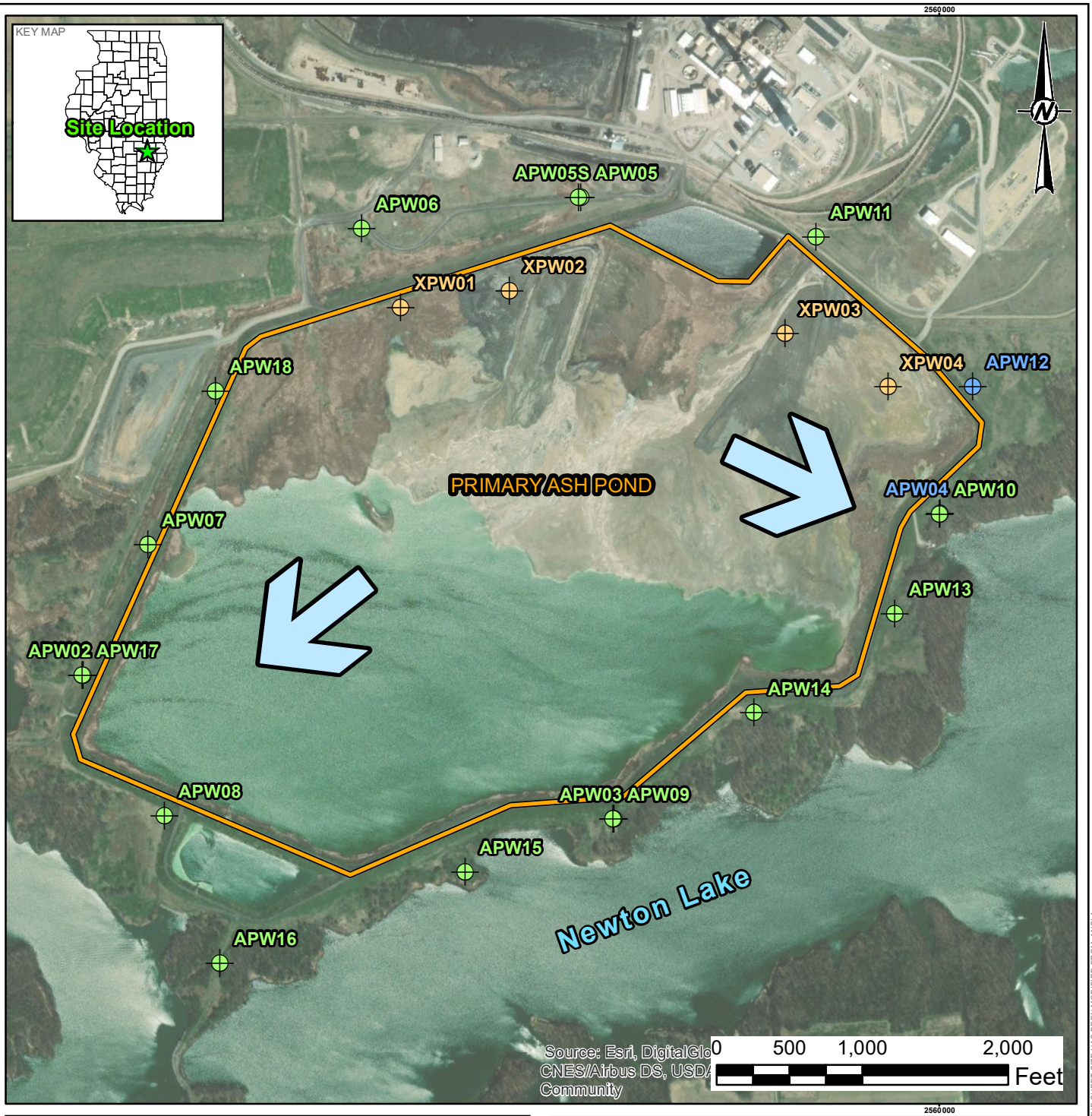
5.0 REFERENCES

Burns and McDonnell 2021. Initial Operating Permit, Newton Ash Pond. October 25.

Ramboll 2021a. History of Potential Exceedances, Newton Ash Pond, Newton Power Plant. October 17.

Ramboll 2021b. Hydrogeologic Site Characterization Report, Primary Ash Pond, Newton Power Plant. October 25.

Ramboll 2021c. Statistical Analysis Plan, Primary Ash Pond, Newton Power Plan. October 25.



LEGEND

- Primary Ash Pond - CCR Unit ID
- Part 845 Groundwater Sample Location With no Potential pH Exceedance
- CCR Pore Water Sample Location
- Part 845 Groundwater Sample Location With a Potential pH Exceedance
- Typical Groundwater Flow Directions

NOTE(S)

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.

REFERENCE(S)

1. RAMBOLL 2021, TABLE 2 SUMMARY OF POTENTIAL EXCEEDANCES.
2. RAMBOLL 2021. GROUNDWATER MONITORING PLAN, PRIMARY ASH POND, NEWTON POWER PLANT, NEWTON ILLINOIS.

CLIENT
ILLINOIS POWER GENERATING COMPANY

PROJECT
NEWTON POWER PLANT - EVALUATION OF POTENTIAL GWPS EXCEEDANCES

TITLE
NEWTON MONITORING WELL LOCATIONS AND TYPICAL GROUNDWATER FLOW DIRECTION

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-02-01
DESIGNED	BTT
PREPARED	BTT
REVIEWED	JSI
APPROVED	PJB

PROJECT NO.	PHASE	FIGURE
21454831	0004	1

PATH: C:\Users\Vinyard\Golder Associates\21454831 Vistra IL MNA Part 845 Support - Project Files\5 Technical Work\Phase4 - Newton\4.11-Figures\WNA-Figures\Figure 1 - Site Location Map - DRAFT.mxd PRINTED ON: 2022-04-07 AT: 8:20:29 AM
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APPENDIX B
MODFLOW, MT3DMS, HELP MODEL, AND FLUX EVALUATION DATA EXPORT FILES (ELECTRONIC ONLY)

APPENDIX C
EVALUATION OF PARTITION COEFFICIENT RESULTS

TECHNICAL MEMORANDUM

DATE March 30, 2022 **Project No.** 21454831

TO David Mitchell, Stu Cravens, Vic Modeer
Illinois Power Generating Company

CC Brian Henning - Ramboll

FROM Golder Associates USA Inc. **EMAIL** **Jeffrey_Ingram@golder.com**

EVALUATION OF PARTITION COEFFICIENT RESULTS, PRIMARY ASH POND (CCR UNIT 501), NEWTON POWER PLANT, JASPER COUNTY, ILLINOIS

1.0 INTRODUCTION

Illinois Power Generating Company (IPGC) operates the Newton Power Plant (NPP) located in Jasper County, Illinois. The Primary Ash Pond (PAP or Site), Illinois Environmental Protection Agency [IEPA] ID No. W0798070001-01 is a 404-acre unlined surface impoundment used to manage coal combustion residuals (CCRs) at the NPP. The PAP is regulated under Part 845 *"Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments"* (State CCR Rule or Part 845) which was promulgated by the Illinois Pollution Control Board (IPCB) on April 21, 2021. WSP Golder (Golder) is assisting IPGC with Part 845 compliance at the Site.

IPGC is currently preparing a Construction Permit application for the PAP as required under Section 845.220. As a part of the Construction Permit application, groundwater modeling is being completed for known potential exceedances of groundwater protection standards (GWPS) as outlined in the Operating Permit application for the PAP (Burns and McDonnell 2021). In the Operating Permit (October 2021), Ramboll Americas Engineering Solutions, Inc. (Ramboll) identified potential GWPS exceedances for several compounds potentially associated with the PAP, including lithium and sulfate. Batch adsorption testing was conducted to generate site-specific partition coefficient results for these parameters for use in the groundwater models. Site-specific partition coefficients were also developed for boron for its use in groundwater modeling. This Technical Memorandum summarizes the results of the batch adsorption testing.

2.0 OVERVIEW

In August 2021, Golder conducted a field investigation at the PAP which included the completion of seven (7) soil/rock borings ranging in depth from 15 to 90 feet below ground surface (ft bgs; Golder 2021). As a part of that investigation, soil and groundwater samples were submitted to SiREM laboratories (Guelph, ON) for batch solid/liquid partitioning testing. A summary of the soil samples used for the batch testing is provided in Table 1.

Table 1: Batch Attenuation Testing Data Summary

Groundwater Sample ID	Soil Sample ID	Soil: Water Ratio
APW-04	N-SB-05 (60.0-67.1 ft bgs)	2:1
		1:1
		1:5
		1:10
		1:20
APW-14	N-SB-04 (12.0-18.0 ft bgs)	2:1
		1:1
		1:5
		1:10
		1:20

Notes:

1) Ft bgs – Feet below ground surface

Site-specific partitioning coefficients were determined for constituents of interest (COIs) lithium and sulfate, identified based on statistical evaluation of potential groundwater exceedances calculated at the Site (Burns and McDonnell 2021). Site-specific partitioning coefficients were also determined for boron for its potential use in groundwater modeling, despite not being detected at statistically significant levels above the site GWPS. Two groundwater samples (APW-04 and APW-14) and two soil samples (N-SB-05 60.0-67.1 ft bgs and N-SB-04 12.0-18.0 ft bgs) were used for batch attenuation testing at various ratios (Table 1). For each treatment, 0.1 L of groundwater was brought in contact with an amount of soil (0.004 to 0.2 kg, dependent on the ratio) over a seven-day period. Each contact water/soil microcosm was amended (spiked) with meta-arsenite, boric acid, lithium chloride, and sodium sulfate to a target concentration of arsenic, boron, lithium, and sulfate, respectively (Table 2). After the seven-day contact period, COI and boron concentrations were analyzed in the contact water. The control samples (i.e., groundwater samples APW-04 and APW-14) were only analyzed at the initiation of testing. The oxidation/reduction potential (redox) and pH were measured for each batch test at the beginning and end of the contact period and in the control samples. Arsenic is not currently a COI at the Site and, therefore, was not evaluated as part of this report. However, arsenic may be revisited in the future, thus meta-arsenite was included as an amendment (Table 2).

Table 2: Microcosm amendment and target concentration for COIs

COI	Groundwater Sample	Amendment	Target Concentration (mg/L)
Arsenic	APW-04	346.80 µL of a 2 g/L As(III) solution	0.2
	APW-14	344.72 µL of a 2 g/L As(III) solution	
Boron	APW-04	11.40 mL of a 10 g/L H_3BO_3 solution	10

	APW-14	11.32 mL of a 10 g/L H_3BO_3 solution	
Lithium	APW-04	3.40 mL of a 1 g/L LiCl solution	0.3
	APW-14	3.39 mL of a 1 g/L LiCl solution	
Sulfate	APW-04	12.20 mL of a 100 g/L Na_2SO_4 solution	774
	APW-14	24.41 mL of a 100 g/L Na_2SO_4 solution	

Notes:

1) g/L – grams per liter
2) mL – milliliter
3) µg/L – micrograms per liter
4) mg/L – milligrams per liter
5) As(III) – arsenite
6) H_3BO_3 – boric acid
7) LiCl – lithium chloride
8) Na_2SO_4 – sodium sulfate

The results of batch attenuation testing (Tables 3 and 4) were used to calculate the following adsorption isotherms for each COI:

- Linear: $q_e = K_D * C_e$
- Langmuir: $C_e/q_e = 1/(K_L * q_m) + C_e/q_m$
- Freundlich: $\log(q_e) = \log(K_F) + (1/n)\log(C_e)$

Where

K_D, K_L, and K_F = the linear, Langmuir, and Freundlich partition coefficients, respectively (in liters per kilogram; L/kg).

q_e = concentration of the adsorbate in soil

C_e = aqueous concentration of the adsorbate

q_m = 1/slope in the linear expression of the isotherm

n = non-linearity constant

3.0 SUMMARY OF RESULTS

Figures that show the linear, Langmuir, and Freundlich isotherms for each COI are provided in Appendix A. The partition coefficient values for APW-04 and APW-14 are presented in Tables 5 and 6, respectively. The results of the batch adsorption testing can be summarized as follows:

- **Boron**: Calculated K_D values for APW-04 and APW-14 were -1.35 and -0.89 L/kg, respectively, K_L values -6.2E+4 and -1.6E+5 L/kg, respectively, and K_F values 57.4 and 68.7 L/kg, respectively. For comparison, in Strenge and Peterson (1989), partition coefficients for boron range from 0.19 to 1.3 L/kg, depending

on pH conditions and the amount of sorbent (i.e. clay, organic matter, and iron and aluminum oxyhydroxide) present.

- **Lithium:** Calculated K_D values for APW-04 and APW-14 were 4.49 and 5.58 L/kg, respectively, K_L values 6.2E+7 and 1.6E+8 L/kg, respectively, and K_F values 135 and 230 L/kg, respectively. In Strenge and Peterson (1989), partition coefficients for lithium range from 0 to 0.8 L/kg, depending on pH conditions and the amount of sorbent present.
- **Sulfate**: Calculated K_D values for APW-04 and APW-14 were 3.58 and -25.6 L/kg, respectively, K_L values -626 and -2,200 L/kg, respectively, and K_F values 4.11 and 2.14E+11 L/kg, respectively. In Strenge and Peterson (1989), partition coefficients for sulfate are 0.0 L/kg, regardless of pH conditions and the amount of sorbent present.
- **pH and Redox**: Generally, after the seven-day contact time, the pH of each contact water was consistent with the pH of the control samples (7.03 and 7.00 for APW-04 and APW-14, respectively), ranging from 7.02 to 7.06 across the batch tests. The average redox values of the control samples after the seven-day contact time were 40 mV and -26 mV for APW-04 and APW-14, respectively. The redox value of contact water ranged from -111 to +40 mV across treatments.

4.0 REFERENCES

Burns and McDonnell, 2021. Initial Operating Permit Newton Ash Pond.

Golder Associates Inc. 2021. Technical Memorandum: Monitored Natural Attenuation Field Investigation Status Update, Primary Ash Pond (CCR Unit 501) Newton Power Plant, Jasper County, Illinois.

Strenge, D. and Peterson, S. 1989. Chemical Data Bases for the Multimedia Environmental Pollutant Assessment System (MEPAS) (No. PNL-7145). Pacific Northwest Lab., Richland, WA (USA).

5.0 CLOSING

Golder appreciates the opportunity to serve as your consultant on this project. If you have any questions concerning this technical memorandum or need additional information, please contact the undersigned.

Golder Associates USA Inc.

Jeffrey Ingram
Senior Consultant, Geologist

Pat Behling
Practice Leader

CK/JSI/PJB

Attachments Appendix A – Partition Coefficient Graphs

Table 3: Batch Attenuation Testing Results, APW-04

Geologic Material Sample ID	Treatment	Date	Day	Replicate	Dissolved Boron	Dissolved Lithium	Dissolved Sulfate	pH	ORP
					mg/L	mg/L	mg/L	SU	mV
N-SB-05 (60.0-67.1 ft bgs)	Groundwater Only Control	2/15/2022	0	APW-04-1a	9.2	0.28	1,097	6.92	2
				APW-04-2a	9.5	0.29	1,077	6.92	29
				Average Concentration (mg/L)	9.3	0.28	1,087	6.92	16
		2/22/2022	7	APW-04-1	9.2	0.26	721	7.02	67
				APW-04-2	9.4	0.25	407	7.04	13
				Average Concentration (mg/L)	9.3	0.26	564	7.03	40
	2:1 Soil:Water Ratio	2/15/2022	0						
		2/22/2022	7	N-SB-05-(60.0-67.1) :APW-04 2:1-1	5.9	<0.10	440	7.02	-20
				N-SB-05-(60.0-67.1) :APW-04 2:1-2	5.8	<0.10	463	7.02	-43
				Average Concentration (mg/L)	5.9	ND	451	7.02	-32
	1:1 Soil:Water Ratio	2/15/2022	0						
		2/22/2022	7	N-SB-05-(60.0-67.1) :APW-04 1:1-1	7.2	0.13	807	7.02	-49
				N-SB-05-(60.0-67.1) :APW-04 1:1-2	7.4	0.14	740	7.02	-48
				Average Concentration (mg/L)	7.3	0.14	773	7.02	-49
	1:5 Soil:Water Ratio	2/15/2022	0						
		2/22/2022	7	N-SB-05-(60.0-67.1) :APW-04 1:5-1	8.6	0.17	813	7.04	-40
				N-SB-05-(60.0-67.1) :APW-04 1:5-2	9.6	0.24	788	7.02	-70
				Average Concentration (mg/L)	9.1	0.21	800	7.03	-55
	1:10 Soil:Water Ratio	2/15/2022	0						
		2/22/2022	7	N-SB-05-(60.0-67.1) :APW-04 1:10-1	10	0.26	889	7.02	-92
				N-SB-05-(60.0-67.1) :APW-04 1:10-2	9.6	0.25	996	7.02	-52
				Average Concentration (mg/L)	10	0.26	943	7.02	-72
	1:20 Soil:Water Ratio	2/15/2022	0						
		2/22/2022	7	N-SB-05-(60.0-67.1) :APW-04 1:20-1	9.2	0.24	776	7.03	-27
				N-SB-05-(60.0-67.1) :APW-04 1:20-2	8.9	0.23	1,212	7.02	-5
				Average Concentration (mg/L)	9.1	0.24	994	7.03	-16

Notes:
1) mg/L- Miligrams per liter
2) SU - Standard Units
3) mV - milivolts
4) ORP - Oxidation Reduction Potential
5) ND - non-detect

Table 4: Batch Attenuation Testing Results, APW-14

Geologic Material Sample ID	Treatment	Date	Day	Replicate	Dissolved Boron	Dissolved Lithium	Dissolved Sulfate	pH	ORP
					mg/L	mg/L	mg/L	SU	mV
N-SB-04 (12.0-18.0 ft bgs)	Groundwater Only Control	2/15/2022	0	APW-14-1a	9.5	0.28	1,010	6.99	17
				APW-14-2a	9.6	0.28	1,004	6.99	4
				Average Concentration (mg/L)	9.5	0.28	1,007	6.99	11
		2/22/2022	7	APW-14-1	9.2	0.25	1,366	7.00	-28
				APW-14-2	10.0	0.25	773	7.00	-24
				Average Concentration (mg/L)	9.6	0.25	1,069	7.00	-26
	2:1 Soil:Water Ratio	2/15/2022	0						
		2/22/2022	7	N-SB-04-(12.0-18.0) :APW-14 2:1-1	5.6	<0.10	773	7.02	-72
				N-SB-04-(12.0-18.0) :APW-14 2:1-2	5.6	<0.10	938	7.02	-150
				Average Concentration (mg/L)	5.6	ND	856	7.02	-111
	1:1 Soil:Water Ratio	2/15/2022	0						
		2/22/2022	7	N-SB-04-(12.0-18.0) :APW-14 1:1-1	7.2	0.15	853	7.03	-47
				N-SB-04-(12.0-18.0) :APW-14 1:1-2	7.0	0.13	630	7.04	35
				Average Concentration (mg/L)	7.1	0.14	741	7.04	-6
	1:5 Soil:Water Ratio	2/15/2022	0						
		2/22/2022	7	N-SB-04-(12.0-18.0) :APW-14 1:5-1	10.2	0.26	716	7.06	53
				N-SB-04-(12.0-18.0) :APW-14 1:5-2	8.9	0.20	1,081	7.05	17
				Average Concentration (mg/L)	9.6	0.23	899	7.06	35
	1:10 Soil:Water Ratio	2/15/2022	0						
		2/22/2022	7	N-SB-04-(12.0-18.0) :APW-14 1:10-1	10	0.22	914	7.05	21
				N-SB-04-(12.0-18.0) :APW-14 1:10-2	9.7	0.23	998	7.06	34
				Average Concentration (mg/L)	10	0.23	956	7.06	28
	1:20 Soil:Water Ratio	2/15/2022	0						
		2/22/2022	7	N-SB-04-(12.0-18.0) :APW-14 1:20-1	9.8	0.26	650	7.08	41
				N-SB-04-(12.0-18.0) :APW-14 1:20-2	9.0	0.24	724	7.04	38
				Average Concentration (mg/L)	9.4	0.25	687	7.06	40

Notes:
1) mg/L- Miligrams per liter
2) SU - Standard Units
3) mV - milivolts
4) ORP - Oxidation Reduction Potential
5) ND - non-detect

Table 5: Partition Coefficient Results, APW-04

Analyte	Isotherm	Variable	With Soil Mass
Boron	Raw Data R^2		0.16
	Linear K_D (L/kg)		-1.35
	Langmuir	R^2	0.03
		q_m (mg/g)	-0.003
		K_L (L/kg)	-6.23E+04
	Freundlich	R^2	0.01
		1/n	0.379
		K_F (L/kg)	57.39
Lithium	Raw Data R^2		0.20
	Linear K_D (L/kg)		4.49
	Langmuir	R^2	0.94
		q_m (mg/g)	0.009
		K_L (L/kg)	6.16E+07
	Freundlich	R^2	0.23
		1/n	0.101
		K_F (L/kg)	135.83
Sulfate	Raw Data R^2		0.62
	Linear K_D (L/kg)		3.58
	Langmuir	R^2	0.13
		q_m (mg/g)	-0.999
		K_L (L/kg)	-6.26E+02
	Freundlich	R^2	0.53
		1/n	1.924
		K_F (L/kg)	4.11

Note(s):

K_D: linear partition coefficient

K_L: Langmuir partition coefficient

K_F: Freundlich partition coefficient

q_m: 1/slope in the linear expression of the isotherm

n: non-linearity constant

Table 6: Partition Coefficient Results, APW-14

Analyte	Isotherm	Variable	With Soil Mass
Boron	Raw Data R^2		0.37
	Linear K_D (L/kg)		-0.89
	Langmuir	R^2	0.18
		q_m (mg/g)	0.000
		K_L (L/kg)	-1.56E+05
	Freundlich	R^2	0.99
		1/n	0.280
		K_F (L/kg)	68.65
Lithium	Raw Data R^2		0.57
	Linear K_D (L/kg)		5.58
	Langmuir	R^2	1.00
		q_m (mg/g)	0.034
		K_L (L/kg)	1.55E+08
	Freundlich	R^2	0.54
		1/n	0.031
		K_F (L/kg)	230.83
Sulfate	Raw Data R^2		0.47
	Linear K_D (L/kg)		-25.60
	Langmuir	R^2	0.07
		q_m (mg/g)	0.166
		K_L (L/kg)	-2.20E+03
	Freundlich	R^2	0.33
		1/n	-6.626
		K_F (L/kg)	2.14E+11

Note(s):

K_D: linear partition coefficient

K_L: Langmuir partition coefficient

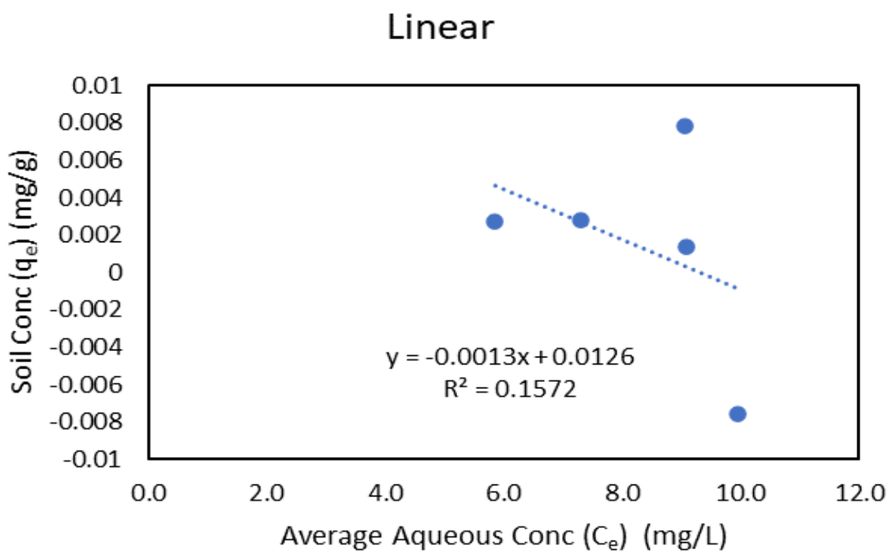
K_F: Freundlich partition coefficient

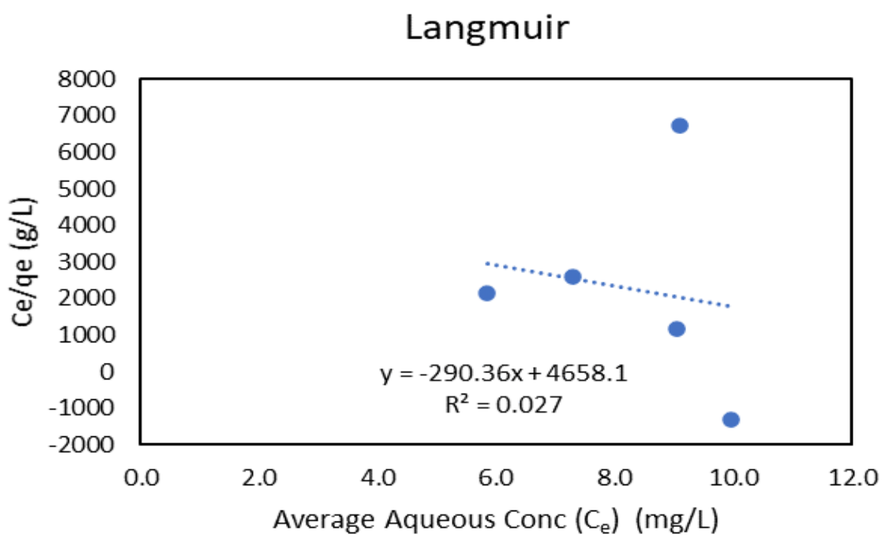
q_m: 1/slope in the linear expression of the isotherm

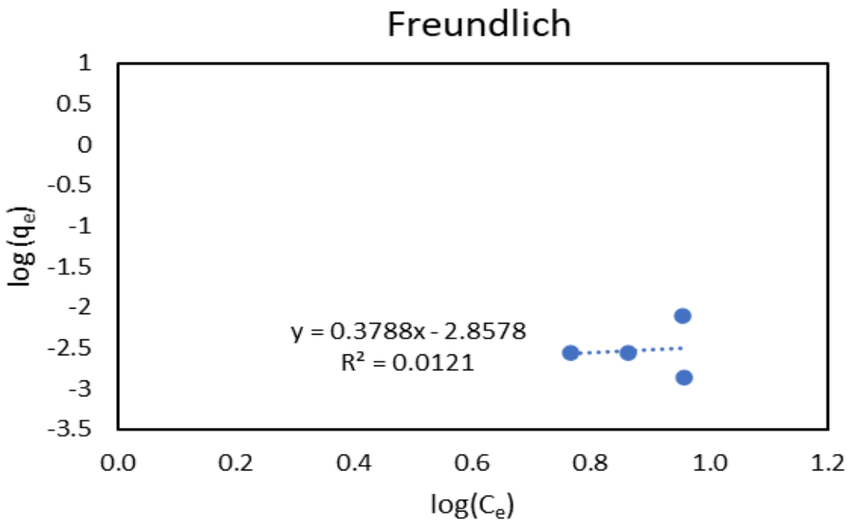
n: non-linearity constant

APPENDIX A

Partition Coefficient Graphs







Note(s):
mg/L: milligrams per liter
mg/g: milligrams per gram
g/L: grams per liter
Ce: aqueous concentration of the adsorbate
qe: concentration of the adsorbate in soil

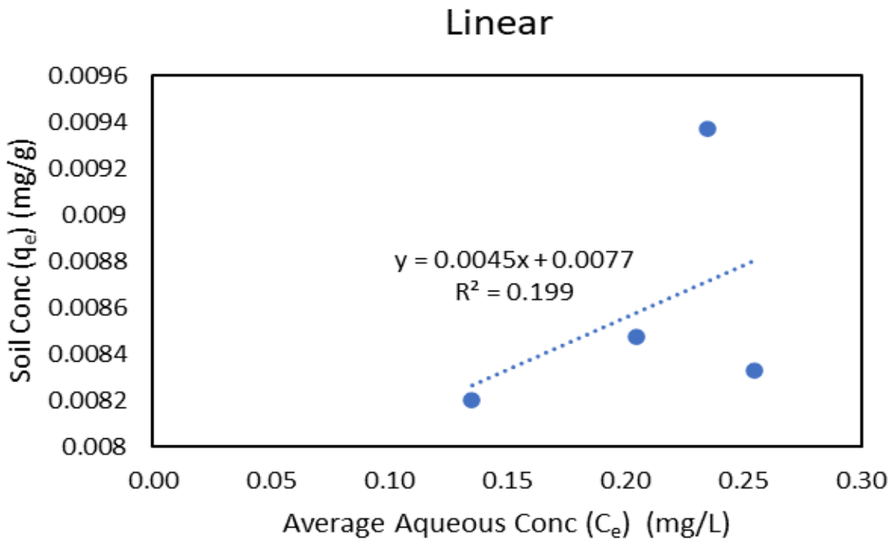
CLIENT
ILLINOIS POWER GENERATING COMPANY
NEWTON PRIMARY ASH POND (CCR UNIT 501)

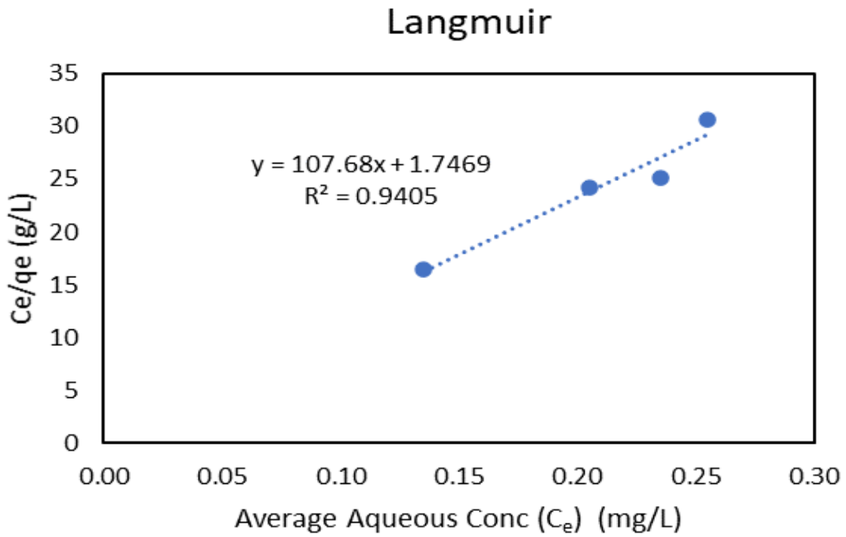
PROJECT
EVALUATION OF PARTITION COEFFICIENT RESULTS PAP

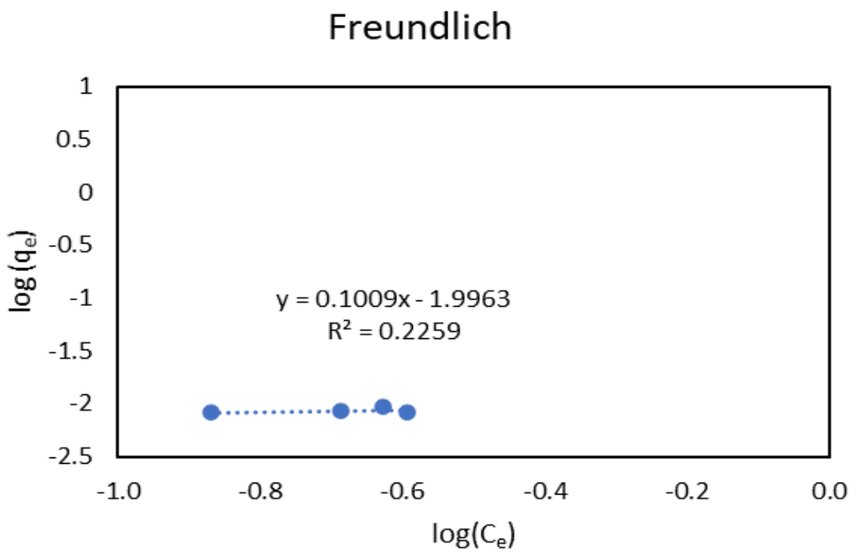
CONSULTANT
wsp GOLDER

TITLE
APW-04 BORON PARTITION COEFFICIENTS

PROJECT NO.	PHASE	REV.	FIGURE
21454831	0004	0	A-1







Note(s):
mg/L: milligrams per liter
mg/g: milligrams per gram
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CLIENT
ILLINOIS POWER GENERATING COMPANY
NEWTON PRIMARY ASH POND (CCR UNIT 501)

PROJECT
EVALUATION OF PARTITION COEFFICIENT RESULTS PAP

CONSULTANT
wsp GOLDER

TITLE
APW-04 LITHIUM PARTITION COEFFICIENTS

PROJECT NO.	PHASE	REV.	FIGURE
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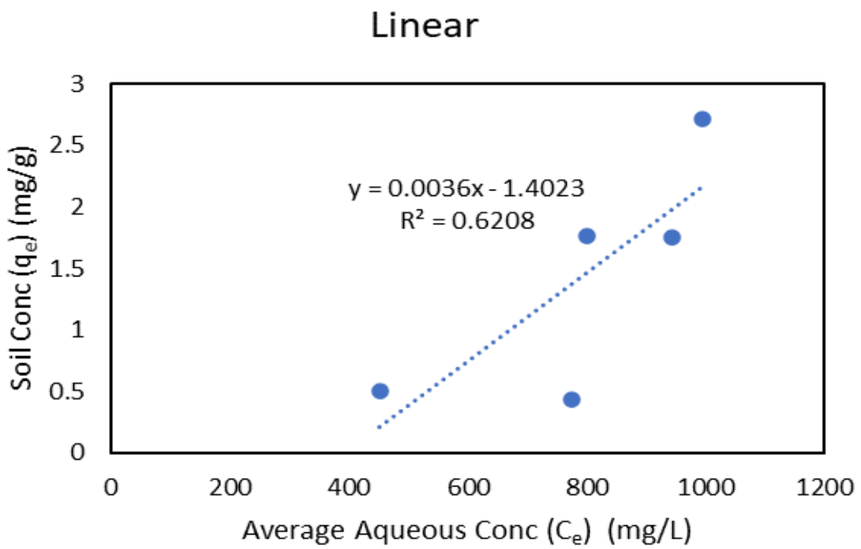

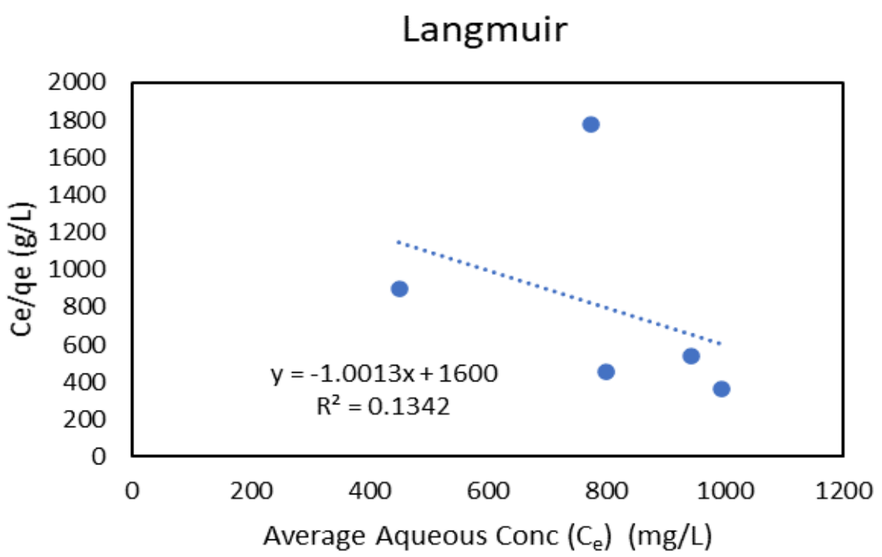

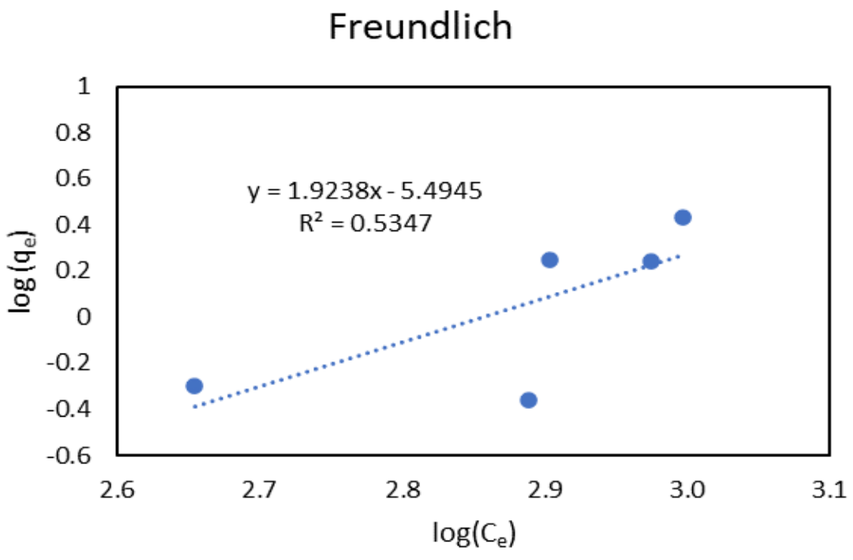

Note(s):
mg/L: milligrams per liter
mg/g: milligrams per gram
g/L: grams per liter
Ce: aqueous concentration of the adsorbate
qe: concentration of the adsorbate in soil

CLIENT
ILLINOIS POWER GENERATING COMPANY
NEWTON PRIMARY ASH POND (CCR UNIT 501)

PROJECT
EVALUATION OF PARTITION COEFFICIENT RESULTS PAP

CONSULTANT
wsp GOLDER

TITLE
APW-04 SULFATE PARTITION COEFFICIENTS

PROJECT NO.	PHASE	REV.	FIGURE
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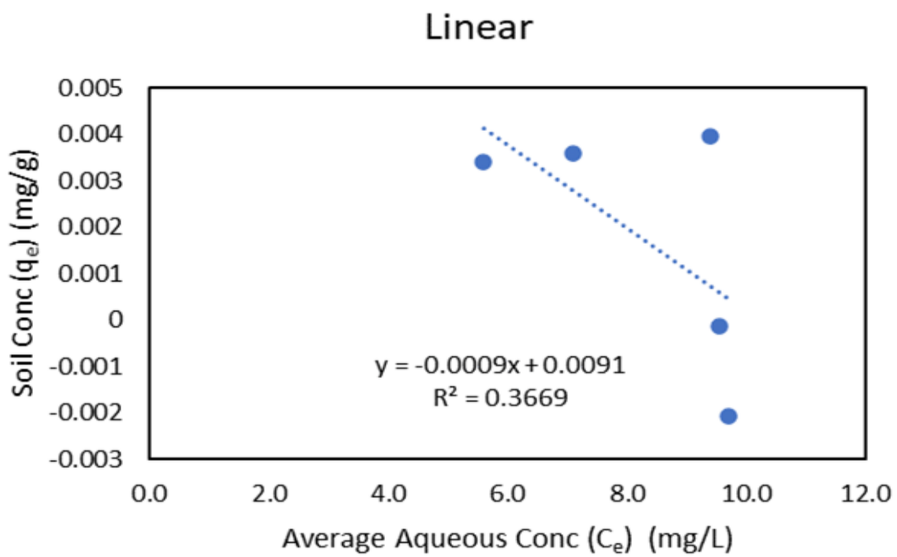

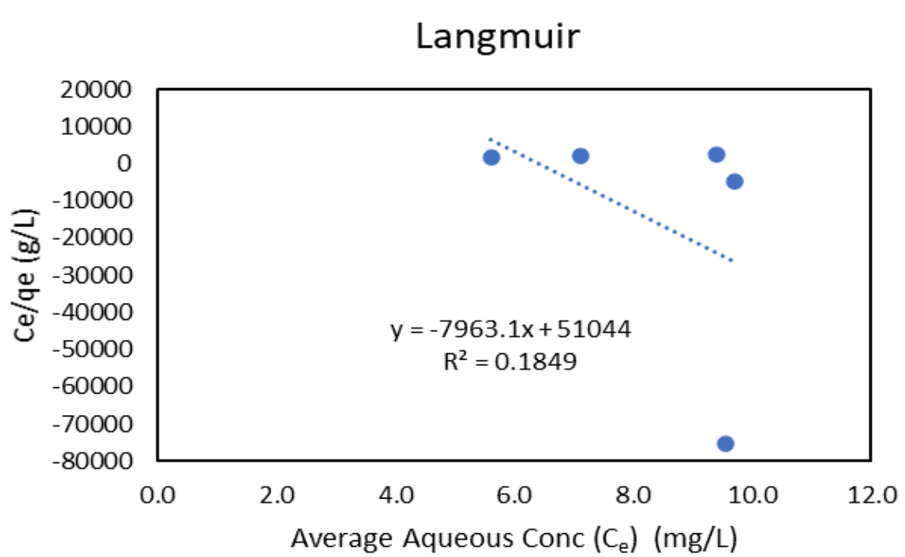

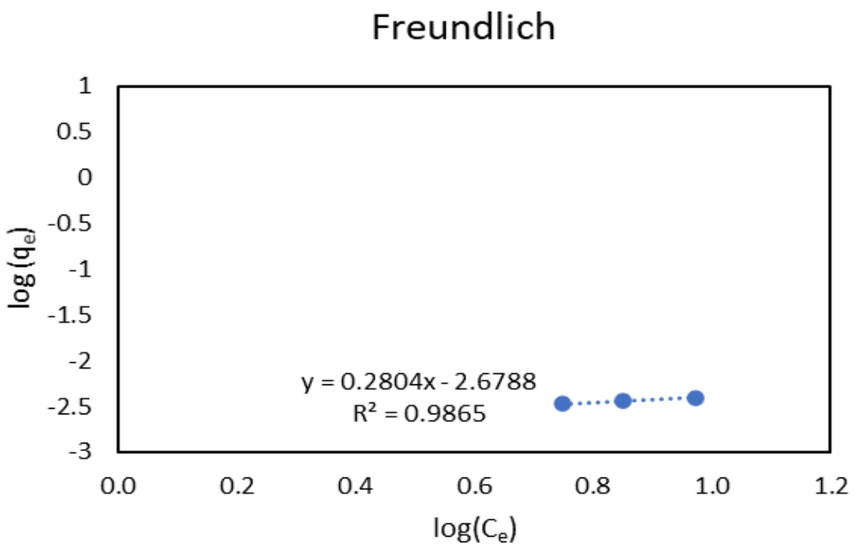

Note(s):
mg/L: milligrams per liter
mg/g: milligrams per gram
g/L: grams per liter
Ce: aqueous concentration of the adsorbate
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CLIENT
ILLINOIS POWER GENERATING COMPANY
NEWTON PRIMARY ASH POND (CCR UNIT 501)

PROJECT
EVALUATION OF PARTITION COEFFICIENT RESULTS PAP

CONSULTANT
wsp GOLDER

TITLE
APW-14 BORON PARTITION COEFFICIENTS

PROJECT NO.	PHASE	REV.	FIGURE
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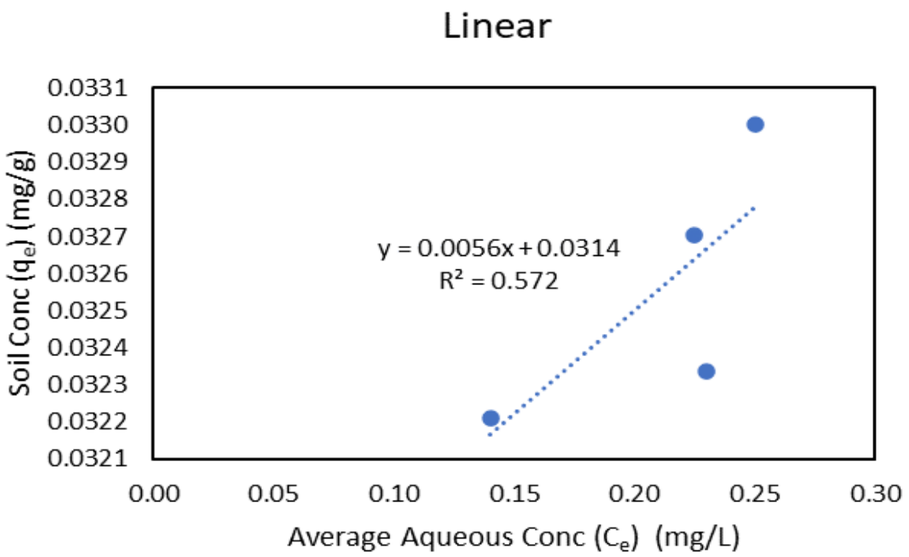

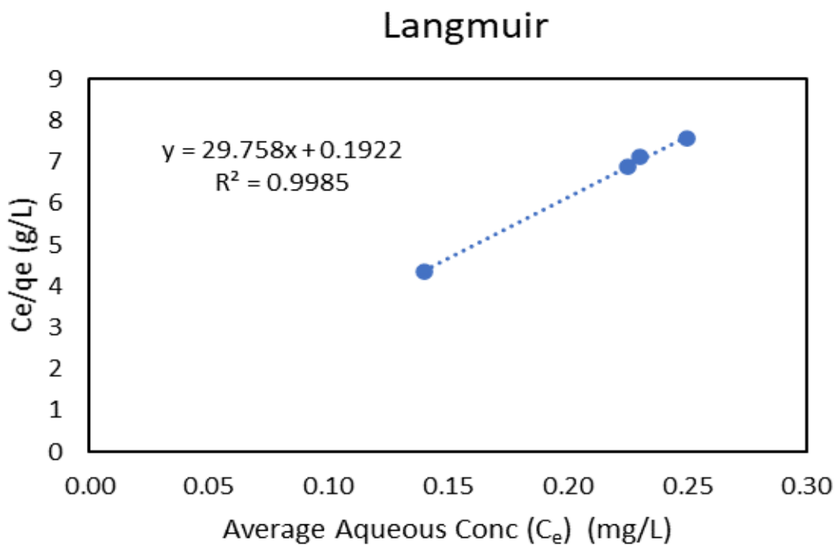

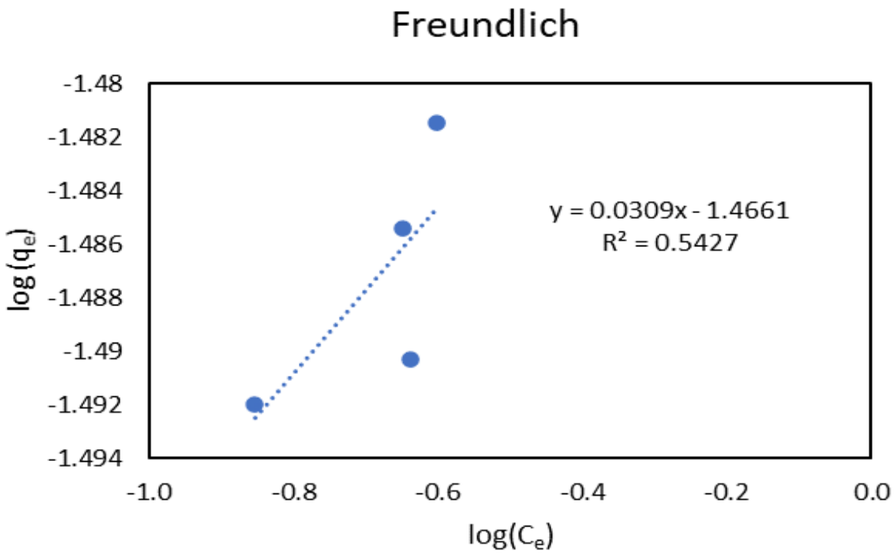

Note(s):
mg/L: milligrams per liter
mg/g: milligrams per gram
g/L: grams per liter
Ce: aqueous concentration of the adsorbate
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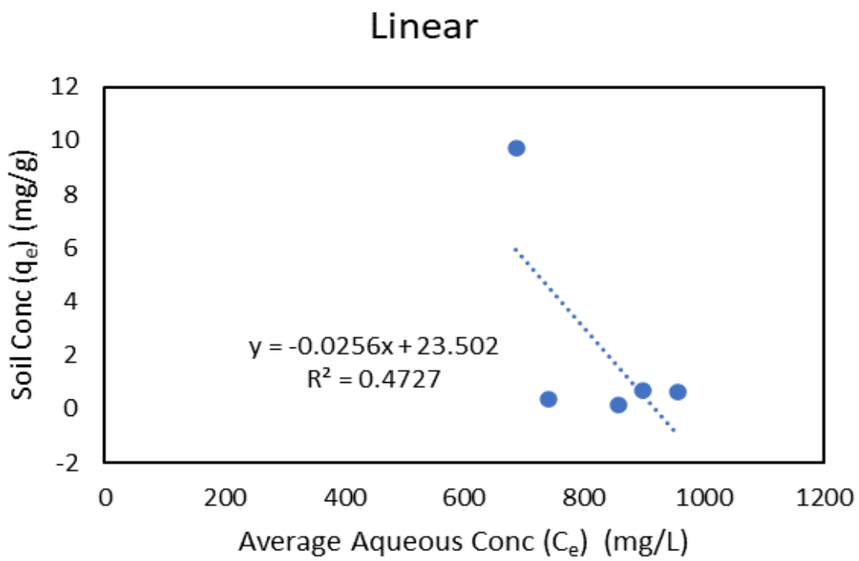
CLIENT
ILLINOIS POWER GENERATING COMPANY
NEWTON PRIMARY ASH POND (CCR UNIT 501)

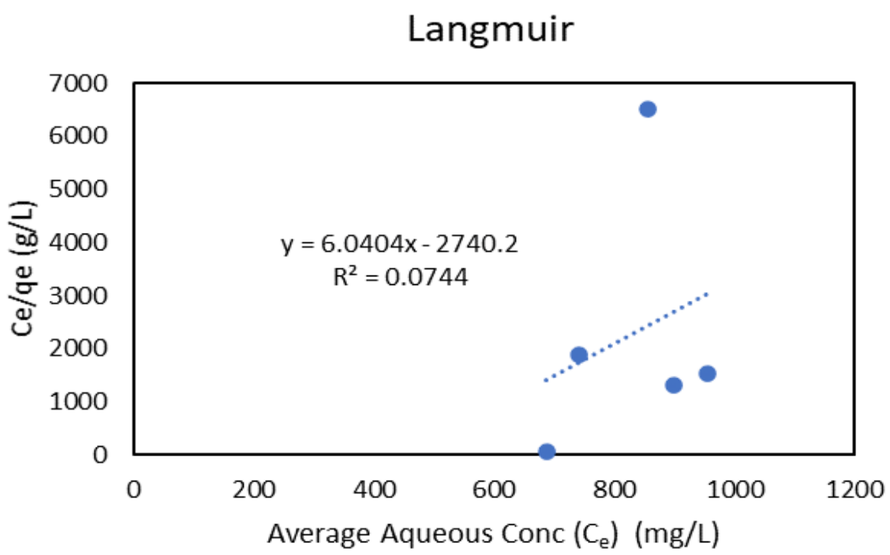
PROJECT
EVALUATION OF PARTITION COEFFICIENT RESULTS PAP

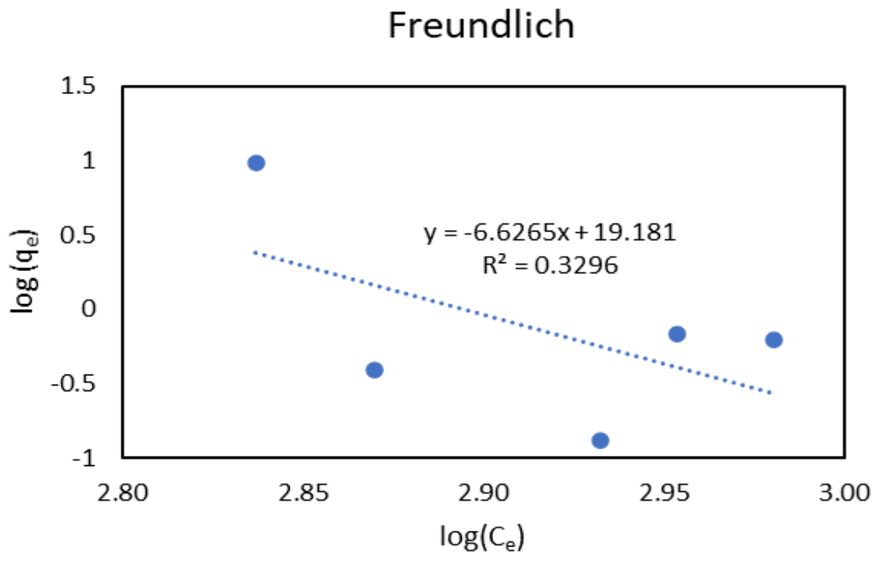
CONSULTANT
wsp GOLDER

TITLE
APW-14 LITHIUM PARTITION COEFFICIENTS

PROJECT NO.	PHASE	REV.	FIGURE
21454831	0004	0	A-5







Note(s):
mg/L: milligrams per liter
mg/g: milligrams per gram
g/L: grams per liter
Ce: aqueous concentration of the adsorbate
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CLIENT
ILLINOIS POWER GENERATING COMPANY
NEWTON PRIMARY ASH POND (CCR UNIT 501)

PROJECT
EVALUATION OF PARTITION COEFFICIENT RESULTS PAP

CONSULTANT
wsp GOLDER

TITLE
APW-14 SULFATE PARTITION COEFFICIENTS

PROJECT NO.	PHASE	REV.	FIGURE
21454831	0004	0	A-6

APPENDIX D
HELP MODEL OUTPUT FILES

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: Newton AP CBR **Simulated On:** 1/22/2025 12:34

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)

Silty Clay

Material Texture Number 43

Thickness	=	60	inches
Porosity	=	0.452	vol/vol
Field Capacity	=	0.411	vol/vol
Wilting Point	=	0.311	vol/vol
Initial Soil Water Content	=	0.4381	vol/vol
Effective Sat. Hyd. Conductivity	=	1.45E-06	cm/sec

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	88.7	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	413.3	acres
Evaporative Zone Depth	=	18	inches
Initial Water in Evaporative Zone	=	7.651	inches
Upper Limit of Evaporative Storage	=	8.136	inches
Lower Limit of Evaporative Storage	=	5.598	inches
Initial Snow Water	=	1.570044	inches
Initial Water in Layer Materials	=	26.284	inches
Total Initial Water	=	27.854	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	38.93	Degrees
Maximum Leaf Area Index	=	4.5	
Start of Growing Season (Julian Date)	=	120	days
End of Growing Season (Julian Date)	=	300	days
Average Wind Speed	=	8	mph
Average 1st Quarter Relative Humidity	=	73	%
Average 2nd Quarter Relative Humidity	=	71	%
Average 3rd Quarter Relative Humidity	=	75	%
Average 4th Quarter Relative Humidity	=	75	%

Note: Evapotranspiration data was obtained for Newton, Illinois

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.464157	2.363177	4.307613	4.875747	5.596821	4.968593
3.874885	3.10377	3.080127	3.602883	4.376843	2.870644

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
39	38.7	47.8	61.1	70.7	80.8
84.9	82.3	72.7	58.1	47.1	38.2

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Average Annual Totals Summary

Title: Newton AP CBR
Simulated on: 1/22/2025 12:35

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	46.49	[5.78]	##########	100.00
Runoff	12.610	[4.666]	##########	27.13
Evapotranspiration	29.590	[2.377]	##########	63.66
Subprofile1				
Percolation/leakage through Layer 1	4.380870	[1.077458]	6,572,527.9	9.42
Water storage				
Change in water storage	-0.0956	[1.0769]	-143,483.9	-0.21

* Note: Average inches are converted to volume based on the user-specified area.

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: Newton PAP Removal **Simulated On:** 8/7/2024 14:37

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)

Silty Clay

Material Texture Number 43

Thickness	=	216	inches
Porosity	=	0.452	vol/vol
Field Capacity	=	0.411	vol/vol
Wilting Point	=	0.311	vol/vol
Initial Soil Water Content	=	0.4281	vol/vol
Effective Sat. Hyd. Conductivity	=	1.45E-06	cm/sec

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	90.2	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	181.7	acres
Evaporative Zone Depth	=	18	inches
Initial Water in Evaporative Zone	=	7.652	inches
Upper Limit of Evaporative Storage	=	8.136	inches
Lower Limit of Evaporative Storage	=	5.598	inches
Initial Snow Water	=	1.570044	inches
Initial Water in Layer Materials	=	92.475	inches
Total Initial Water	=	94.045	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	38.93	Degrees
Maximum Leaf Area Index	=	4.5	
Start of Growing Season (Julian Date)	=	120	days
End of Growing Season (Julian Date)	=	300	days

Average Wind Speed	=	8 mph
Average 1st Quarter Relative Humidity	=	73 %
Average 2nd Quarter Relative Humidity	=	71 %
Average 3rd Quarter Relative Humidity	=	75 %
Average 4th Quarter Relative Humidity	=	75 %

Note: Evapotranspiration data was obtained for Newton, Illinois

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.464157	2.363177	4.307613	4.875747	5.596821	4.968593
3.874885	3.10377	3.080127	3.602883	4.376843	2.870644

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
39	38.7	47.8	61.1	70.7	80.8
84.9	82.3	72.7	58.1	47.1	38.2

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Average Annual Totals Summary

Title: Newton PAP Removal
Simulated on: 8/7/2024 14:39

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	46.49	[5.78]	30,660,329.0	100.00
Runoff	13.511	[4.737]	8,911,511.9	29.07
Evapotranspiration	29.352	[2.344]	19,359,498.6	63.14
Subprofile1				
Percolation/leakage through Layer 1	3.754711	[0.870412]	2,476,498.7	8.08
Water storage				
Change in water storage	-0.1322	[1.5597]	-87,180.1	-0.28

* Note: Average inches are converted to volume based on the user-specified area.

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: Newton PAP CIP East **Simulated On:** 8/8/2024 15:45

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)
SCL - Sandy Clay Loam
Material Texture Number 10

Thickness	=	6	inches
Porosity	=	0.398	vol/vol
Field Capacity	=	0.244	vol/vol
Wilting Point	=	0.136	vol/vol
Initial Soil Water Content	=	0.2476	vol/vol
Effective Sat. Hyd. Conductivity	=	1.20E-04	cm/sec

Layer 2

Type 1 - Vertical Percolation Layer
Sandy Silty Clay - PAP
Material Texture Number 43

Thickness	=	18	inches
Porosity	=	0.4	vol/vol
Field Capacity	=	0.35	vol/vol
Wilting Point	=	0.3	vol/vol
Initial Soil Water Content	=	0.375	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-05	cm/sec

Layer 3

Type 2 - Lateral Drainage Layer
Drainage Net (0.5 cm)
Material Texture Number 20

Thickness	=	0.2	inches
Porosity	=	0.85	vol/vol
Field Capacity	=	0.01	vol/vol
Wilting Point	=	0.005	vol/vol
Initial Soil Water Content	=	0.1782	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E+01	cm/sec
Slope	=	2	%
Drainage Length	=	2250	ft

Layer 4

Type 4 - Flexible Membrane Liner
LDPE Membrane
Material Texture Number 36

Thickness	=	0.04	inches
Effective Sat. Hyd. Conductivity	=	4.00E-13	cm/sec
FML Pinhole Density	=	1	Holes/Acre
FML Installation Defects	=	1	Holes/Acre
FML Placement Quality	=	3	Good

Layer 5

Type 1 - Vertical Percolation Layer (Waste)
High-Density Electric Plant Coal Fly Ash
Material Texture Number 30

Thickness	=	168	inches
Porosity	=	0.541	vol/vol
Field Capacity	=	0.187	vol/vol
Wilting Point	=	0.047	vol/vol
Initial Soil Water Content	=	0.1875	vol/vol
Effective Sat. Hyd. Conductivity	=	5.00E-05	cm/sec

Layer 6

Type 3 - Barrier Soil Liner
Silty Clay
Material Texture Number 44

Thickness	=	60	inches
Porosity	=	0.479	vol/vol
Field Capacity	=	0.371	vol/vol
Wilting Point	=	0.251	vol/vol
Initial Soil Water Content	=	0.479	vol/vol
Effective Sat. Hyd. Conductivity	=	1.45E-06	cm/sec

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	84.1	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	90.4	acres
Evaporative Zone Depth	=	18	inches
Initial Water in Evaporative Zone	=	5.994	inches
Upper Limit of Evaporative Storage	=	7.188	inches
Lower Limit of Evaporative Storage	=	4.416	inches
Initial Snow Water	=	1.570044	inches

Initial Water in Layer Materials	=	68.507	inches
Total Initial Water	=	70.077	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	38.93	Degrees
Maximum Leaf Area Index	=	4.5	
Start of Growing Season (Julian Date)	=	120	days
End of Growing Season (Julian Date)	=	300	days
Average Wind Speed	=	8	mph
Average 1st Quarter Relative Humidity	=	73	%
Average 2nd Quarter Relative Humidity	=	71	%
Average 3rd Quarter Relative Humidity	=	75	%
Average 4th Quarter Relative Humidity	=	75	%

Note: Evapotranspiration data was obtained for Newton, Illinois

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.464157	2.363177	4.307613	4.875747	5.596821	4.968593
3.874885	3.10377	3.080127	3.602883	4.376843	2.870644

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
39	38.7	47.8	61.1	70.7	80.8
84.9	82.3	72.7	58.1	47.1	38.2

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Average Annual Totals Summary

Title: Newton PAP CIP East
Simulated on: 8/8/2024 15:47

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	46.49	[5.78]	15,254,230.8	100.00
Runoff	5.983	[3.591]	1,963,228.7	12.87
Evapotranspiration	31.069	[2.767]	10,195,325.6	66.84
Subprofile1				
Lateral drainage collected from Layer 3	9.4167	[1.8849]	3,090,097.4	20.26
Percolation/leakage through Layer 4	0.068518	[0.027412]	22,484.2	0.15
Average Head on Top of Layer 4	2.3731	[0.957]	---	---
Subprofile2				
Percolation/leakage through Layer 6	0.071173	[0.030448]	23,355.6	0.15
Average Head on Top of Layer 6	0.0001	[0]	---	---
Water storage				
Change in water storage	-0.0542	[1.0896]	-17,776.5	-0.12

* Note: Average inches are converted to volume based on the user-specified area.

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: Newton PAP CIP West **Simulated On:** 8/8/2024 10:47

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)
SCL - Sandy Clay Loam
Material Texture Number 10

Thickness	=	6	inches
Porosity	=	0.398	vol/vol
Field Capacity	=	0.244	vol/vol
Wilting Point	=	0.136	vol/vol
Initial Soil Water Content	=	0.2475	vol/vol
Effective Sat. Hyd. Conductivity	=	1.20E-04	cm/sec

Layer 2

Type 1 - Vertical Percolation Layer
Sandy Silty Clay - PAP
Material Texture Number 43

Thickness	=	18	inches
Porosity	=	0.4	vol/vol
Field Capacity	=	0.35	vol/vol
Wilting Point	=	0.3	vol/vol
Initial Soil Water Content	=	0.3704	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-05	cm/sec

Layer 3

Type 2 - Lateral Drainage Layer
Drainage Net (0.5 cm)
Material Texture Number 20

Thickness	=	0.2	inches
Porosity	=	0.85	vol/vol
Field Capacity	=	0.01	vol/vol
Wilting Point	=	0.005	vol/vol
Initial Soil Water Content	=	0.0543	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E+01	cm/sec
Slope	=	2	%
Drainage Length	=	1450	ft

Layer 4

Type 4 - Flexible Membrane Liner
LDPE Membrane
Material Texture Number 36

Thickness	=	0.04	inches
Effective Sat. Hyd. Conductivity	=	4.00E-13	cm/sec
FML Pinhole Density	=	1	Holes/Acre
FML Installation Defects	=	1	Holes/Acre
FML Placement Quality	=	3	Good

Layer 5

Type 1 - Vertical Percolation Layer (Waste)
High-Density Electric Plant Coal Fly Ash
Material Texture Number 30

Thickness	=	252	inches
Porosity	=	0.541	vol/vol
Field Capacity	=	0.187	vol/vol
Wilting Point	=	0.047	vol/vol
Initial Soil Water Content	=	0.1871	vol/vol
Effective Sat. Hyd. Conductivity	=	5.00E-05	cm/sec

Layer 6

Type 3 - Barrier Soil Liner
Silty Clay
Material Texture Number 44

Thickness	=	60	inches
Porosity	=	0.479	vol/vol
Field Capacity	=	0.371	vol/vol
Wilting Point	=	0.251	vol/vol
Initial Soil Water Content	=	0.479	vol/vol
Effective Sat. Hyd. Conductivity	=	1.45E-06	cm/sec

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	84.5	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	141.2	acres
Evaporative Zone Depth	=	18	inches
Initial Water in Evaporative Zone	=	5.925	inches
Upper Limit of Evaporative Storage	=	7.188	inches
Lower Limit of Evaporative Storage	=	4.416	inches
Initial Snow Water	=	1.570044	inches

Initial Water in Layer Materials	=	84.043	inches
Total Initial Water	=	85.613	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	38.93	Degrees
Maximum Leaf Area Index	=	4.5	
Start of Growing Season (Julian Date)	=	120	days
End of Growing Season (Julian Date)	=	300	days
Average Wind Speed	=	8	mph
Average 1st Quarter Relative Humidity	=	73	%
Average 2nd Quarter Relative Humidity	=	71	%
Average 3rd Quarter Relative Humidity	=	75	%
Average 4th Quarter Relative Humidity	=	75	%

Note: Evapotranspiration data was obtained for Newton, Illinois

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.464157	2.363177	4.307613	4.875747	5.596821	4.968593
3.874885	3.10377	3.080127	3.602883	4.376843	2.870644

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
39	38.7	47.8	61.1	70.7	80.8
84.9	82.3	72.7	58.1	47.1	38.2

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Average Annual Totals Summary

Title: Newton PAP CIP West
Simulated on: 8/8/2024 10:49

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	46.49	[5.78]	23,826,298.6	100.00
Runoff	5.546	[3.487]	2,842,443.1	11.93
Evapotranspiration	30.972	[2.73]	15,875,058.1	66.63
Subprofile1				
Lateral drainage collected from Layer 3	9.9755	[2.1985]	5,112,981.9	21.46
Percolation/leakage through Layer 4	0.039783	[0.017738]	20,391.3	0.09
Average Head on Top of Layer 4	1.3750	[0.6188]	---	---
Subprofile2				
Percolation/leakage through Layer 6	0.040323	[0.018917]	20,667.7	0.09
Average Head on Top of Layer 6	0.0000	[0]	---	---
Water storage				
Change in water storage	-0.0485	[1.0226]	-24,852.2	-0.10

* Note: Average inches are converted to volume based on the user-specified area.

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: DEF Earth NEW PAP CIP East **Simulated On:** 2/5/2025 14:21

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)

SCL - Sandy Clay Loam

Material Texture Number 10

Thickness	=	6	inches
Porosity	=	0.398	vol/vol
Field Capacity	=	0.244	vol/vol
Wilting Point	=	0.136	vol/vol
Initial Soil Water Content	=	0.3858	vol/vol
Effective Sat. Hyd. Conductivity	=	1.20E-04	cm/sec

Layer 2

Type 1 - Vertical Percolation Layer

Sandy Silty Clay - PAP

Material Texture Number 43

Thickness	=	30	inches
Porosity	=	0.4	vol/vol
Field Capacity	=	0.35	vol/vol
Wilting Point	=	0.3	vol/vol
Initial Soil Water Content	=	0.4	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-05	cm/sec

Layer 3

Type 3 - Barrier Soil Liner

Liner Soil (High)

Material Texture Number 16

Thickness	=	36	inches
Porosity	=	0.427	vol/vol
Field Capacity	=	0.418	vol/vol
Wilting Point	=	0.367	vol/vol
Initial Soil Water Content	=	0.427	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-07	cm/sec

Layer 4

Type 1 - Vertical Percolation Layer (Waste)

High-Density Electric Plant Coal Fly Ash

Material Texture Number 30

Thickness	=	168	inches
Porosity	=	0.541	vol/vol
Field Capacity	=	0.187	vol/vol
Wilting Point	=	0.047	vol/vol
Initial Soil Water Content	=	0.1987	vol/vol
Effective Sat. Hyd. Conductivity	=	5.00E-05	cm/sec

Layer 5

Type 3 - Barrier Soil Liner

Silty Clay

Material Texture Number 44

Thickness	=	60	inches
Porosity	=	0.479	vol/vol
Field Capacity	=	0.371	vol/vol
Wilting Point	=	0.251	vol/vol
Initial Soil Water Content	=	0.479	vol/vol
Effective Sat. Hyd. Conductivity	=	1.45E-06	cm/sec

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	84.1	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	90.4	acres
Evaporative Zone Depth	=	18	inches
Initial Water in Evaporative Zone	=	7.115	inches
Upper Limit of Evaporative Storage	=	7.188	inches
Lower Limit of Evaporative Storage	=	4.416	inches
Initial Snow Water	=	1.570044	inches
Initial Water in Layer Materials	=	91.806	inches
Total Initial Water	=	93.376	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	38.93	Degrees
Maximum Leaf Area Index	=	4.5	
Start of Growing Season (Julian Date)	=	120	days
End of Growing Season (Julian Date)	=	300	days
Average Wind Speed	=	8	mph
Average 1st Quarter Relative Humidity	=	73	%
Average 2nd Quarter Relative Humidity	=	71	%
Average 3rd Quarter Relative Humidity	=	75	%
Average 4th Quarter Relative Humidity	=	75	%

Note: Evapotranspiration data was obtained for Newton, Illinois

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.464157	2.363177	4.307613	4.875747	5.596821	4.968593
3.874885	3.10377	3.080127	3.602883	4.376843	2.870644

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
39	38.7	47.8	61.1	70.7	80.8
84.9	82.3	72.7	58.1	47.1	38.2

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Average Annual Totals Summary

Title: DEF Earth NEW PAP CIP East

Simulated on: 2/5/2025 14:23

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	46.49	[5.78]	##########	100.00
Runoff	12.233	[4.87]	4,014,357.5	26.32
Evapotranspiration	32.240	[2.871]	##########	69.36
Subprofile1				
Percolation/leakage through Layer 3	2.070798	[0.059882]	679,536.6	4.45
Average Head on Top of Layer 3	24.0070	[1.7568]	---	---
Subprofile2				
Percolation/leakage through Layer 5	1.822327	[0.58916]	598,000.2	3.92
Average Head on Top of Layer 5	0.0017	[0.0006]	---	---
Water storage				
Change in water storage	0.1894	[1.0859]	62,153.7	0.41

* Note: Average inches are converted to volume based on the user-specified area.

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: NEW DEF Earth PAP CIP West **Simulated On:** 2/5/2025 13:56

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)

SCL - Sandy Clay Loam

Material Texture Number 10

Thickness	=	6	inches
Porosity	=	0.398	vol/vol
Field Capacity	=	0.244	vol/vol
Wilting Point	=	0.136	vol/vol
Initial Soil Water Content	=	0.3858	vol/vol
Effective Sat. Hyd. Conductivity	=	1.20E-04	cm/sec

Layer 2

Type 1 - Vertical Percolation Layer

Sandy Silty Clay - PAP

Material Texture Number 43

Thickness	=	30	inches
Porosity	=	0.4	vol/vol
Field Capacity	=	0.35	vol/vol
Wilting Point	=	0.3	vol/vol
Initial Soil Water Content	=	0.4	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-05	cm/sec

Layer 3

Type 3 - Barrier Soil Liner

Liner Soil (High)

Material Texture Number 16

Thickness	=	36	inches
Porosity	=	0.427	vol/vol
Field Capacity	=	0.418	vol/vol
Wilting Point	=	0.367	vol/vol
Initial Soil Water Content	=	0.427	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-07	cm/sec

Layer 4

Type 1 - Vertical Percolation Layer (Waste)

High-Density Electric Plant Coal Fly Ash

Material Texture Number 30

Thickness	=	252	inches
Porosity	=	0.541	vol/vol
Field Capacity	=	0.187	vol/vol
Wilting Point	=	0.047	vol/vol
Initial Soil Water Content	=	0.1948	vol/vol
Effective Sat. Hyd. Conductivity	=	5.00E-05	cm/sec

Layer 5

Type 3 - Barrier Soil Liner

Silty Clay

Material Texture Number 44

Thickness	=	60	inches
Porosity	=	0.479	vol/vol
Field Capacity	=	0.371	vol/vol
Wilting Point	=	0.251	vol/vol
Initial Soil Water Content	=	0.479	vol/vol
Effective Sat. Hyd. Conductivity	=	1.45E-06	cm/sec

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	84.5	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	141.2	acres
Evaporative Zone Depth	=	18	inches
Initial Water in Evaporative Zone	=	7.115	inches
Upper Limit of Evaporative Storage	=	7.188	inches
Lower Limit of Evaporative Storage	=	4.416	inches
Initial Snow Water	=	1.570044	inches
Initial Water in Layer Materials	=	107.513	inches
Total Initial Water	=	109.083	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	38.93	Degrees
Maximum Leaf Area Index	=	4.5	
Start of Growing Season (Julian Date)	=	120	days
End of Growing Season (Julian Date)	=	300	days
Average Wind Speed	=	8	mph
Average 1st Quarter Relative Humidity	=	73	%
Average 2nd Quarter Relative Humidity	=	71	%
Average 3rd Quarter Relative Humidity	=	75	%
Average 4th Quarter Relative Humidity	=	75	%

Note: Evapotranspiration data was obtained for Newton, Illinois

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.464157	2.363177	4.307613	4.875747	5.596821	4.968593
3.874885	3.10377	3.080127	3.602883	4.376843	2.870644

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
39	38.7	47.8	61.1	70.7	80.8
84.9	82.3	72.7	58.1	47.1	38.2

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Average Annual Totals Summary

Title: NEW DEF Earth PAP CIP West
Simulated on: 2/5/2025 14:00

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	46.49	[5.78]	##########	100.00
Runoff	12.243	[4.887]	6,275,394.0	26.34
Evapotranspiration	32.231	[2.871]	##########	69.34
Subprofile1				
Percolation/leakage through Layer 3	2.069857	[0.059678]	1,060,917.8	4.45
Average Head on Top of Layer 3	23.9797	[1.7511]	---	---
Subprofile2				
Percolation/leakage through Layer 5	1.653214	[0.729981]	847,364.9	3.56
Average Head on Top of Layer 5	0.0015	[0.0007]	---	---
Water storage				
Change in water storage	0.3575	[1.165]	183,251.0	0.77

* Note: Average inches are converted to volume based on the user-specified area.

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: DEF NEW PAP CIP East 2 **Simulated On:** 2/20/2025 15:49

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)
SCL - Sandy Clay Loam
Material Texture Number 10

Thickness	=	6	inches
Porosity	=	0.398	vol/vol
Field Capacity	=	0.244	vol/vol
Wilting Point	=	0.136	vol/vol
Initial Soil Water Content	=	0.398	vol/vol
Effective Sat. Hyd. Conductivity	=	1.20E-04	cm/sec

Layer 2

Type 1 - Vertical Percolation Layer
Sandy Silty Clay - PAP
Material Texture Number 43

Thickness	=	30	inches
Porosity	=	0.4	vol/vol
Field Capacity	=	0.35	vol/vol
Wilting Point	=	0.3	vol/vol
Initial Soil Water Content	=	0.4	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-05	cm/sec

Layer 3

Type 4 - Flexible Membrane Liner
LDPE Membrane
Material Texture Number 36

Thickness	=	0.04	inches
Effective Sat. Hyd. Conductivity	=	4.00E-13	cm/sec
FML Pinhole Density	=	1	Holes/Acre
FML Installation Defects	=	1	Holes/Acre
FML Placement Quality	=	3	Good

Layer 4

Type 1 - Vertical Percolation Layer (Waste)

High-Density Electric Plant Coal Fly Ash
Material Texture Number 30

Thickness	=	168	inches
Porosity	=	0.541	vol/vol
Field Capacity	=	0.187	vol/vol
Wilting Point	=	0.047	vol/vol
Initial Soil Water Content	=	0.1881	vol/vol
Effective Sat. Hyd. Conductivity	=	5.00E-05	cm/sec

Layer 5
Type 3 - Barrier Soil Liner
Silty Clay
Material Texture Number 44

Thickness	=	60	inches
Porosity	=	0.479	vol/vol
Field Capacity	=	0.371	vol/vol
Wilting Point	=	0.251	vol/vol
Initial Soil Water Content	=	0.479	vol/vol
Effective Sat. Hyd. Conductivity	=	1.45E-06	cm/sec

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	84.1	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	90.4	acres
Evaporative Zone Depth	=	18	inches
Initial Water in Evaporative Zone	=	7.188	inches
Upper Limit of Evaporative Storage	=	7.188	inches
Lower Limit of Evaporative Storage	=	4.416	inches
Initial Snow Water	=	1.570044	inches
Initial Water in Layer Materials	=	74.725	inches
Total Initial Water	=	76.295	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	38.93	Degrees

Maximum Leaf Area Index	=	4.5	
Start of Growing Season (Julian Date)	=	120	days
End of Growing Season (Julian Date)	=	300	days
Average Wind Speed	=	8	mph
Average 1st Quarter Relative Humidity	=	73	%
Average 2nd Quarter Relative Humidity	=	71	%
Average 3rd Quarter Relative Humidity	=	75	%
Average 4th Quarter Relative Humidity	=	75	%

Note: Evapotranspiration data was obtained for Newton, Illinois

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.464157	2.363177	4.307613	4.875747	5.596821	4.968593
3.874885	3.10377	3.080127	3.602883	4.376843	2.870644

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
39	38.7	47.8	61.1	70.7	80.8
84.9	82.3	72.7	58.1	47.1	38.2

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Average Annual Totals Summary

Title: DEF NEW PAP CIP East 2
Simulated on: 2/20/2025 15:51

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	46.49	[5.78]	15,254,230.8	100.00
Runoff	13.646	[5.016]	4,478,037.7	29.36
Evapotranspiration	32.521	[2.81]	10,671,928.1	69.96
Subprofile1				
Percolation/leakage through Layer 3	0.372330	[0.01089]	122,180.9	0.80
Average Head on Top of Layer 3	26.1062	[1.2334]	---	---
Subprofile2				
Percolation/leakage through Layer 5	0.324116	[0.066584]	106,359.2	0.70
Average Head on Top of Layer 5	0.0003	[0.0001]	---	---
Water storage				
Change in water storage	-0.0064	[0.8832]	-2,094.2	-0.01

* Note: Average inches are converted to volume based on the user-specified area.

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: NEW DEF PAP CIP West 2 **Simulated On:** 2/20/2025 15:31

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)
SCL - Sandy Clay Loam
Material Texture Number 10

Thickness	=	6	inches
Porosity	=	0.398	vol/vol
Field Capacity	=	0.244	vol/vol
Wilting Point	=	0.136	vol/vol
Initial Soil Water Content	=	0.398	vol/vol
Effective Sat. Hyd. Conductivity	=	1.20E-04	cm/sec

Layer 2

Type 1 - Vertical Percolation Layer
Sandy Silty Clay - PAP
Material Texture Number 43

Thickness	=	30	inches
Porosity	=	0.4	vol/vol
Field Capacity	=	0.35	vol/vol
Wilting Point	=	0.3	vol/vol
Initial Soil Water Content	=	0.4	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-05	cm/sec

Layer 3

Type 4 - Flexible Membrane Liner
LDPE Membrane
Material Texture Number 36

Thickness	=	0.04	inches
Effective Sat. Hyd. Conductivity	=	4.00E-13	cm/sec
FML Pinhole Density	=	1	Holes/Acre
FML Installation Defects	=	1	Holes/Acre
FML Placement Quality	=	3	Good

Layer 4

Type 1 - Vertical Percolation Layer (Waste)

High-Density Electric Plant Coal Fly Ash
Material Texture Number 30

Thickness	=	252	inches
Porosity	=	0.541	vol/vol
Field Capacity	=	0.187	vol/vol
Wilting Point	=	0.047	vol/vol
Initial Soil Water Content	=	0.1877	vol/vol
Effective Sat. Hyd. Conductivity	=	5.00E-05	cm/sec

Layer 5
Type 3 - Barrier Soil Liner
Silty Clay
Material Texture Number 44

Thickness	=	60	inches
Porosity	=	0.479	vol/vol
Field Capacity	=	0.371	vol/vol
Wilting Point	=	0.251	vol/vol
Initial Soil Water Content	=	0.479	vol/vol
Effective Sat. Hyd. Conductivity	=	1.45E-06	cm/sec

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	84.5	
Fraction of Area Allowing Runoff	=	100	%
Area projected on a horizontal plane	=	141.2	acres
Evaporative Zone Depth	=	18	inches
Initial Water in Evaporative Zone	=	7.188	inches
Upper Limit of Evaporative Storage	=	7.188	inches
Lower Limit of Evaporative Storage	=	4.416	inches
Initial Snow Water	=	1.570044	inches
Initial Water in Layer Materials	=	90.433	inches
Total Initial Water	=	92.003	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	38.93	Degrees

Maximum Leaf Area Index	=	4.5	
Start of Growing Season (Julian Date)	=	120	days
End of Growing Season (Julian Date)	=	300	days
Average Wind Speed	=	8	mph
Average 1st Quarter Relative Humidity	=	73	%
Average 2nd Quarter Relative Humidity	=	71	%
Average 3rd Quarter Relative Humidity	=	75	%
Average 4th Quarter Relative Humidity	=	75	%

Note: Evapotranspiration data was obtained for Newton, Illinois

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
3.464157	2.363177	4.307613	4.875747	5.596821	4.968593
3.874885	3.10377	3.080127	3.602883	4.376843	2.870644

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
39	38.7	47.8	61.1	70.7	80.8
84.9	82.3	72.7	58.1	47.1	38.2

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 38.93/-88.28

Average Annual Totals Summary

Title: NEW DEF PAP CIP West 2
Simulated on: 2/20/2025 15:33

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	46.49	[5.78]	23,826,298.6	100.00
Runoff	13.664	[5.014]	7,003,388.1	29.39
Evapotranspiration	32.504	[2.81]	16,660,134.7	69.92
Subprofile1				
Percolation/leakage through Layer 3	0.372173	[0.010819]	190,759.7	0.80
Average Head on Top of Layer 3	26.0886	[1.225]	---	---
Subprofile2				
Percolation/leakage through Layer 5	0.296900	[0.070893]	152,178.0	0.64
Average Head on Top of Layer 5	0.0003	[0.0001]	---	---
Water storage				
Change in water storage	0.0207	[0.8832]	10,597.8	0.04

* Note: Average inches are converted to volume based on the user-specified area.

APPENDIX E
FLUX EVALUATION DATA

Appendix E. Flux Evaluation Data
GROUNDWATER MODELING REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Calibration Model

Model	Model Period (years)	HSU	Total Flux In[1] (ft^3/d)	Total Flux In (gpm)
Calibration Model	45	Fill Unit (CCR)	33427.89	173.65
Model	**Model Period (years)**	**HSU**	**Total Flux Out[1] (ft^3/d)**	**Total Flux Out (gpm)**
Calibration Model	45	Fill Unit (CCR)	-33528.40	-174.17

Scenario 1: CIP (CCR removal from the northwest areas of the Ash Pond, consolidation to the northeast, central and southern areas of the Ash Pond, and construction of a cover system over the remaining CCR)

Prediction Model	Years (Post-Construction Period)	HSU	Total Flux In[1] (ft^3/d)	Total Flux In (gpm)	Reduction in Flux In Post Closure[2] (Percentage, %)
CIP	56	Fill Unit (CCR)	223.70	1.16	99.3%
Prediction Model	**Years (Post-Construction Period)**	**HSU**	**Total Flux Out[1] (ft^3/d)**	**Total Flux Out (gpm)**	**Reduction in Flux Out Post Closure[2] (Percentage, %)**
CIP	56	Fill Unit (CCR)	-133.99	-0.70	99.6%

[O: PR 1/22/25; C: KM 3/27/2025]

Notes:
1. Total flux in and out source data provided in flux calculation data files included in Appendix B.
2. Reduction in flux as compared to flux at the end of calibration model (model period of 45 years).
CCR = coal combustion residuals
CIP = Closure In Place
HSU = Hydrostratigraphic Unit
% = percentage
ft^3/d = cubic feet per day
gpm = gallons per minute

APPENDIX C
MATERIAL QUANTITY, LABOR, AND MILEAGE ESTIMATES FOR ALTERNATIVE 2

RAMBOLL

ILLINOIS POWER GENERATING COMPANY - NEWTON POWER PLANT
CORRECTIVE ACTION ALTERNATIVES ANALYSIS SUPPORTING INFORMATION REPORT (CAAA-SIR)
ALTERNATIVE 2 - SOURCE CONTROL WITH GROUNDWATER EXTRACTION TRENCH[1]

ITEM NO.	ENGINEERING, PRE-CONSTRUCTION, AND CONSTRUCTION SUPPORT TASKS	Units	Quantity	Crew	Daily Output	Labor Hours	Equipment Hours	Notes
1	Pre-Design Investigation, Final Groundwater Extraction Trench Design and Bid Support	LS	1	-	-	0	0	Assumes pre-design investigation is needed as part of the Final Groundwater Extraction Trench design.
2	Engineering Support and CQA During Construction	LS	1	Eng	12	3,240	2,700	Assumed labor and equipment hours based on Ramboll project experience.
	ENGINEERING, PRE-CONSTRUCTION, AND CONSTRUCTION SUPPORT ESTIMATED SUBTOTAL					**3,240**	**2700**	
ITEM NO.	**SITE PREPARATION**	**Units**	**Quantity**	**Crew**	**Daily Output**	**Labor Hours**	**Equipment Hours**	**Notes**
3	Mobilization and De-Mobilization	LS	1	-	-	-	-	Assumes mobilization and demobilization.
4	Tree clearing in Extraction Trench Alignment and Laydown Areas	-	-	-	-	181	121	Assumes some tree clearance and fine site preparation work is needed ahead of construction activities.
	Tree Clearing Down to Grade	Acre	2.6	B7	0.7	181	121	311110100200: Clearing and grubbing, medium trees to 12" diameter, cut and chip. Assumes 25 ft of tree clearance along the approximately 4,600 ft of extraction trench.
5	Staging Area & Temporary Roads Preparation	-	-	-	-	422	65	Assumes some work general preparation of temporary access roads along the trench alignment will be needed specific to extraction trench construction.
	Subsurface Stabilization Nonwoven Geotextile	SY	5,000	2 Clab	2500	32	0	313219161550: Geosynthetic soil stabilization, geotextile fabric, non-woven, 120 lb tensile strength includes scarifying and compaction. Assumes 0.5 acre staging area and approximately 3,500 ft of temporary access road.
	Construct Staging Area & Temporary Roads	SY	5,000	B14	615	390	65	015523500100: Temporary, roads, gravel fill, 8" gravel depth, excluding surfacing. Assumes 0.5 acre staging area and approximately 3,500 ft of temporary access road.
6	Construction Soil Erosion & Sediment Controls	-	-	-	-	415	138	Assumes soil erosion and sediment controls will be implemented only during the groundwater extraction trench construction.
	Silt Fence	LF	8,000	B62	650	295	98	312514161000: Synthetic erosion control, silt fence, install and remove, 3' high. Assumes silt fence is installed on downgradient side of the extraction trench alignments (4,600 ft total with one complete replacement).
	Sediment Log, Filter Sock	LF	5,000	A2	1000	120	40	312514160705: Sediment Log, Filter Sock, 9". Assume sediment log is needed along alignment of extraction trench (4,600 LF total) and settling pond perimeter (1,000 LF).
7	Construction Facilities		-	-	-	-	-	Assumes office trailer, storage boxes, and portable toilets are required during the construction phase of the alternative.
	Office Trailer	MO - in use	12	-	-	-	-	015213200350: Office trailer, furnished, no hookups, 32' x 8'. Assume quantity of one (1).
	Storage Trailers	MO - in use	12	-	-	-	-	015213201350: Storage boxes, 40' x 8'. Assume quantity of two (2) boxes onsite.
	Portable Toilet	MO - in use	12	-	-	-	-	015433406410: Toilet, portable chemical. Assume quantity of four (4) units onsite.
8	Electrical Installation	EA	3	R1B	-	720	0	Electrical installation based on Ramboll experience to install two power drops for low-voltage (120V) power for the pneumatic extraction pumps along the extraction trenches, and one for secondary settling pond discharge of water to outfall. For each power drop, consider the distances from existing power sources.
9	Existing Site Utilities Preparation	-	-	-	-	331	159	Assumes abandonment of conflicting section of fire water conveyance line that extends between the Pump House and the Plant. Assumes updated layout will be determined during design phase.
	Abandonment of Conflicting Section of Fire Water Supply Line - Grouting	Days	5	GRT	1	100	50	Assumes 5 days labor to grout approximately 2,000 LF of existing fire water conveyance line based on Ramboll previous project experience.
	Excavate Utility Trench for Replacement Fire Water Supply Line	LF	1,500	B54	860	14	14	312316142750: Utility trench excavating, chain trencher, 40 HP operator riding, 12" wide trench and backfill, 18" deep. Trench installed from pump house area up toward plant to rejoin existing line.
	Install 8" HDPE Replacement Fire Water Supply Line	LF	1,500	B22A	320	188	75	331413350300: Water supply distribution piping, piping HDPE, butt fusion joints, 40' lengths, 8" diameter, SDR 21. Includes labor, materials, and machine for installation and welding of HDPE pipe for fire water supply line.
	Backfill Fire Water Supply Line Trench with Granular Trench Backfill	LCY	250	B10R	100	30	20	312316133060: Backfill trench, F.E. loader, wheel mtd., 1 C.Y. bucket, 200' haul. Backfill with granular trench backfill. Quantity based on trench dimensions 12" wide, 18" deep, 1,500 ft long.
10	Geotechnical Monitoring	LS	--	GM	--	600	0	Assumes installation of inclinometers, survey prisms, and settlement monitoring devices along the east drain trench where the embankment will be modified. Assumes a 4-person crew installs the monitoring system over a period of 3 weeks. Based on Ramboll experience.

11	Extraction Trench Alignment Preparation Work Pad	-	-	-	-	1,022	322	Assumes construction of a 40-ft wide work pad for the full length of the eastern and western trenches. For the eastern trench, excavation of berm material on the upslope side and fill along the downslope side will be required to level off the work area. Once prepared, surface grading and stabilization will be completed along the eastern trench work pad. For the western trench, it is anticipated that only surface grading and stabilization will be required for the work pad.
	Excavation of Berm Material and Stockpiling	CY	10,000	B12D	2080	77	38	312316420300: Excavating, bulk bank measure, hydraulic, crawler mtd., 3 C.Y. cap (300 CY/hr).
	Loading Stockpiled Berm Material	BCY	10,000	B10T	1575	76	51	312323154070: Borrow, common earth, 3 C.Y. bucket, loading and/or spreading, front end loader, wheel-mounted. Assumes stockpiling of upslope material adjacent to work area.
	Hauling Berm Material to Stockpile	LCY	10,000	B34G	986	81	81	312323206130: Hauling; no loading equipment, including hauling, waiting, loading/dumping; 34 C.Y. off-road, 15 min wait/ld./uld., 15 MPH, cycle 2,000 ft.
	Spreading/Drying Material on Downslope Side of Work Pad	CY	8,000	B10B	1000	96	64	312323170020: Spread dumped material, no compaction, by dozer.
	Compaction of Work Pad	BCY	8,000	B10G	5200	18	12	312323235680: Compaction, 2 passes, 12" lifts, sheepsfoot or wobbly wheel roller.
	Surface Grading	MSF	204	B11L	30	109	54	312216103600: Fine grading, work pad area. Assumes grading along the eastern (2,600 ft) and western trench (2,500 ft) alignments with additional area on each trench end.
	Subsurface Stabilization Nonwoven Geotextile	SY	8,500	2 Clab	2500	54	--	313219161550: Geosynthetic soil stabilization, geotextile fabric, non-woven, 120 lb tensile strength includes scarifying and compaction; assume we need for working pad. At eastern trench, work pad will span 2,600 ft long and 15 ft wide. At western trench, work pad will span 2,500 ft long and 15 ft wide.
	Install Crushed Gravel Work Pad (8" Thick)	SY	8,500	B14	615	663	111	015523500100: Temporary, roads, gravel fill, 8" gravel depth, excluding surfacing. At eastern trench, work pad will span 2,600 ft long and 15 ft wide. At western trench, work pad will span 2,500 ft long and 15 ft wide.
	SITE PREPARATION ESTIMATED SUBTOTAL					**3,692**	**806**	
ITEM NO.	**GROUNDWATER EXTRACTION TRENCH CONSTRUCTION**	**Units**	**Quantity**	**Crew**	**Daily Output**	**Labor Hours**	**Equipment Hours**	**Notes**
12	Materials	-	-	-	-	1,969	1,969	Purchase of sand/granular material for backfilling the extraction trenches.
	Sand / Granular Backfill	CY	14,833	B13D	376	631	631	Sand/granular backfill for extraction trenches. Assumes eastern trench is 2,000 ft and 30 ft deep and western trench is 2,100 ft and 35 ft deep. Assumes both trenches are 3 ft wide. Based on Ramboll experience.
	Haul Material to Site	LCY	14,833	B34C	99	1,199	1,199	312323203104: Cycle hauling(wait, load, travel, unload or dump & reutrn) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 16.5 C.Y. truck, cycle 50 miles, 45 mph, excludes loading equipment.
	Haul Material to Trench Locations	CY	14,833	B34G	850	140	140	312323206170: Hauling; no loading equipment, including hauling, waiting, loading/dumping; 34 C.Y. off-road, 15 min wait/ld./uld., 15 MPH, cycle 1 mile. Daily output extrapolated down to 10 min wait. Assumes onsite stockpile location approximately 1/2 mile from each trench. Assumes hauling of granular material to trenches.
13	Installation of Groundwater Extraction Trench and Clay Trench Cap	-	-	-	-	1,039	1,036	Installation of groundwater extraction trench using One-Pass technology performed by a specialty contractor and associated clay cap surface completion activities.
	Trench Excavation	LF	4,100	OP	200	1,025	1,025	OP crew determined from crew information provided by specialty contractor. Assumes two trenches totaling 4,100 ft in length with an approximate depth of 35 ft.
	Hauling Berm Stockpiled Clay for Trench Cap	LCY	585	B34G	850	6	6	312323206170: Hauling; no loading equipment, including hauling, waiting, loading/dumping; 34 C.Y. off-road, 15 min wait/ld./uld., 15 MPH, cycle 1 mile. Daily output extrapolated down to 10 min wait. Assumes onsite stockpile location approximately 1/2 mile from each trench. Assumes hauling of excavated berm material for use as trench cap.
	Spread Lifts for Clay Trench Cap	CY - as excavated	585	B10B	1000	7	5	312323170020: Spread dumped material, no compaction, by dozer. Daily output edited to match excavation based on experience. Assumes use of overexcavated berm material.
	Compaction of Clay Trench Cap	CY - in place	585	B10Y	5200	1	1	312323235060: Compaction; Riding, vibrating roller, 12" lifts, 2 passes. RS Means Crew is B10Y; altered to B10F based on experience.
14	Spoils Management	CY - Loose	14,833	-	-	387	305	Hauling and management of trench excavation spoils to the PAP for placement beneath the final cover system.
	Loading	CY - as excavated	14,833	B14B	5000	36	24	312316435320: Excavating, large volume projects; excavation with truck loading; excavator, 6 C.Y. bucket, 100% fill factor (assume 10% fluff factor from ground to excavated).
	Hauling and Placement at PAP	CY - as excavated	14,833	B34G	850	140	140	312323206170: Hauling; no loading equipment, including hauling, waiting, loading/dumping; 34 C.Y. off-road, 15 min wait/ld./uld., 15 MPH, cycle 1 mile. Daily output extrapolated down to 10 min wait.
	Spreading Lifts	CY - as excavated	14,833	B10B	1000	178	119	312323170020: Spread dumped material, no compaction, by dozer. Daily output edited to match excavation based on experience.
	Compaction of Material	CY - in place	14,833	B10Y	5200	34	23	312323235060: Compaction; Riding, vibrating roller, 12" lifts, 2 passes. RS Means Crew is B10Y; altered to B10F based on experience.

15	Groundwater Extraction Trench Mechanical Installation	-	-	-	-	1,522	537	Installion of a system to pump and convey extracted groundwater from the trenches to the new settling pond.
	Install Pneumatic Pumps	EA	17	Q1	1.8	151	0	221429132010: Wet-pit-mounted, vertical sump pump, single stage, 25 GPM, 1 HP, 1-1/2" discharge. Assumes one pump per 200 ft of extraction trench.
	Install Equalization Tank	EA	2	B6	1.0	48	16	Installation of equalization tank at each trench and associated site preparation and instrumentation. Assumes 2 days for installation.
	Install Transfer Pumps and Controllers	EA	2	R30	1.0	52	0	Installation of transfer pump and pump controller at each extraction trench to convey water from settling pond to discharge outfall based on Ramboll project experience. Assumes inclusion of housing structure and 2 days for installation.
	Excavate Utility Trench for Lines to Compressors and Extraction Pumps	LF	5,000	B54	860	47	47	312316142750: Utility trench excavating, chain trencher, 40 HP operator riding, 12" wide trench and backfill, 18" deep. Trench installed from power drop/compressor shed to extraction trench to supply compressed air and power to sump pits.
	Install Mechanical Elements and Piping	EA	1	R30	-	390	0	Assumes furnishing all mechanical elements (air compressors, pneumatic extraction pumps, transfer pumps) and associated HDPE housing piping for distribution of power and housing of mechanical elements throughout the extraction trench system. Assumes approximately 15 days of work.
	Excavate Utility Trench for Conveyance to Settling Pond	LF	7,700	B54	860	72	72	312316142750: Utility trench excavating, chain trencher, 40 HP operator riding, 12" wide trench and backfill, 18" deep. Trench installed from groundwater extraction trench to convey extracted water to the settling pond.
	Install 8" HDPE Conveyance Pipe to Settling Pond	LF	7,700	B22A	320	963	385	331413350300: Water supply distribution piping, piping HDPE, butt fusion joints, 40' lengths, 8" diameter, SDR 21. Includes labor, materials, and machine for installation and welding of HDPE pipe for conveying extracted water from trenches to settling pond.
	Backfill Conveyance Line Trench with Granular Trench Backfill	LCY	428	B10R	100	51	34	312316133060: Backfill trench, F.E. loader, wheel mtd., 1 C.Y. bucket, 200' haul. Backfill with granular trench backfill. Quantity based on trench dimensions 12" wide, 18" deep, 7,700 ft long.
16	Construction of Compressor & Mechanical Sheds	-	-	-	-	540	180	Assumes Ramboll experience for construction of housing unit for air compressor sheds.
	Construct Compressor Shed	EA	2	B6	-	540	180	Assumes pre-fabricated mechanical instrumentation shelter, installed primarily by hand with light equipment assistance. Hours are based on Ramboll experience. Two sheds will include extraction equipment (air compressor and transfer pump) and will be located at the trenches.
17	Installation of Settling Pond	-	-	-	-	1,060	372	Quantity based on 1-acre pond, 5 feet deep. Assume all excavated material is reused for berm construction.
	Excavation and Loading of Settling Pond Material	BCY	8,148	B12D	2080	63	31	312316420300: Excavating, bulk bank measure, hydraulic, crawler mtd., 3 C.Y. cap (300 CY/hr).
	Hauling and Placement of Settling Pond Material	LCY	8,148	B34G	986	66	66	312323206130: Hauling; no loading equipment, including hauling, waiting, loading/dumping; 34 C.Y. off-road, 15 min wait/ld./uld., 15 MPH, cycle 2,000 ft. Daily output extrapolated down to 600 ft cycle.
	Spreading/Drying Material in Berm	CY	8,148	B10B	1000	98	65	312323170020: Spread dumped material, no compaction, by dozer. Daily output edited to match excavation based on experience.
	Compaction of Material in Berm	BCY	8,148	B10G	5200	19	13	312323235680: Compaction, 2 passes, 12" lifts, sheepsfoot or wobbly wheel roller.
	Fine Grading of Berm	MSF	8	B11L	30	4	2	312216103600: Fine grading, tops of lagoon banks for compaction. Assumes 10 ft-wide berm around perimeter of 1-acre settling pond.
	Subsurface Stabilization Nonwoven Geotextile	SY	5,000	2 Clab	2500	32	0	313219161550: Geosynthetic soil stabilization, geotextile fabric, non-woven, 120 lb tensile strength includes scarifying and compaction. Assumes 1 acre settling pond.
	Settling Pond Liner	SF	45,000	B63B	1850	778	195	310519531100: Reservoir liners, membrane lining, 40 mil, LLDPE. Assumes 1 acre ft print.
18	Extracted Water Discharge Management	-	-	-	-	263	96	Based on approximate 1,500 ft distance from settling pond to discharge outfall.
	Install Transfer Pump and Controller	EA	1	R30	1	52	0	Installation of transfer pump and pump controller to convey water from settling pond to discharge outfall based on Ramboll project experience. Assumes inclusion of housing structure and 2 days for installation.
	Excavate Utility Trench for Conveyance to Discharge	LF	1,500	B54	860	14	14	312316142750: Utility trench excavating, chain trencher, 40 HP operator riding, 12" wide trench and backfill, 18" deep. Trench installed from settling pond to convey settled water to outfall for discharge.
	Install 8" HDPE Conveyance Pipe to Discharge	LF	1,500	B22A	320	188	75	331413350300: Water supply distribution piping, piping HDPE, butt fusion joints, 40' lengths, 8" diameter, SDR 21. Includes labor, materials, and machine for installation and welding of HDPE pipe for conveying water from settling pond to discharge point.
	Backfill with Granular Trench Backfill	LCY	83	B10R	100	10	7	312316133060: Backfill trench, F.E. loader, wheel mtd., 1 C.Y. bucket, 200' haul. Backfill with granular trench backfill. Quantity based on trench dimensions 12" wide, 18" deep, 1,500 ft long.
	GROUNDWATER EXTRACTION TRENCH CONSTRUCTION					**6,241**	**4,315**	

ITEM NO.	SITE RESTORATION	Units	Quantity	Crew	Daily Output	Labor Hours	Equipment Hours	Notes
19	Site Restoration	-	-	-	-	286	6	Assumes restoration of grade surface following extraction trench installation activities.
	Erosion Control Blanket	SY	29,040	B1	2500	279	0	312514160100: Rolled erosion control mats and blankets, plastic netting stapled, 2" x 1" mesh, 20 mil. Assumes approximately 6 acres of erosion control.
	Lime	MSF	29	B66	700	1	0	329113234250: Soil preparation, structural soil mixing, spread soil conditioners, ground limestone, 1#/S.Y., tractor spreader. Assumes soils possibly being void of nutrients. Quantity assumes approximately 6 acreas of disturbed areas including staging area and temporary roads, as well as adjacent areas.
	Fertilizer	MSF	29	B66	700	1	0	329113234150: Soil preparation, structural soil .mixing, spread soil conditioners, fertilizer, 0.2#/S.Y., tractor spreader. Assumes soils possibly being void of nutrients. Quantity assumes approximately 6 acreas of disturbed areas including staging area and temporary roads, as well as adjacent areas.
	Grassland Mix	MSF	29	B66	52	4	4	329219142300: Seeding athletic fields, seeding fescue, tall, 5.5 lb. per M.S.F., tractor spreader. Quantity assumes approximately 6 acreas of disturbed areas including staging area and temporary roads, as well as adjacent areas.
	Mulch	MSF	29	B65	530	1	1	329113160350: Mulching, Hay, 1" deep, power mulcher, large. Quantity assumes approximately 6 acreas of disturbed areas including staging area and temporary roads, as well as adjacent areas.
	SITE RESTORATION ESTIMATED SUBTOTAL					**286**	**6**	

ITEM NO.	Corrective Action Operation and Maintenance	Units	Quantity	Crew	Daily Output	Labor Hours	Equipment Hours	Notes
Corrective Action Operation and Maintenance								
20	Groundwater Extraction Trench Operation & Maintenance	-	-	-	-	24,000	24,000	Assumes routine monitoring, maintenance, and electrical service charges for the duration of system operation.
	Field Maintenance	Day	1,200	TM	-	24,000	24,000	Assumes monthly monitoring visits and quarterly maintenance on pneumatic pumps and air compressors over 30 years of operation. Each monthly monitoring visit assumes 2 staff for 2 day and each quarterly maintenance event assumes 2 staff for 4 days to check, clean, and service all mechanical parts.
	Electrical Distribution and Service	MO	360	-	-	-	-	Assumes electrical distribution and usage for operating the extraction and transfer pumps.
21	Non-routine System O&M	-	-	-	-	3,600	0	Assumes non-routine tasks including flushing of groundwater conveyance lines and periodic site visits (e.g., alarm responses or equipment troubleshooting).
	Groundwater Conveyance Line Flushing - Vacuum Truck	LF	240,000	VT	-	1,800	900	330130116140: Pipe, internal cleaning and inspection, cleaning, power rodder with header & cutts, 4"-12" diameter. Assumes one 5-day cleaning event of 8,000 LF of 6" HDPE pipe per year for a total of 30 years.
	Non-Routine Site Visits/Alarm Responses	LS	180	OM	-	1,800	0	Assumes 6 non-routine site visits per year over 30 years of operation. Each non-routine event assumes 2 staff for 1 day.
22	Engineering Oversight/Monitoring	LS	30	Eng	-	-	-	Assumes office-based engineering support over 30 years of operation.
	CORRECTIVE ACTION OPERATION AND MAINTENANCE SUBTOTAL					**27,600**	**24,000**	

	Total Labor Hours	Total Equipment Hours
ENGINEERING AND CONSTRUCTION SUBTOTAL	**13,460**	**7,827**
CORRECTIVE ACTION OPERATION AND MAINTENANCE SUBTOTAL	**27,600**	**24,000**
SUBTOTAL	**41,060**	**31,827**
40%	**16,400**	**12,700**
ENGINEER'S ESTIMATE OF TOTAL CONSTRUCTION, O&M, AND MONITORING HOURS	**57,500**	**44,500**

NOTES:

1. Alternative 2: Source Control with groundwater extraction trench is estimated to take approximately 33 years to achieve groundwater protection standards (GWPS-35 I.A.C Section 845.600) at all perimeter wells associated with the Primary Ash Pond (PAP) following PAP closure in place (CIP). The operation and maintenace pe
2. RS Means refers to the 2023 online edition of RS Means Commercial New Construction.
3. See crew tab (Alt 2 - Crews) for assumptions regarding crew size, total labor hours and required construction equipment, as needed, for each task.
4. See mileage tab (Alt 2 - Mileage) for assumptions regarding total mileage for tasks outlined in this alternative.

ACRONYMS:

AC = Acre
CIP = closure in place
CY = Cubic Yard
Loose: Material swelled when removed from compacted state
EA = Each
GWPS = groundwater protection standards
LCY = Loose Cubic Yards
LF = Linear Foot
LS = Lump Sum
MSF = square feet divided by 1000
MO = Month
OMM = Operation, Monitoring, Maintenance
PAP = Primary Ash Pond
SF = Square Feet
SY = Square Yard

CREW CODES
ILLINOIS POWER GENERATING COMPANY - NEWTON POWER PLANT
CORRECTIVE ACTION ALTERNATIVES ANALYSIS SUPPORTING INFORMATION REPORT (CAAA-SIR)
ALTERNATIVE 2 - SOURCE CONTROL WITH GROUNDWATER EXTRACTION TRENCH

Item No.	Crew Code	Labor	Daily Labor Hours	Equipment	Daily Equipment Hours	Crew Size	Onsite Labor Hours	Onsite Heavy Equipment Hours
Construction								
5,11,17	2 Clab	Laborer x2	16	None	0	2	118	0
6	A2	Laborer x2 Truck Driver (light) x1	24	Flatbed Truck, Gas, 1.5 ton	8	3	120	40
19	B1	Labor Foremanx1 Laborer x2	24	None	0	3	279	0
15,16	B6	Laborer x 2 Operator (light) x 1	24	Backhoe Loader, 48 H.P.	8	3	588	196
4	B7	Labor Foreman x 1 Operator (med) x 1 Laborer x 4	48	Brush Chipper 12", 130 H.P. Crawler Loader, 3 C.Y. 2 Chain Saws, Gas, 36" Long	32	6	181	121
11,13,14,17	B10B	Operator (med) x1 Laborer x0.5	12	Dozer, 200 H.P.	8	1.5	379	253
11	B10T	Operator (med) x 1 Laborer x 0.5	12	1 F.E. Loader, W.M., 2.5 C.Y.	8	1.5	76	51
9,15,18	B10R	Operator (med) x 1 Laborer x 0.5	12	Frontend loader, W.M., 1 C.Y.	8	1.5	91	61
13,14	B10Y	Operator (med) x1 Laborer x0.5	12	1 Vibr. Roller, Towed, 12 ton	8	1.5	36	24
11,17	B11L	Operator (med) x 1 Laborer x 1	16	Grader, 30,000lb	8	2	113	57
11,17	B12D	Operator (crane) x 1 Laborer x 1	16	Hydraulic excavator, 3.5 C.Y.	8	2	140	70
11,17	B10G	Operator (med) x 1 Laborer x 0.5	12	1 Sheepsfoot Roller, 240 HP	8	1.5	37	25
12	B13D	Operator (crane) x 1 Laborer x 1	16	Hydraulic excavator, 1 C.Y. Trench Box	16	2	631	631
5,11	B14	Labor Foreman x 1 Operator (light) x1 Laborer x 4	48	Backhoe Loader, 48 H.P.	8	6	1,054	176
14	B14B	Operator (crane) x 1 Laborer x 0.5	12	Hydraulic excavator, 6. C.Y.	8	1.5	36	24
9,15,18	B22A	Labor Foreman x1 Skilled Worker x1 Laborer x2 Operator (crane) x1	40	S.P. Crane, 4x4, 5 ton Butt Fusion Machine, 4-12" diam.	16	5	1,338	535
11,12,13,14,17	B34G	Truck Driver x1	8	Dump Truck, Off Hwy., 50 ton	8	1	432	432
12	B34C	Truck Driver x1	8	Truck Tractor, 6x4, 380 H.P. Dump Trailer, 16.5 C.Y.	8	1	1,199	1,199
9,15,18	B54	Operator (light) x1	8	Trencher, Chain, 40 H.P.	8	1	146	146
6	B62	Laborer x2 Operator (light) x 1	24	Loader, Skid Steer, 30 H.P.	8	3	295	98
17	B63B	Labor Foreman x1 Laborer x2 Operator (light) x1	32	Loader, Skid Steer, 78 H.P.	8	4	778	195
19	B65	Laborer x1 Truck Driver (light) x1	16	Power Mulcher (large) Flatbed Truck, Gas, 1.5 ton	16	2	1	1
19	B66	Operator (light) x1	8	Loader-Backhoe, 40 H.P.	8	1	6	5
15	Q1	Plumber x1 Plumber Apprentice x1	16	None	0	2	151	0
8	R1B	Electrician x1 Electrician Apprentice x2	16	None	0	3	720	0
15,18	R30	Electrician Foreman x0.25 Electrician x1 Laborer (Semi-Skilled) x2	26	None	0	3.25	494	0
22,2	Eng	Engineering Staff x1.2	10	Side by Side x1	10	1.2	3,240	2,700
10	GM	Engineering Staff x4	40	Service Vehicle X 2	0	4	600	0
9	GRT	Laborer x 1 Operator x1	20	Service/Grout Truck x1	10	2	100	50
13	OP	Operator X 3 Laborer x 2	50	CAT 950 Loader x 3, CAT 374 Excavator x 1 CAT 349 Excavator x 1 Manlift x 1, Telehandlers x 2	50	5	1,025	1,025
21	VT	Laborer x1 Operator x1	20	Vacuum Truck with Flushing Capabilities	10	2	1,800	900
				Construction Subtotals			16,200	9,000
Corrective Action Operation & Maintenance								
21	OM	Laborer x1	10	Service Truck x1	0	1	1,800	0
20	TM	Maintenance Crew x2	20	Service Truck x2 Hand Tools	20	2	24,000	24,000
				O&M Subtotals			25,800	24,000
Note: Blue shaded crew codes were created by Ramboll based on experience (not pulled from RS Means).						**Totals**	**42,000**	**33,000**

CONSTRUCTION MILEAGE AND LABOR ESTIMATES
ILLINOIS POWER GENERATING COMPANY - NEWTON POWER PLANT
CORRECTIVE ACTION ALTERNATIVES ANALYSIS SUPPORTING INFORMATION REPORT (CAAA-SIR)
ALTERNATIVE 2 - SOURCE CONTROL WITH GROUNDWATER EXTRACTION TRENCH

Construction Mileage and Labor Estimates - Alternative 2: Groundwater Extraction Trench

Item	Quantity	Assumptions
Labor Total Hours	13,460	Per projected Construction total in cost estimate (does not include contingency)
Duration of Onsite Construction Days	270	Total Days
Average Daily Crew Size	12	Assumes multiple crew sizes and a 10 hour work day Assumes 1 Ramboll personnel daily for construction oversight
Daily Labor Mobilization Miles	226,800	Includes light and medium commercial vehicles Average of 70 miles round trip per day, as proposed in construction permit for PAP Closure
Vehicles Miles Onsite	48,600	Includes light and medium commercial vehicles 15 miles per day, including onsite mileage and local trips No contingency Included
Equipment Mobilization Miles - Unloaded	10,125	Average of 450 miles round trip for equipment hauling (from Chicago, IL) Average 1 load of equipment per working week
Equipment Mobilization Miles - Loaded	10,125	Average of 450 miles round trip for equipment hauling (from Chicago, IL) Average 1 load of equipment per working week
Onsite Haul Truck Miles - Unloaded	703	34 CY Off Road Dump Truck 1 mile round trip per load
Onsite Haul Truck Miles - Loaded	703	34 CY Off Road Dump Truck 1 mile round trip per load
Offsite Haul Truck Miles - Unloaded	31,250	Assumes 20,000 CY delivered in 16 CY loads of fill material (granular and low permeability material) are delivered to the site from a regional supplier located within 50 miles of the site. Assumes truck is returning to the origin location
Offsite Haul Truck Miles - Loaded	31,250	Assumes 20,000 CY delivered in 16 CY loads of fill material (granular and low permeability material) are delivered to the site from a regional supplier located within 50 miles of the site.
Material Delivery Miles - Unloaded	10,800	Misc. construction materials (erosion controls, piping, geotextile) Assumes 200 mile round trip, average 2 trips per working week
Material Delivery Miles - Loaded	10,800	Misc. construction materials (erosion controls, piping, geotextile) Assumes 200 mile round trip, average 2 trips per working week

OMM Mileage and Labor Estimates - Alternative 2: Groundwater Extraction Trench

Item	Quantity	Assumptions
Labor Total Hours	27,600	Per projected OMM total in cost estimate (does not include contingency)
Duration of Onsite OMM Days	1,380	Total Days
Average Daily Crew Size	2	Assumes multiple crew sizes and a 10 hour work day
Daily Labor Mobilization Miles	648,600	Includes mob/demob from Chicago (460 miles round trip) and local daily commute mileage (50 miles per day) for an average of 235 miles round trip per day
Vehicles Miles Onsite	41,400	Includes light and medium commercial vehicles 15 miles per day, including onsite mileage and local trips No contingency Included
Equipment Mobilization Miles - Unloaded	0	Normal work vehicles only for this alternative & phase No heavy equipment to mobilize
Equipment Mobilization Miles - Loaded	0	Normal work vehicles only for this alternative & phase No heavy equipment to mobilize
Onsite Haul Truck Miles - Unloaded	0	No material hauling onsite will occur under this alternative
Onsite Haul Truck Miles - Loaded	0	No material hauling onsite will occur under this alternative
Offsite Haul Truck Miles - Unloaded	0	No material hauling offsite will occur under this alternative
Offsite Haul Truck Miles - Loaded	0	No material hauling offsite will occur under this alternative
Material Delivery Miles - Unloaded	0	No materials will be delivered during OMM
Material Delivery Miles - Loaded	0	No materials will be delivered during OMM

CAGM = Corrective Action Groundwater Monitoring
CY = Cubic yard
OMM = Operation, Maintenance, and Monitoring

Appendix C

Corrective Measures Assessment

Intended for
Illinois Power Generating Company

Date
April 3, 2024

Project No.
1940103584-008

35 I.A.C. § 845 CORRECTIVE MEASURES ASSESSMENT

NEWTON POWER PLANT, PRIMARY ASH POND,

IEPA ID: W0798070001-1

RAMBOLL Bright ideas. Sustainable change.

35 I.A.C. § 845 CORRECTIVE MEASURES ASSESSMENT NEWTON POWER PLANT, PRIMARY ASH POND, IEPA ID: W0798070001-1

Project name	**Newton Power Plant Primary Ash Pond**
Project no.	**1940103584-008**
Recipient	**Illinois Power Generating Company**
Document type	**35 I.A.C. § 845 Corrective Measures Assessment**
Revision	**Final**
Date	**April 3, 2024**
Prepared by	**Frances Ackerman, RG, PE**
Checked by	**Lucas P. Carr, PE**
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ATTACHMENTS

Attachment A	Selected Construction Permit Application Plans

ACRONYMS AND ABBREVIATIONS

35 I.A.C.	Title 35 of the Illinois Administrative Code
ASD	alternative source demonstration
bgs	below ground surface
CAAA	Corrective Action Alternatives Analysis
CAP	Corrective Action Plan
CCR	coal combustion residuals
CIP	closure-in-place
CMA	Corrective Measures Assessment
cm/s	centimeters per second
CSM	conceptual site model
EPRI	Electric Power Research Institute
E001	Event 1
GMP	Groundwater Monitoring Plan
GWPS	groundwater protection standard(s)
ID	identification
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
IPCB	Illinois Pollution Control Board
IPGC	Illinois Power Generating Company
ITRC	National Research Council, Interstate Technology & Regulatory Council
IX	ion exchange
LCU	lower confining unit
No.	number
NAVD88	North American Vertical Datum of 1988
NID	National Inventory of Dams
NPDES	National Pollutant Discharge Elimination System
NPP	Newton Power Plant, also referred to as site
NRT/OBG	Natural Resource Technology, an OBG Company
PRB	Permeable Reactive Barrier
PAP	Primary Ash Pond
PMP	Potential Migration Pathway
Ramboll	Ramboll Americas Engineering Solutions, Inc.
Rapps	Rapps Engineering and Applied Science
SI	surface impoundment
TDS	total dissolved solids
UA	uppermost aquifer
UCU	upper confining unit
UD	upper drift
USEPA	United States Environmental Protection Agency
ZVI	zero-valent iron

1. INTRODUCTION

Ramboll Americas Engineering Solutions, Inc. (Ramboll) has developed this assessment of groundwater corrective measures on behalf of Illinois Power Generating Company (IPGC) to assist in the compliance with the requirements of Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845 Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments. This assessment applies specifically the coal combustion residuals (CCR) unit referred to as the Primary Ash Pond (PAP) at the Newton Power Plant (NPP), also referred to as Vistra identification (ID) number (No.) 501, Illinois Environmental Protection Agency (IEPA) ID No. W0798070001-01, and National Inventory of Dams (NID) No. IL50719. This report addresses content requirements specific to 35 I.A.C. § 845.660 (Assessment of Corrective Measures) for exceedances of lithium, sulfate, and total dissolved solids (TDS) at the PAP.

1.1 Source Control and Residual Plume Management

IPGC intends to initiate significant source control and residual plume management efforts as part of the PAP closure, as documented in the Final Closure Plan and Construction Permit Application that were submitted to IEPA in July of 2022 (IPGC, 2022). The proposed closure exceeds the minimum Closure Performance Standards listed in 35 I.A.C § 845.750. The closure will include removing free liquids in accordance with the performance standard in 35 I.A.C § 845 and maintaining that condition during the closure construction period. The closure will reduce the hydraulic head that can force leachate into subsurface soils and is the mechanism that can drive risk (United States Environmental Protection Agency [USEPA], 2015a, p. 21342):

> *EPA's risk assessment shows that the highest risks are associated with CCR surface impoundments due to the hydraulic head imposed by impounded water. Dewatered CCR surface impoundments will no longer be subjected to hydraulic head so the risk of releases, including the risk that the unit will leach into the groundwater, would be no greater than those from CCR landfills.*

The PAP will be closed using a consolidate-and-cap approach consisting of excavating nearly 2 million cubic yards of CCR and placing it in a consolidated CCR footprint at an elevation greater than 5 feet above the uppermost aquifer (UA). The consolidated CCR will be covered with an alternate geomembrane final cover system having performance that exceeds the 35 I.A.C §845.750(c)(2) minimum final cover requirements. The proposed source control is predicted to reduce water flux into and out of the PAP by 94% and allow the groundwater protection standards (GWPS) to be achieved within approximately 20 years (Ramboll, 2022). These source control activities will serve as the primary groundwater corrective measure at the PAP. The potentially feasible corrective measures presented herein are intended to be supplementary to the primary source control and are intended to serve as management measures to address any residual plumes that remain after completion of source control.

Attachment A includes summary figures from the Construction Permit Application that show the proposed final source control and primary corrective action.

1.2 Adaptive Site Management

Adaptive site management strategies will be employed as an integral part of ongoing corrective action at the PAP. The adaptive site management approach will allow timely incorporation of new

site information over the closure and post-closure life cycle of the PAP to ensure the achievement of the GWPS. The adaptive site management approach is proposed to expedite progress toward meeting the GWPS while acknowledging uncertainties, such as the persistence of current groundwater flow directions and flux quantities and potential related changes in geochemical conditions. A structured decision-making process and explicitly planned iterations between the implemented corrective measures and monitoring results will ensure that remediation is occurring. System performance and the condition of the residual plume will be monitored as the corrective measure(s) selected through the 35 I.A.C. § 845.710 Corrective Action Plan (CAP) process are implemented to supplement the source control measures described above. If the groundwater concentrations do not decrease consistent with the modeling prediction, the adaptive site management approach will facilitate timely modifications or enhancements to the corrective measure(s), as needed in accordance with 35 I.A.C. § 845.680(b). This approach will be employed to provide continuous improvement to the PAP groundwater remediation in response to new site information and/or the performance of the selected corrective measure(s).

The planned adaptive site management strategies are generally consistent with National Research Council, Interstate Technology & Regulatory Council (ITRC) and USEPA methodologies developed to address sites with long remediation times and high levels of uncertainty regarding the remedial actions necessary to achieve final and protective remediation goals (USEPA, 2022). The elements of the proposed adaptive site management strategy at the PAP will be responsive to the changing conditions associated with pond closure and performance of the selected corrective measure(s) and will include the following:

1. Implementing the groundwater corrective measure(s) selected as part of the CAP for the current conditions at the PAP. The selected corrective measures may include a combination of the technologies presented in this Corrective Measures Assessment (CMA).

2. Establishing both the absolute remedial objective and functional (interim) goals to monitor progress toward the remedial objective. Achieving the GWPS for 35 I.A.C. § 845.600 constituents at the downgradient waste boundary is the remedial objective for the PAP. Specific functional goals will be developed as part of the CAP process. The functional goals will be measurable thresholds for future action and may include short-term or technology-specific objectives and triggers. Functional goals may vary for different locations, CCR constituents or other site-specific considerations (ITRC, 2017) and will serve as benchmarks for comparison to ongoing groundwater monitoring at the PAP.

3. Ongoing groundwater monitoring at the PAP will continue throughout the implementation of source control and residual plume management activities. Post-closure monitoring will continue for a period of at least 30 years, in accordance with 35 I.A.C. § 845.780(c). A comprehensive groundwater monitoring plan (GMP) will be developed as part of the CAP process in accordance with 35 I.A.C. § 845.670 and 35 I.A.C. § 845.220(c)(4). The GMP will include the functional goals and proposed action levels.

4. Groundwater monitoring information will be used to guide decisions regarding whether progress toward the remedial goal is advancing as expected and/or whether additional actions may be needed to achieve the remedial objective, in conjunction with IEPA, as required by 35 I.A.C. § 845.680(b).

2. SITE INFORMATION

The NPP is located in Jasper County in the southeastern part of central Illinois, approximately 7 miles southwest of the town of Newton. The PAP is located in Section 26 and the western half of Section 25, Township 6 North, Range 8 East. The PAP is located south of the power plant and situated in a predominantly agricultural area (**Figure 2-1**). The PAP is surrounded by Newton Lake on the west, south, and east (**Figure 2-2**). Beyond the lake is additional agricultural land.

The NPP's sole CCR surface impoundment (SI), the PAP, was constructed in 1977 and has a design capacity of approximately 9,715 acre-feet. The PAP is an unlined CCR SI with a surface area of 404 acres which currently receives bottom ash, fly ash, and low-volume wastewater from the plant's two coal-fired boilers. The PAP is operated per National Pollutant Discharge Elimination System (NPDES) Permit IL0049191, Outfall 001. A construction permit application for the closure of the PAP (*e.g.,* source control) was submitted to IEPA on July 28, 2022 (IPGC, 2022); permit approval is pending at this time.

2.1 Conceptual Site Model

Significant site investigation has been completed at the NPP to characterize the geology, hydrogeology, and groundwater quality. Based on extensive investigation and monitoring, the PAP has been well characterized and detailed in the Hydrogeologic Site Characterization Report (Ramboll, 2021), which was prepared to comply with the requirements specified in 35 I.A.C. § 845.620 and expands upon the Hydrogeologic Monitoring Plan (Natural Resource Technology, an OBG Company [NRT/OBG], 2017). The conceptual site model (CSM) is presented below.

Quaternary deposits in the Newton area consist mainly of diamictons and outwash deposits that were deposited during Illinoian and Pre-Illinoian glaciations (Lineback, 1979; Willman et al., 1975). The unconsolidated deposits include the following units (beginning at the ground surface):

- **Upper Drift (UD)/ Potential Migration Pathway (PMP):** The upper drift (UD) is composed of the low permeability silts and clays of the Peoria Silt and Sangamon Soil and the sandier soils of the Hagarstown Member. The Peoria Silt and Sangamon Soil units are present within the PAP at thicknesses up to approximately 46 feet, as measured in APW15, and range from 3 to 46 feet thick as observed in APW05 and APW10 (Ramboll, 2021). The hydraulic conductivity of this unit, calculated from field hydraulic test data from monitoring wells screened between 8 and 36 feet below ground surface (bgs), was observed to range from 2.4×10^{-6} to 6.1×10^{-5} centimeters per second (cm/s) with a geometric mean of 1.3×10^{-5} cm/s (Rapps Engineering and Applied Science [Rapps], 1997).
  - **Hagarstown Member/PMP**: The Hagarstown Member consists of the discontinuous, sandier deposits of the UD where present and overlies the Vandalia Till. Where present, the sandy deposits of the Hagarstown are generally less than 2 feet thick, with a maximum encountered thickness of approximately 6.9 feet at APW18 (Ramboll, 2021). Results of field hydraulic conductivity tests in wells screened within the Hagarstown PMP (APW05S and APW12) ranged from 6.1×10^{-4} to 1.5×10^{-2} cm/s, with a geometric mean hydraulic conductivity of 3.1×10^{-3} cm/s (Ramboll, 2021).
- **Upper Confining Unit (UCU)**: The UCU consists of a thick, 26 feet thick on average with a maximum observed thickness of 59 feet at APW07, package of the low permeability clay and silt of the Vandalia Till Member. This unit is a laterally continuous layer between the base of

the upper drift and the top of the UA. The hydraulic conductivity of this unit was observed to range from 6.3 x 10^{-9} to 2.1 x 10^{-8} cm/s with a geometric mean of 1.1 x 10^{-8} cm/s (Rapps, 1997).

- **Uppermost Aquifer (UA):** The UA is composed of the Mulberry Grove Member, which has been classified as poorly graded sand, silty sand, clayey sand, and gravel. The top of the UA is highest in elevation in the north and east portions of the unit and slopes downward toward APW15. The top of unit elevations range from approximately 482 feet[1] (APW05 and APW10) to 425 feet (APW15). The average thickness of the Mulberry Grove sands and gravels is approximately 10 feet, with a maximum thickness of 30 feet observed at APW17. Field hydraulic conductivity tests conducted in 2021 at monitoring wells screened in the UA ranged from 2.0 x 10^{-4} to 1.5 x 10^{-1} cm/s with a geometric mean hydraulic conductivity of 6.8 x 10^{-3} cm/s. The highest conductivities are measured in APW15, APW16, and APW17 (Ramboll, 2021).
- **Lower Confining Unit (LCU):** The LCU is comprised of low permeability silt and clay of the Smithboro Till Member and the Banner Formation. The unit was encountered at thicknesses up to 36 feet in APW14), while the average thickness is 32 feet (Ramboll, 2021). The hydraulic conductivity of this unit was observed to be 1.4 x 10^{-7} cm/s (Rapps, 1997).
- **Bedrock Unit:** Shale bedrock of the Pennsylvanian-age Mattoon Formation (Willman et al., 1967) was encountered at the NPP during recent and historical investigations. Based on boring logs, the bedrock surface elevation at the NPP ranges from 408 feet (B141) to 445 feet (APW13) (Ramboll, 2021). Bedrock was not encountered at APW15, which was advanced to approximately 412 feet (Ramboll, 2021). This indicates that APW15, which is screened within the UA from 424 to 419 feet, is located in close proximity to the bedrock surface.

Groundwater flow in the UA is generally from north to south. However, UA wells also display flow converging towards a former surface drainage feature located west of the PAP and an area where the UA is lowest in elevation. Groundwater elevations in the UA vary seasonally, generally less than one foot per year, while across the PAP they range from approximately 490 to 530 feet, although flow directions are generally consistent. Groundwater elevations and contours for the April 24, 2023 monitoring event (Event 1 [E001]) are presented in **Figure 2-3**.

2.2 Groundwater Quality

Groundwater monitoring in accordance with the proposed GMP and sampling methodologies provided in the operating permit application for the PAP began in the second quarter of 2023. The 35 I.A.C § 845 groundwater monitoring system is displayed on **Figure 2-4** and consists of two background monitoring wells screened in the UA, 11 compliance wells screened in the UA, five compliance wells screened in the UD, and two temporary water level only surface water staff gages. The groundwater samples collected from the 18 wells are used to monitor and evaluate groundwater quality and demonstrate compliance with the groundwater quality standards listed in 35 I.A.C. § 845.600(a). The proposed monitoring wells yield groundwater samples that represent the quality of downgradient groundwater at the CCR boundary (as required in 35 I.A.C. § 845.630(a)(2)).

The E001 sampling event was completed on April 28, 2023. In accordance with 35 I.A.C. § 845.610(b)(3)(C), statistically derived values were compared with the GWPSs summarized in

[1] All elevations in this report are referenced to North American Vertical Datum of 1988 (NAVD88) unless otherwise noted.

35 I.A.C. § 845.600 to determine exceedances of the GWPS (Ramboll, 2023a). The statistical determinations initiated during E001 identified the following GWPS exceedances at compliance groundwater monitoring wells:

- Lithium in UD/PMP well APW02;
- Sulfate in UD/PMP wells APW02, APW04, APW05S, and in UA well APW10;
- TDS in UD/PMP wells APW02, APW04, APW05S and APW12;
- Chloride in UA well APW15.

Pursuant to 35 I.A.C. § 845.650(e), an alternative source demonstration (ASD) was prepared and submitted to IEPA that presented evidence demonstrating that sources other than the PAP were the cause of the chloride GWPS exceedance listed above (Ramboll, 2023b).

The IEPA did not concur with the ASD due to the following alleged data gaps:

1. Source characterization of the CCR at the PAP must include total solids sampling in accordance with SW846.
2. Hydraulic conductivities from laboratory or in-situ testing must be collected, analyzed, and presented with hydrogeologic characterization of bedrock unit.
3. Characterization to include sample and analysis in accordance with 35 IAC § 845.640 of alternative source must be provided with the ASD.

IPGC submitted written comments and additional information in response to IEPA's request for information and filed a petition asking the Illinois Pollution Control Board (IPCB) to review IEPA's ASD denial. Implementing corrective actions to address naturally occurring compounds in groundwater will not be effective and IPGC believes that it is likely that it will succeed on the merits of the petition for review of the ASD denial. The petition included a motion for a partial stay of the 35 I.A.C. § 845 requirements as they apply to the exceedance of the chloride GWPS at the PAP. The IEPA had no objection to the requested stay, which was granted by IPCB on January 18, 2024. Therefore, the CMA will address identified GWPS exceedances, exclusive of chloride exceedances at APW15, in accordance with 35 I.A.C. § 845.660 and the partial stay. The 35 I.A.C. § 845.650 groundwater monitoring requirements will continue to ensure that there will be timely detection of any additional changes in groundwater quality during the stay. The inclusion of the chloride GWPS exceedance in the CAP process will remain under review pending IPCB's final action on IPGC's appeal of the IEPA ASD denial or until IPCB orders otherwise.

3. CORRECTIVE MEASURES ASSESSMENT METHODOLOGY

This section describes the CMA methodology initiated in response to the identification of exceedances of the GWPSs for 35 I.A.C. § 845.600 constituents at the downgradient waste boundary of the PAP during the E001 groundwater monitoring event (Ramboll, 2023a). The CMA was initiated on November 5, 2023, within 90 days after the detection of exceedance(s) of GWPS. Under 35 I.A.C. § 845, owners and operators of existing CCR SI must initiate the assessment of corrective measures in accordance with 35 I.A.C. § 845.660 if one or more constituents are detected, and confirmed by an immediate resample, to be in exceedance of a GWPS in 35 I.A.C. § 845.600, and the owner or operator has not demonstrated that: a source other than the CCR SI caused the exceedance, or; that the exceedance of the GWPS resulted from error in sampling, analysis, statistical evaluation, natural variation in groundwater quality or a change in the potentiometric surface and groundwater flow direction (an ASD).

The CMA is the first step in developing a long-term CAP to address the GWPS exceedances at CCR SIs. The process provides a systematic, rational method for evaluating potential corrective measures by first identifying potentially viable technologies and assessing them using qualitative information to eliminate from consideration infeasible or otherwise unacceptable remedial technologies (*i.e.,* the 35 I.A.C. § 845.660 CMA). The remaining technologies will be evaluated individually, or assembled into combined alternatives, and further evaluated under the 35 I.A.C. § 845.670 CAP process.

This CMA identified applicable corrective measure technologies and evaluated them for viability, given the site-specific conditions and considerations at the PAP, by addressing the following 35 I.A.C § 845.660 evaluation criteria:

- Performance, reliability, ease of implementation and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination;
- Time required to begin and complete the corrective action plan; and
- Institutional requirements, such as State or local permit requirements or other environmental or public health requirements, that may substantially affect implementation of the corrective action plan.

The evaluation included qualitative and/or semi-quantitative screening of the potential corrective measures (technologies) relative to their general performance, reliability, and ease of implementation characteristics and their potential impacts, timeframes, and institutional requirements to assess the viability of each technology to address the GWPS exceedances at the PAP. This approach provided a reasoned set of corrective measures that could be used, either individually or in combination, to supplement the primary source control measures described in **Section 1.1**. This set of corrective measures will be further evaluated in the Corrective Action Alternatives Analysis (CAAA).

4. DESCRIPTION OF POTENTIAL CORRECTIVE MEASURE TECHNOLOGIES

The potential groundwater corrective measures summarized below are applicable to the PAP and were included in the CMA development and analysis. Site-specific considerations provided in **Section 2** were used to evaluate potential groundwater corrective measures. Each of the corrective measures evaluated may be capable of satisfying the requirements and objectives, listed in **Section 3**, to varying degrees of effectiveness. The corrective measure review process was intended to yield a set of applicable corrective measures that could be used to supplement the primary corrective action, which will be the source control activities described in **Section 1.1** (hybrid consolidate-and-cap approach with a geomembrane final cover system). The source control is expected to reduce downgradient concentrations in the UA to less than the GWPS via naturally occurring physical and chemical processes over an approximately 20-year timeframe. Ongoing monitoring will be an integral part of all corrective measures to verify and document the remedial process. The corrective measures ultimately advanced to the CAAA and selected in the CAP will be used to enhance the effectiveness of the source control and may be used independently or combined into specific remedial alternatives to leverage the advantages of multiple corrective measures to attain GWPSs.

Source control measures will be initiated for the PAP, as described in **Section 1.1**; all of the evaluated additional corrective measure technologies are proposed to be supplemental and complementary to source control activities. The following potential corrective measures, commonly used to mitigate groundwater impacts, were considered as a part of the CMA process:

- Source Control with Groundwater Polishing;
- Source Control with Groundwater Extraction (groundwater pumping wells or collection trenches);
- Source Control with a Cutoff Wall; and
- Source Control with In-Situ Treatment (Permeable Reactive Barrier [PRB] or In-Situ Chemical Treatment).

4.1 Source Control with Groundwater Polishing

Both federal and state regulators have long recognized that natural geochemical processes can be an acceptable component of a remedial action when it can achieve remedial action objectives in a reasonable timeframe. In 1999, the USEPA published a final policy directive (USEPA, 1999) for groundwater remediation and described the process as follows:

- *"The reliance on natural attenuation processes (within the context of a carefully controlled and monitored site cleanup approach) to achieve site-specific remediation objectives within a time frame that is reasonable compared to that offered by other more active methods. The natural attenuation processes that are at work in such a remediation approach include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. These in-situ processes include biodegradation; dispersion; dilution; sorption; volatilization; radioactive decay; and chemical or biological stabilization, transformation, or destruction of contaminants."*

The USEPA has stated that source control is the most effective means of ensuring the timely attainment of remediation objectives (USEPA, 1999). Natural geochemical processes may be appropriate as a "finishing step" after effective source control implementation (*i.e.*, groundwater polishing), to reduce the residual mass remaining in the groundwater after closure, if there are no risks to receptors and/or the contaminant plume is not expanding. Thus, groundwater polishing would be used in conjunction with the significant planned source control effort at the site, which will consist of a hybrid consolidate-and-cap approach with a final cover system described in **Section 1.1**.

In 2015, USEPA addressed remediation of inorganic compounds in groundwater and noted that the use of natural geochemical processes to address inorganic contaminants: (1) is not intended to constitute a treatment process for inorganic contaminants; (2) when appropriately implemented, can help to restore an aquifer to beneficial uses by immobilizing contaminants onto aquifer solids and providing the primary means for attenuation of contaminants in groundwater; and (3) is not intended to be a "do nothing" response (USEPA, 2015b). Rather, documenting the applicability of natural geochemical processes for groundwater remediation should be thoroughly and adequately supported with site-specific characterization data and analysis (USEPA, 1999; USEPA, 2007; USEPA, 2015b):

Both physical and chemical processes can contribute to the reduction of the small amount of residual mass remaining after closure of the PAP, and the toxicity, mobility, volume, or concentration of contaminants in groundwater. Physical processes applicable to CCR constituents in groundwater include dilution, dispersion, and flushing. Chemical processes applicable to CCR constituents in groundwater include precipitation and coprecipitation (*e.g.,* incorporation into sulfide minerals), sorption (*e.g.,* to iron, manganese, aluminum; to other metal oxides or oxyhydroxides; or to sulfide minerals or organic matter), and ion exchange.

All inorganic compounds are subject to physical processes and under typical environmental conditions, the physical mechanisms most often exert the dominant control on the CCR constituents of interest. Chemical mechanisms are also likely to be active, though not often dominant, such as adsorption, ion exchange, and organic complexation. In combination with source control, these natural controls can provide an effective means to polish residual loading and achieve the GWPS in a reasonable timeframe. Additional data collection and analysis may be required to support the USEPA's evaluation framework (USEPA, 2015b) and obtain regulatory approval.

4.2 Source Control with Groundwater Extraction

Groundwater extraction is one of the most widely used groundwater corrective technologies and has a long history of performance. This corrective measure includes installation of one or more groundwater pumping wells or an extraction trench to control and extract impacted groundwater. Groundwater extraction captures and contains impacted groundwater and can limit plume expansion and/or off-site migration. Construction of a groundwater extraction system typically includes, but is not limited to, the following primary components:

- Designing and constructing a groundwater extraction system consisting of one or more extraction wells or trenches and operating at a rate to allow capture of CCR impacted groundwater within the UA and or the UD/PMP.

- Management of extracted groundwater, which may include modification to the existing NPDES permit.
- Ongoing inspection and maintenance of the groundwater extraction system.

Remediation of inorganics by groundwater extraction can be effective, but systems do not always perform as expected. A combination of factors, including geologic heterogeneities, difficulty in flushing low-permeability zones, and rates of contaminant desorption from aquifer solids can limit effectiveness. Groundwater extraction systems require ongoing operation and maintenance to address issues such as iron bacteria and well fouling and to ensure optimal performance. The extracted groundwater must be managed, either by ex-situ treatment or disposal.

Groundwater extraction may reduce the timeframe to achieve GWPS and limit the off-site migration of constituents that exceed the GWPS. Extraction could be accomplished using a groundwater pumping well system or an extraction trench.

4.3 Source Control with Groundwater Cutoff Wall

Since the late 1970s and early 1980s, vertical cutoff walls have been used to control and/or isolate impacted groundwater. Low-permeability cutoff walls can be used to prevent horizontal off-site migration of potentially impacted groundwater. Cutoff walls act as barriers to lateral transport of impacted groundwater and can isolate soils that have been impacted by CCR to prevent mixing with unimpacted groundwater. Cutoff walls are often used in conjunction with an interior pumping system to establish an inward gradient within the cutoff wall. The gradient imparted by the pumping system maintains an inward flow through the wall, keeping it from acting as a groundwater dam and controlling potential end-around or breakout flow of contaminated groundwater. Constructing the cutoff wall such that it intersects a low-permeability material at its base, referred to as "keying", greatly increases its effectiveness.

A commonly used cutoff wall construction technology is the slurry trench method, which consists of excavating a trench and backfilling it with a soil-bentonite mixture, often created with the excavated soils, or, for deeper walls, a cement-bentonite mixture that is produced at an onsite batch plant. The trench is temporarily supported with bentonite slurry pumped into the trench during excavation (D'Appolonia & Ryan, 1979). Cutoff wall excavation uses conventional hydraulic excavators, hydraulic excavators equipped with specialized booms to extend their reach (*i.e.,* long-stick excavators), clamshells, or more specialized equipment such as hydromills, secant-pile drill rigs, or one-pass machines, depending upon trench depth, material excavated, and type of material that the wall is keyed into.

Cutoff walls are a widely accepted technology for containing impacted groundwater. Combining groundwater polishing with a limited cutoff wall and groundwater extraction in specific areas may provide advantages over independent use of these potential corrective technologies. Cutoff walls can be used in combination with groundwater extraction or as part of a PRB system (as the "funnel" in a funnel-and-gate system; **Section 4.4**).

4.4 Source Control with In-Situ Chemical Treatment

The use of in-situ treatment, either by injection or PRBs is a widely used technology for treating impacted groundwater. However, in-situ treatment techniques for lithium and sulfate are not well established, therefore performance is unknown.

Chemical treatment could consist of injection of reactive materials into the subsurface to treat contaminants at specific, targeted locations. Alternatively, treatment could be accomplished via PRB, where subsurface barriers (*i.e.,* cutoff walls) are placed at locations designed to direct the contaminant plume along a flow path through the reactive media. In either system, the contaminants are transformed or otherwise rendered into environmentally acceptable forms to attain remediation concentration goals downgradient of the barrier (Electric Power Research Institute [EPRI], 2006).

As groundwater passes through the PRB under natural gradients, dissolved constituents in the groundwater react with the reactive media and are transformed or immobilized. A variety of media have been used or proposed for use in PRBs. Zero-valent iron (ZVI) has been shown to effectively immobilize some CCR constituents, including arsenic, chromium, cobalt, molybdenum, selenium, and sulfate. Use of a combination media consisting of ZVI and a boron-selective ion exchange resin to treat boron has been documented in a pilot-scale test (EPRI, 2006).

System configurations include continuous PRBs, in which the reactive media extends across the entire path of the contaminant plume; and funnel-and-gate systems, where low-permeability barriers are installed to control groundwater flow through a permeable gate containing the reactive media. Continuous PRBs intersect the entire contaminant plume and do not materially impact the groundwater flow system. Design may or may not include keying the PRB into a low-permeability unit at depth. Funnel-and-gate systems utilize a system of barriers to groundwater flow (funnels) to direct the contaminant plume through the reactive gate. The barriers, typically some form of cutoff wall, are keyed into a low-permeability unit at depth to prevent short circuiting of the plume. Funnel-and-gate design must consider the residence time to allow chemical reactions to occur. Directing the contaminant plume through the reactive gate can significantly increase the flow velocity, thus reducing residence time.

Design of in-situ treatment systems requires rigorous site investigation to characterize the site hydrogeology and to delineate the contaminant plume. A thorough understanding of the geochemical and redox characteristics of the plume is critical to assess the feasibility of the process and select appropriate reactive media. Laboratory studies, including batch studies and column studies using samples of site groundwater, are needed to determine the effectiveness of the selected reactive media at the site (EPRI, 2006). The main considerations in selecting reactive media are as follows (Gavaskar et al., 1998; cited by EPRI, 2006):

- Reactivity - The media should be of adequate reactivity to immobilize a contaminant within the residence time of the design.
- Hydraulic performance - The media should provide adequate flow through the PRB, meaning a greater particle size than the surrounding aquifer materials. Alternatively, gravel beds have been emplaced in front of barriers to direct flow through the barrier.
- Stability - The media should remain reactive for an amount of time that makes its use economically advantageous over other technologies.
- Environmentally compatible by-products - Any by-products of media reaction should be environmentally acceptable. For example, iron released by zero-valent iron corrosion should not occur at levels exceeding regulatory acceptance levels.
- Availability and price: The media should be easy to obtain in large quantities at a price that does not negate the economic feasibility of using a PRB.

5. ASSESSMENT OF CORRECTIVE MEASURE TECHNOLOGIES

This CMA was initiated to address exceedances of the 35 I.A.C. § 845.600 GWPS for lithium, sulfate, and TDS at the downgradient waste boundary of the PAP identified during the E001 groundwater monitoring event (**Section 2.2**).

5.1 Requirements

The potential groundwater corrective technologies described in the previous section were evaluated relative to the requirements presented in **Section 3** and reiterated below:

- Performance, reliability, ease of implementation and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination;
- Time required to begin and complete the corrective action plan; and
- Institutional requirements, such as State or local permit requirement or other environmental or public health requirements that may substantially affect implementation of the corrective action plan.

Table 5-1 presents the qualitative CMA evaluation for each corrective technology relative to these requirements, as well as their ability to address lithium, sulfate, and TDS GWPS exceedances. The following sections provide a summary of these evaluations and a discussion of the potential groundwater corrective measure technologies that may be viable, either independently or in combination, to address GWPS exceedances. This section also provides a summary of corrective measure technologies that have been retained and advanced for evaluation as part of the CAAA process for selecting the final remedy for the PAP per 35 I.A.C. § 845.670.

5.2 Groundwater Corrective Technology Assessment

Source control, consisting of CCR consolidation and closure-in-place (CIP) with a final cover system, will be the primary groundwater corrective measure for the PAP. Closure is expected to be completed in 2028 and each of the potential groundwater corrective measure technologies would supplement the positive impact of the closure activities. The following sections evaluate groundwater corrective measure technologies that, when combined with site closure, may be viable to address the lithium, sulfate, and TDS GWPS exceedances. Technologies that are not viable for addressing exceedances of GWPS at the PAP will be eliminated from further evaluation and viable technologies will be advanced for further evaluation as part of the CAAA process per 35 I.A.C. § 845.600.

5.2.1 Source Control with Groundwater Polishing

Source control corrective measures (**Section 1.1**) will reduce the mass loading to the groundwater system and the groundwater polishing process could decrease the timeframe for attainment of GWPS in the UA. Groundwater flow and fate and transport modeling incorporating only physical processes indicate that source control would meet GWPS in approximately 20 years. Physical processes are expected to perform well in the UA, as discussed below.

Groundwater polishing by natural geochemical processes is a widely accepted component of groundwater remediation and is routinely approved by the IEPA when paired with source control. The performance of groundwater polishing as a groundwater corrective measure varies based on site-specific conditions and additional data collection may be needed to support the design and achieve regulatory approval. The sandy nature of the UA suggests good performance by physical processes in addressing the sulfate in the UA. The chemical processes in the fine-grained UD require further evaluation.

Naturally occurring geochemical processes are ongoing at the PAP and will continue to affect groundwater constituent concentrations during and after PAP closure. Ongoing monitoring of groundwater conditions is needed to better understand the mechanisms and efficacy of the groundwater polishing process and to confirm the effectiveness over time. Thus, additional groundwater sample collection and analyses would be required to characterize potential mechanisms, as discussed above, and to provide long term monitoring of the remedial progress. Enhancements to the groundwater monitoring system may be required to ensure that groundwater polishing is occurring as predicted by the groundwater and consistent with the adaptive site management approach. The reliability of groundwater polishing as a groundwater corrective measure is high because operation and maintenance requirements are limited. However, the reliability can also vary based on site-specific hydrogeologic and geochemical conditions.

Following characterization and approval of the CAP, monitoring of the groundwater polishing processes and comparison to functional goals established to monitor progress toward the remedial objective could begin prior to, or concurrently with, site closure activities. Installing additional monitoring wells could begin as quickly as within a few months of CAP approval. The time required could be reduced if existing groundwater monitoring well systems could be utilized for monitoring.

No potential safety impacts or exposure to human health or environmental receptors are expected to result from the groundwater polishing processes. Timeframes to achieve GWPS are dependent on site-specific conditions, which require detailed technical analysis which are ongoing and will be evaluated in connection with the CAAA. Selecting groundwater polishing as a corrective measure for the PAP will require approval of the closure and CAP permits by the IEPA.

Monitoring the groundwater polishing to track progress toward achievement of the GWPS, in conjunction with source control at the PAP, would require long-term maintenance and monitoring of the groundwater monitoring system to confirm source control and verify the effectiveness in reducing groundwater concentrations to levels below the GWPS. System design could begin immediately after approval of the CAP permit. Additional investigations to characterize site conditions and installation of the final monitoring system could be performed concurrently with the source control (unit closure) activities, which are currently expected to be completed in 2028.

Groundwater polishing processes will continue before and after source control implementation and may be a viable corrective measure for the sulfate and lithium exceedances at the PAP. Therefore, these processes are being advanced to the CAAA for further evaluation.

5.2.2 Source Control with Groundwater Extraction

Source control will reduce the mass loading to the groundwater system and implementing a groundwater extraction system may reduce the time required to attain the GWPS in the UA.

However, the groundwater impacts already present in the low permeability PMP may limit the reduction in time to attain the GWPS that can be achieved by a groundwater extraction system.

Groundwater extraction is a widely accepted corrective measure with a long track record of performance and reliability. It is routinely approved by the IEPA. For a corrective measure using groundwater extraction to effectively control off-site flow and/or to remove potentially contaminated groundwater, horizontal and vertical capture zone(s) must be created. However, the low permeability PMP would restrict the ability to pump at rates high enough to establish the required capture zone(s) or would require a high density of wells or a trench drainage system. The performance of a groundwater extraction system would be expected to be effective in the high permeability UA (mean hydraulic conductivity of 6.8×10^{-3} cm/s). However, the proximity and influence of Newton Lake to the impacted area of the UA would potentially result in large volumes of extracted groundwater and lake water. Cutoff walls (**Section 4.3**) could also be used in conjunction with a pumping system to control potential groundwater movement from the lake. A groundwater extraction system in the PMP would be limited by its low permeability (mean hydraulic conductivity of 1.3×10^{-5} cm/s); however, a low volume extraction trench in the PMP could be used to enhance groundwater capture from the PMP.

Implementation of a groundwater extraction system presents design challenges due to the proximity to Newton Lake. An extraction system in the UA would have to consider the potential for extracting unimpacted lake water. Construction of an extraction system between the PAP and Newton Lake may be challenging due to the physical site constraints (limited construction area). Extracted groundwater (and potentially lake water) would need to be managed, which may include modification to the existing NPDES permit and treatment prior to discharge, if necessary. Specialized treatment equipment may be required, and ongoing operations and maintenance activities would be necessary.

There could be some impacts associated with constructing and operating a groundwater extraction system, including some limited exposure to extracted groundwater. Additional data collection and analyses would be required to design an extraction system. Construction could be completed within 1 year following completion of a final design. Time of implementation is approximately 3 to 4 years after approval of the CAP permit, including characterization, design, permitting, and construction. Timeframes to achieve GWPS are dependent on site-specific conditions. An extraction system may reduce the time to attain GWPS in the UA relative to the post-closure timeframe predicted by the groundwater modeling. However, accelerated attainment of the GWPS is expected to be limited by the low permeability of the PMP.

Implementing a groundwater extraction system at the PAP would require IEPA approval of the CAP permit, and discharge of extracted groundwater may require a modification to the NPDES permit, as well as possibly permitting and construction of a new outfall. Depending upon the location of the extraction system an Illinois Department of Natural Resources (IDNR) dam safety modification permit may also be required to construct an extraction system.

Groundwater extraction could be viable corrective measure for the sulfate and lithium exceedances at the PAP. Implementation of groundwater extraction may require combining an extraction system with a cutoff wall to prevent potential inflow of water from Newton Lake. Therefore, groundwater extraction is being advanced to the CAAA for further evaluation.

5.2.3 Source Control with Groundwater Cutoff Wall

Source control will reduce the mass loading to the groundwater system and implementing additional groundwater corrective measures may reduce the time required to attain the GWPS in the UA. A low permeability cutoff wall could be used in combination with a groundwater extraction system in the UA to reduce the potentially high volumes of extracted groundwater that would be captured by and extraction system between the PAP and Newton Lake. A cutoff wall could reduce the water management and treatment requirements for an extraction system.

Groundwater cutoff walls are a widely accepted corrective measure used to control and/or isolate impacted groundwater and are routinely approved by the IEPA. Cutoff walls have a long history of reliable performance as hydraulic barriers, provided they are properly designed and constructed. However, if not coupled with a groundwater extraction system, a cutoff wall will provide directional groundwater control only and may result in redistribution of contaminants and potentially GWPS exceedances at new locations.

Cutoff walls are designed to act as hydraulic barriers; as a result, cutoff walls inherently alter the existing groundwater flow system. Changes to the existing groundwater flow system may need to be controlled to maximize the effectiveness of the remedy by, for example, combining a cutoff wall with groundwater extraction to control build-up of hydraulic head upgradient and around the cutoff walls. The effectiveness of a cutoff wall as a hydraulic barrier also relies on the contrast between the hydraulic conductivity of the native geologic materials and the cutoff wall. The most effective barriers have hydraulic conductivity values that are several orders of magnitude lower than the geologic materials they are in contact with. A cutoff wall designed with hydraulic conductivity of 1×10^{-7} cm/sec would be two orders of magnitude lower than the UD with a mean conductivity of 1.3×10^{-5} cm/sec, limiting its performance. Performance and reliability of a cutoff wall in the UD/PMP would also be limited due to the difficulty in delineating the intermittent sandy zones within the unit. Construction of a cutoff wall extending into the UA would be four orders of magnitude lower than the UA, with a mean hydraulic conductivity of 6.8×10^{-3} cm/s and would be an effective containment method in the UA and could improve the performance of a UA extraction system.

Constructing a cutoff wall may be challenging due to the physical site constraints (limited construction area due to the proximity to Newton Lake), particularly if used in combination with an extraction system. In that case, both the extraction system and the cutoff wall would need to be located between the PAP and Newton Lake, which would increase the construction complexity and could result in structural impacts to the embankment dikes, depending on the location of the wall. Specialized construction contractor(s) may be required, which could delay implementation.

Additional data collection and analyses would be required to design a cutoff wall. Construction of only the cutoff wall could be completed within 2 to 3 years. Time of implementation is approximately 5 to 8 years, including characterization, design, permitting and construction. Construction could possibly be accelerated by combining with site closure activities. To attain GWPS, cutoff walls require a separate groundwater corrective measure to operate in concert with the cutoff wall(s). Cutoff walls are commonly coupled with groundwater polishing and/or groundwater extraction as groundwater corrective measures. The time to attain GWPS is dependent on the selected groundwater corrective measure or measures that are coupled with the cutoff walls.

Constructing a cutoff wall at the PAP would require IEPA approval of the CAP permit and, depending on the location, an IDNR dam safety modification permit may be required.

A cutoff wall at the PAP alone would not be a viable corrective measure for the sulfate, lithium, and TDS exceedances at the PAP. However, a cutoff wall may serve to increase the efficiency of a groundwater extraction system by preventing inflow of water from Newton Lake. Therefore, the cutoff wall is being advanced to the CAAA for further evaluation.

5.2.4 Source Control with In-Situ Chemical Treatment

Source control will reduce the mass loading to the groundwater system and implementing additional groundwater corrective measures may reduce the time required to attain the GWPS in the UA. Use of in-situ treatment, either through targeted injection of reactive media or in PRB systems, to transform contaminants into environmentally acceptable forms to attain the GWPS was considered.

In-situ treatment using ion exchange to address sulfate and lithium exceedances in groundwater is not an established or widely accepted groundwater corrective measure; therefore, its performance and reliability are unknown. Regulatory acceptance of this innovative approach to achieving the GWPS is uncertain.

In-situ treatment presents design and construction challenges, including targeted reactive media delivery via injection to the sandier zones in the UD/PMP and the complicated construction that would be required for a PRB system in close proximity to Newton Lake (if possible). Depending upon the location of the PRB system, construction may affect the PAP embankment and/or final cover system and periodic change-outs of ion exchange (IX) resin media may be required.

Additional data collection and analyses would be required to design an in-situ treatment system and bench scale and/or pilot scale testing may be required to demonstrate performance and reliability. Time of implementation is approximately 4 to 6 years after approval of the CAP permit, including characterization, design, permitting, and construction. Timeframes to achieve GWPS are dependent on demonstrations of performance and reliability along with regulatory acceptance. It is not known whether in-situ treatment would reduce the time to attain GWPS in the UA relative to the post-closure timeframe predicted by the groundwater modeling.

Due to the uncertain performance, reliability and potential for not obtaining regulatory acceptance, in-situ chemical treatment is not a viable corrective measure for the sulfate and lithium exceedances at the PAP and is not being advanced to the CAAA for further evaluation.

5.3 Technologies Advanced to CAAA

Based on the evaluations presented above, the following potential corrective technologies are being advanced to the CAAA, individually or in combination, for more detailed evaluations:

- Source control with groundwater polishing;
- Source control and with groundwater extraction; and
- Source control with a groundwater cutoff wall.

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Tables

Table 5-1
35 I.A.C. PART 845 CORRECTIVE MEASURES ASSESSMENT MATRIX
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS
March 29, 2024

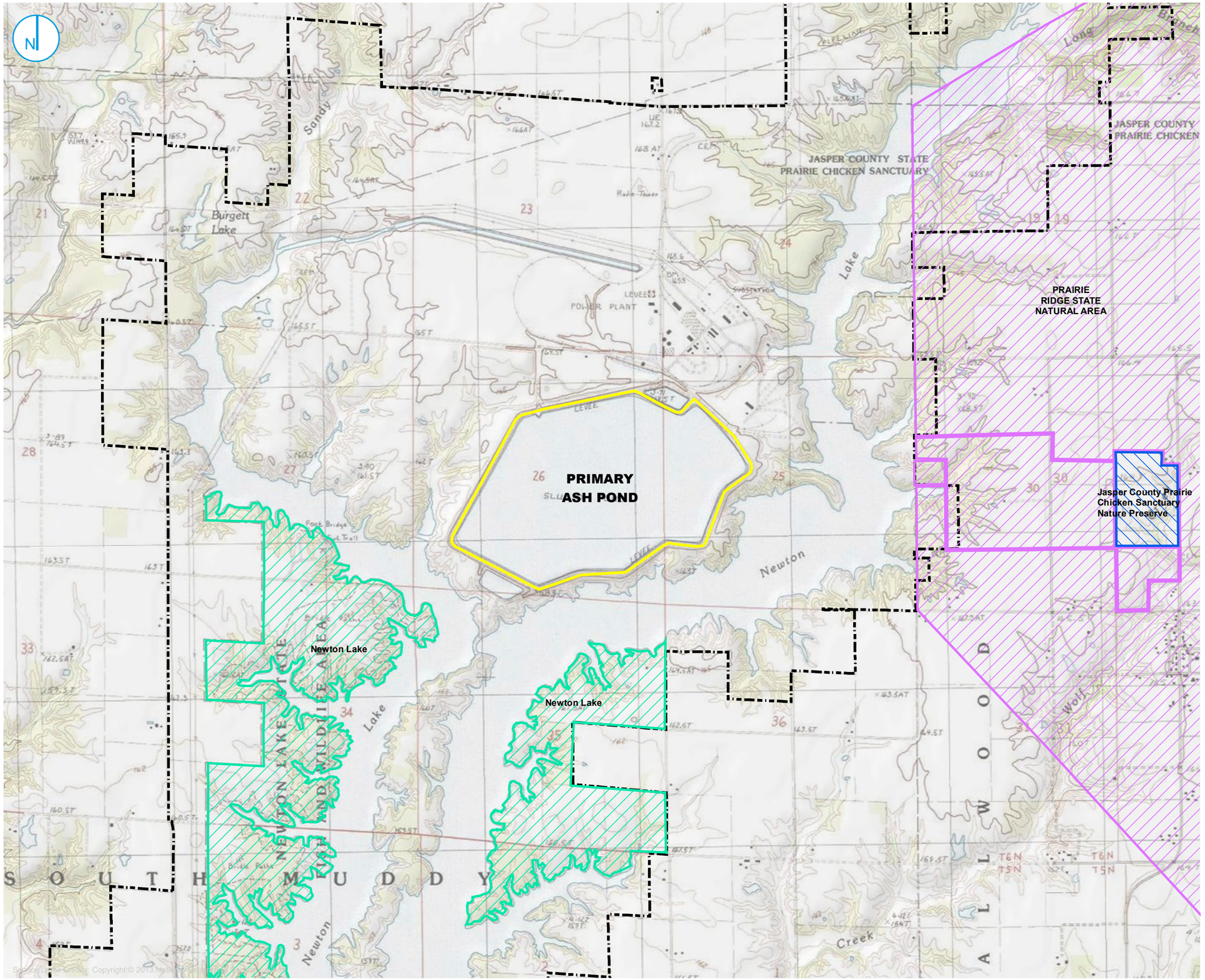
Potential Corrective Measure Technology	Evaluation Factors						
	Performance	**Reliability**	**Ease of Implementation**	**Potential Impacts of Remedy** (safety impacts, cross-media impacts, control of exposure to any residual contamination)	**Time Required to Begin and Implement Remedy[1]**	**Time to Attain Groundwater Protection Standards**	**Institutional Requirements** (state/local permit requirements, environmental/public health requirements that affect implementation of remedy)
Source Control with Aquifer Polishing	Performs best paired with source control, which is expected to be completed at the site in 2028. Site conditions are favorable for physical processes of sulfate and lithium. Good performance is expected for physical processes due to the sandy nature of the Uppermost Aquifer. Geochemical process performance may be limited.	Ongoing analysis will evaluate whether the geochemical mechanism has low reversibility, the Uppermost Aquifer and/or the Upper Drift have sufficient capacity, and the hydrogeology is favorable for physical processes. Possibly low reliability for lithium due to reversibility.	Evaluation is underway and is expected to be completed in 2024. Long-term monitoring would be required. Implementing would not require extensive specialized equipment or contractors.	None identified.	Approximately 90 days after CAP permit approval.	Dependent on site specific conditions. Accelerated attainment of GWPS will be limited by the low permeability of the Upper Drift and may not significantly improve attainment of the GWPS in the Uppermost Aquifer to less than the 20 years post-closure predicted by the groundwater model.	IEPA approval of the closure and CAP permits is required.
Source Control with Groundwater Extraction	A widely accepted, routinely approved technology. Performance expected to be effective in the relatively high permeability, sandy, Uppermost Aquifer but would be limited in the low permeability silts and clays of the Upper Drift.	Reliable if properly designed, constructed, and maintained. Reliability is expected to be high in the Uppermost Aquifer but may be affected by the potential need for dense well spacing to ensure overlapping cones of depression and complete groundwater capture in the low permeability silts and clays of the Upper Drift. Groundwater treatment prior to discharge can be considered if indicated by performance monitoring.	Groundwater flow direction in Uppermost Aquifer and physical site constraints (proximity and influence of Newton Lake) may make locating capture wells challenging and would result in a high volume of extracted water. In the Upper Drift, there would likely be a limited zone of influence for capture wells, which would likely require dense well spacing or installation of an extraction trench. Site constraints could make well installation challenging. Specialized contractors are not expected to be needed. Extracted groundwater would require management, possibly including treatment. Groundwater treatment, if needed, may required specialized equipment/contractors.	Alters groundwater flow system and there is some potential for some limited exposure to extracted groundwater.	Design, permitting and construction is expected to take 3 to 4 years after CAP permit approval.	Dependent on site specific conditions. Accelerated attainment of GWPS will be limited by the low permeability of the Upper Drift and may not significantly improve attainment of the GWPS to less than the 20 years post-closure predicted by the groundwater model for source control and aquifer polishing.	IEPA approval of the closure and CAP permits is required. Extracted groundwater discharge may require an NPDES permit modification or permitting and constructing a new outfall, depending on the groundwater flow rates. A IDNR dam safety modification permit might also be required, depending on location of wells and settlement potential.
Source Control with Groundwater Cutoff Wall	Widely accepted and routinely approved technology with good performance if properly designed and constructed, however containment using cutoff walls in the low permeability Upper Drift materials would likely not be effective. If not combined with extraction wells, a cutoff wall will provide directional control only, thus redirecting flow to other areas where GWPS may be exceeded.	Reliable for groundwater directional control in the Uppermost Aquifer if properly designed and constructed. Reliability in the discontinuous sandy deposits of the Upper Drift would be limited by the ability to delineate the sandy deposits.	Widely used, established technology. Groundwater flow direction in Uppermost Aquifer and physical site constraints (proximity and influence of Newton Lake) make locating a cutoff wall challenging. Potential need to locate cutoff wall either upon the existing embankment or upon the (post-closure) final cover would increase the construction complexity. May require specialized construction equipment and delay implementation.	Alters groundwater flow system but does not provide any treatment. Can result in unintended consequences resulting from redirecting contaminants to areas where they are not currently present. May cause structural impacts to the embankment dikes, depending on the location of the wall.	Design, permitting and construction is expected to take 5 to 8 years after CAP permit approval. Implementation could be accelerated by combining with closure construction activities.	Provides groundwater directional control only. Combination with another groundwater corrective measure, such as groundwater extraction or a permeable reactive barrier, may not significantly improve attainment of the GWPS to less than the 20 years post-closure predicted by the groundwater model for source control and aquifer polishing.	IEPA approval of the closure and CAP permits is required. An IDNR dam safety permit may also be required depending on the location of the cutoff wall.
Source Control with In-Situ Chemical Treatment	In-Situ treatment using ion exchange (IX) is not well established for sulfate and lithium, therefore performance is unknown.	Unknown reliability for sulfate and lithium.	Design challenges for a funnel and gate PRB system due to depth, stratigraphy and proximity to the Newton Lake. Challenge to target reactive media delivery in the low permeability Upper Drift for in-situ treatment (injection). Could require periodic change-outs of IX resin media.	Depending on the location of a PRB, it's construction may affect the embankment/final cover system (structural impacts to the dike, inducting settlement, impacts to final cover system, etc.).	May require bench scale and/or pilot scale testing as part of design. Design, permitting and construction is expected to take 4 to 6 years after CAP permit approval.	There is uncertainty regarding whether a permeable reactive barrier would reduce sulfate concentrations to achieve the GWPS. Dependent on conditions specific to the reactive media used and the site. Treatment technology not well understood.	IEPA approval of the CAP permit is required. IEPA approval of this innovative and relatively unproven solution may be challenging. An IDNR dam safety permit may also be required depending on the location of the PRB.

Notes: [1] Time required to begin and implement remedy includes design, permitting and construction.

GWPS - Groundwater Protection Standard
CAP - Corrective Action Plan
IEPA - Illinois Environmental Protection Agency
IDNR - Illinois Department of Natural Resources
IX - Ion Exchange
PRB - Permeable Reactive Barrier

Figures

Y:\Mapping\Projects\222285\MXD\845_Operating_Permit\Newton\Figure 1-1_Site Location Map.mxd



REGULATED UNIT (SUBJECT UNIT)

JASPER COUNTY PRAIRIE CHICKEN SANCTUARY NATURE PRESERVE

NEWTON LAKE STATE FISH AND WILDLIFE AREA

PRAIRIE RIDGE STATE NATURAL AREA

PROPERTY BOUNDARY

0 1,000 2,000 Feet

SITE LOCATION MAP

35 I.A.C. § 845 CORRECTIVE MEASURES ASSESSMENT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: 169000XXXX | DATED: 10/19/2021 | DESIGNER: STOLZSD

Source Layer Credits: Copyright© 2013 Na

REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
PROPERTY BOUNDARY

0 500 1,000
Feet

SITE MAP

35 I.A.C. § 845 CORRECTIVE MEASURES ASSESSMENT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-2

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\22285\MXD\845_Operating_Permit\Newton\Figure 1-2_Site Map.mxd

PROJECT: 169000XXXX | DATED: 10/19/2021 | DESIGNER: STOLZSD

COMPLIANCE MONITORING WELL
BACKGROUND MONITORING WELL
MONITORING WELL
PORE WATER WELL
LEACHATE WELL
STAFF GAGE, CCR UNIT
STAFF GAGE, LAKE
GROUNDWATER ELEVATION CONTOUR (5-FT CONTOUR INTERVAL, NAVD88)
INFERRED GROUNDWATER ELEVATION
GROUNDWATER FLOW DIRECTION
REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE

NOTES:
1.ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

0 400 800
Feet

UPPERMOST AQUIFER POTENTIOMETRIC SURFACE MAP APRIL 24, 2023

35 I.A.C. § 845 CORRECTIVE MEASURES ASSESSMENT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-3

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\2285\MXD\GW_Contours\Round_2023\Newton\PAP_501\NEW 501 PAP Pot Surface 20230424.mxd
PROJECT: 169000XXXX | DATED: 9/20/2023 | DESIGNER: GALARNMC

COMPLIANCE WELL
BACKGROUND WELL
STAFF GAUGE
PART 845 REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
PROPERTY BOUNDARY

0 500 1,000
Feet

MONITORING WELL LOCATION MAP

35 I.A.C. § 845 CORRECTIVE MEASURES ASSESSMENT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-4

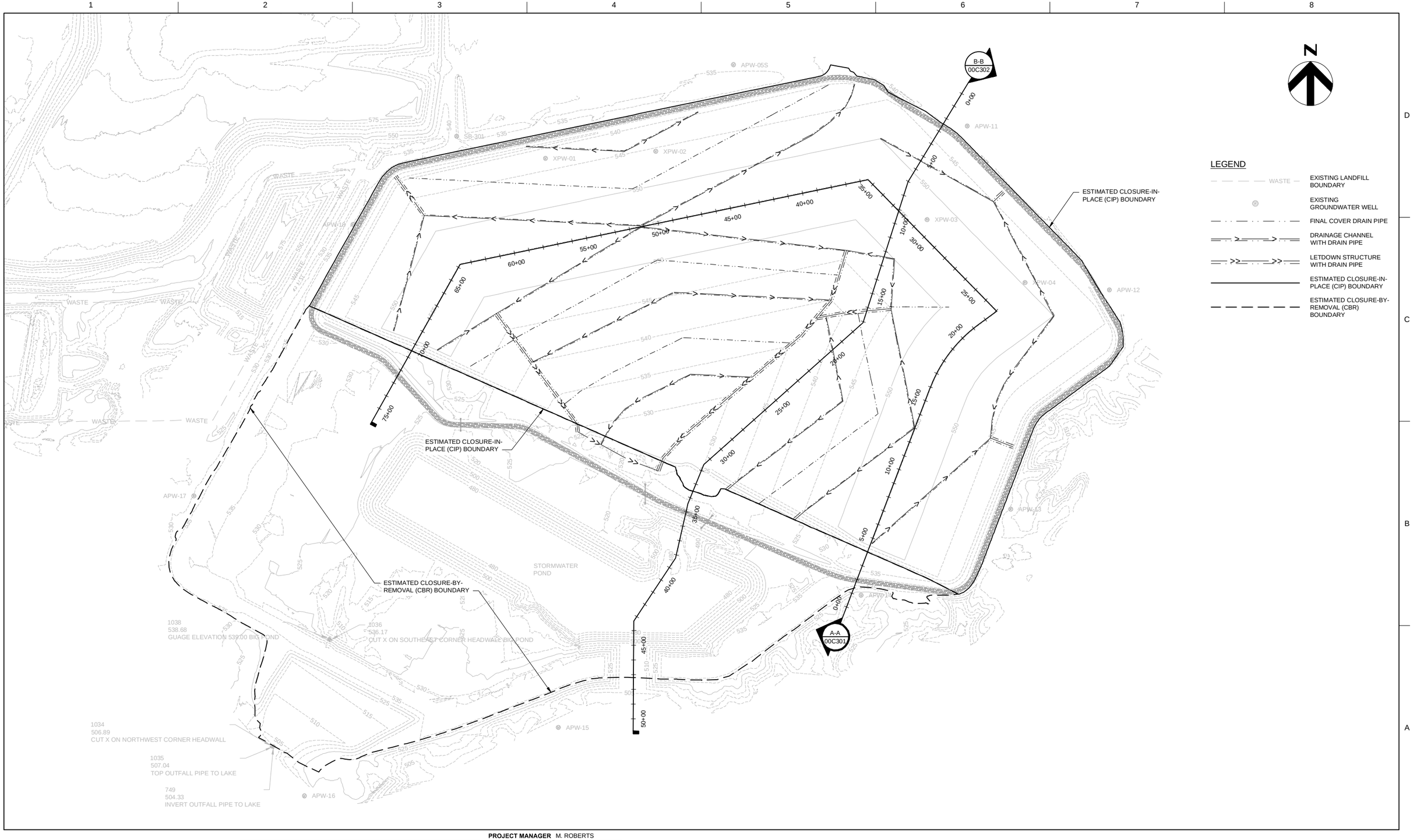
RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\222285\MXD\845_Operating_Permit\Newton\GMP\Figure 2-1_Proposed Monitoring Well Network.mxd

PROJECT: 169000XXXX | DATED: 10/20/2021 | DESIGNER: STOLZSD

Attachment A – Selected Construction Permit Application Plans



ISSUE	DATE	DESCRIPTION
0	07/28/2022	ISSUED TO IEPA

PROJECT MANAGER	M. ROBERTS
CIVIL	G. WILLIAMS
CIVIL	K. KINLEY
DRAWN BY	M. BICKFORD
PROJECT NUMBER	10296144

ILLINOIS POWER GENERATING COMPANY
NEWTON POWER PLANT
PRIMARY ASH POND CLOSURE

FINAL CLOSURE CONDITIONS

0 1" 2"

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SCALE	1" = 300'

SHEET
00C106

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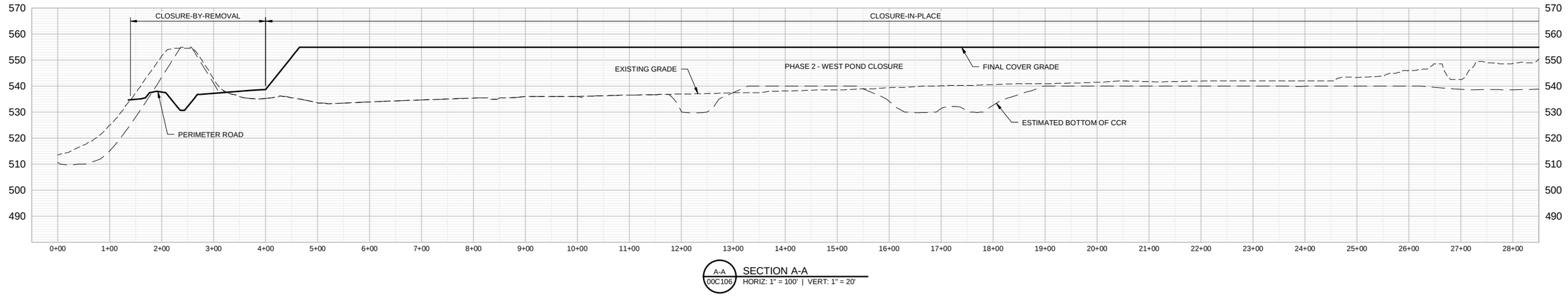

A-A / 00C106 SECTION A-A
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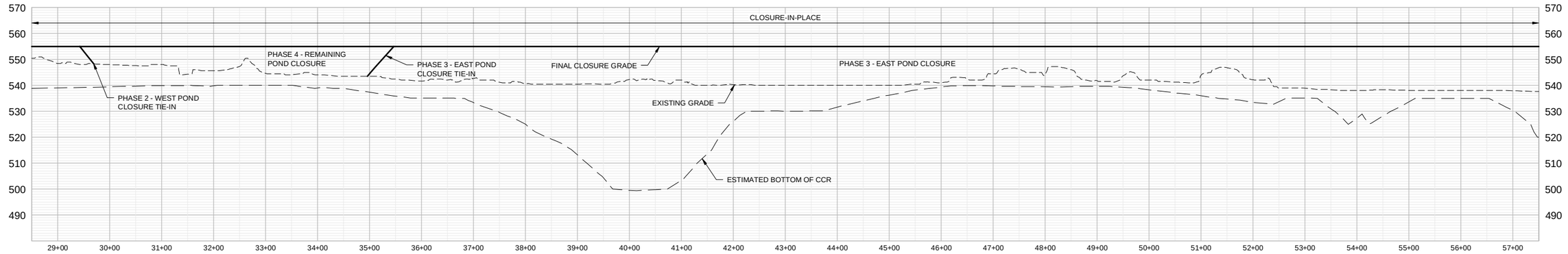

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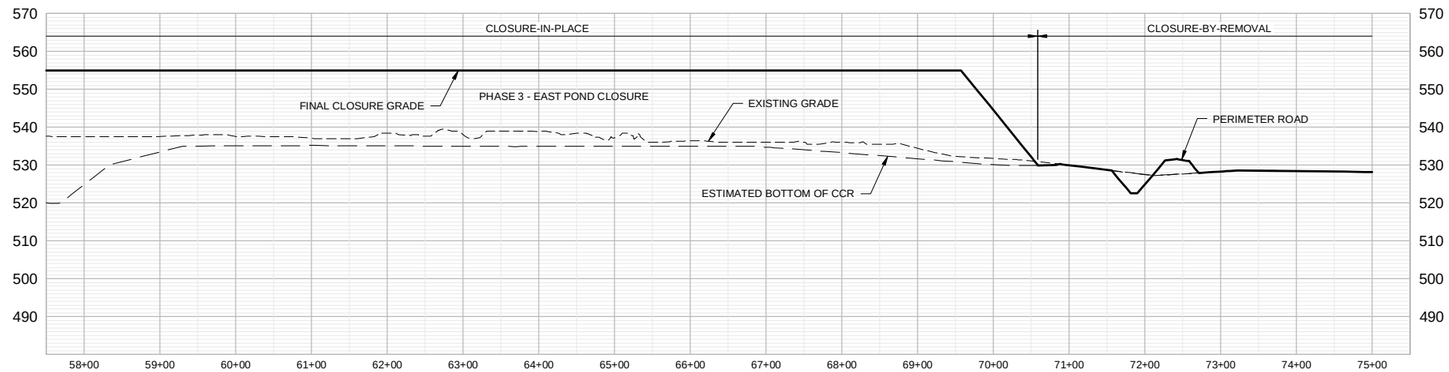

A-A / 00C106 SECTION A-A (cont.)
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ISSUE	DATE	DESCRIPTION
0	07/28/2022	ISSUED TO IEPA

PROJECT MANAGER	M. ROBERTS
CIVIL	G. WILLIAMS
CIVIL	K. KINLEY
DRAWN BY	M. BICKFORD
PROJECT NUMBER	10296144

ILLINOIS POWER GENERATING COMPANY
NEWTON POWER PLANT
PRIMARY ASH POND CLOSURE

CROSS SECTIONS

0 1" 2"

FILENAME 00C301.DWG
SCALE AS NOTED

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00C301

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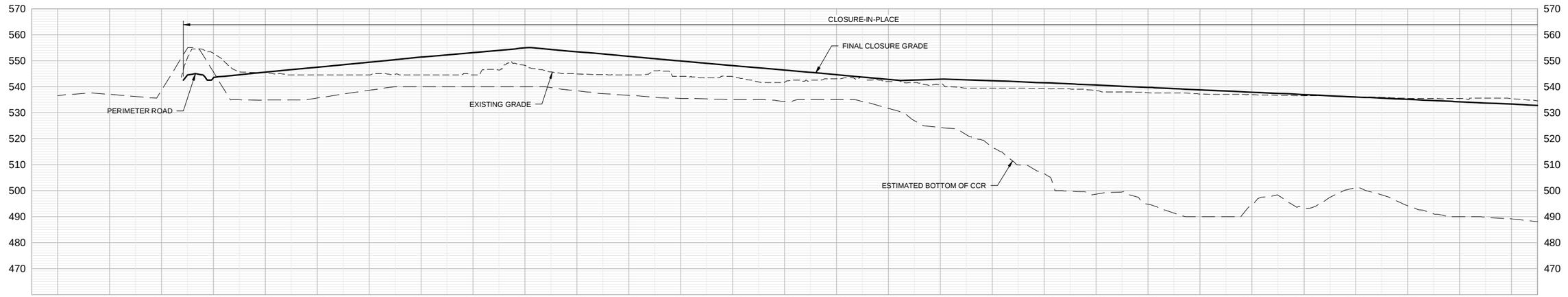
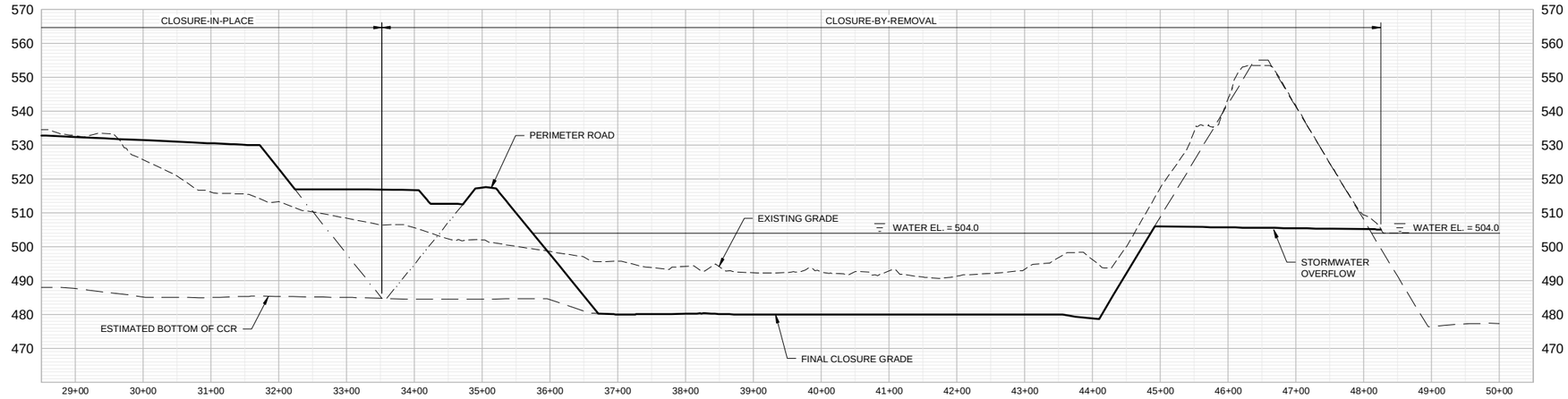


B-B
00C106

SECTION B-B

HORIZ: 1" = 100' | VERT: 1" = 20'



B-B
00C106

SECTION B-B (cont.)

HORIZ: 1" = 100' | VERT: 1" = 20'

ISSUE	DATE	DESCRIPTION
0	07/28/2022	ISSUED TO IEPA

PROJECT MANAGER	M. ROBERTS
CIVIL	G. WILLIAMS
CIVIL	K. KINLEY
DRAWN BY	M. BICKFORD
PROJECT NUMBER	10296144

ILLINOIS POWER GENERATING COMPANY
NEWTON POWER PLANT
PRIMARY ASH POND CLOSURE

CROSS SECTIONS

0 1" 2"

FILENAME 00C302.DWG
SCALE AS NOTED

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00C302

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Appendix D

Nature and Extent Report

Intended for
Illinois Power Generating Company
6725 North 500th Street
Newton, Illinois, 62448

Date
April 3, 2024

Project No.
1940103584-008

NATURE AND EXTENT REPORT

NEWTON POWER PLANT, PRIMARY ASH POND, IEPA ID NO. W0798070001-01

RAMBOLL Bright ideas. Sustainable change.

NATURE AND EXTENT REPORT
NEWTON POWER PLANT, PRIMARY ASH POND, IEPA ID NO. W0798070001-01

Project name	**Newton Power Plant Primary Ash Pond**
Project no.	**1940103584-008**
Recipient	**Illinois Power Generating Company**
Document type	**Nature and Extent Report**
Revision	**Final**
Date	**April 3, 2024**
Prepared by	**Alison O'Connor and Nathaniel Keller**
Checked by	**Lauren Cook**
Approved by	**Brian G. Hennings, PG**

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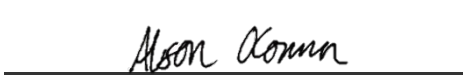

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Geochemist

Nathaniel R. Keller, PG
Senior Technical Manager

Brian G. Hennings, PG
Project Officer, Hydrogeology

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APPENDICES

Appendix A Technical Memorandum – Monitored Natural Attenuation Field Investigation Status Update
Appendix B Technical Memorandum – Surface Water Sampling
Appendix C Geochemical Conceptual Site Model

ACRONYMS AND ABBREVIATIONS

35 I.A.C.	Title 35 of the Illinois Administrative Code
40 C.F.R.	Title 40 of the Code of Federal Regulations
ASD	Alternative Source Demonstration
bgs	below ground surface
BOD	biological oxygen demand
CCR	coal combustion residuals
CEC	Cation Exchange Capacity
cm/s	centimeters per second
COC	chain-of-custody
COD	chemical oxygen demand
CORRACTS	RCRA Corrective Action Sites
CSM	conceptual site model
CWA	Clean Water Act
DO	dissolved oxygen
EDR	Environmental Data Resources, Inc.
E001	Event 1
GCSM	geochemical conceptual site model
GPS	Global Positioning System
GWPS	groundwater protection standard
IEPA	Illinois Environmental Protection Agency
IPCB	Illinois Pollution Control Board
kHz	kilohertz
LCL	lower confidence limit
LCU	lower confining unit
LF 1	Phase 1 Landfill
LF 2	Phase 2 Landfill
LOI	loss-on-ignition
LUST	Leaking Underground Storage Tanks
LVW	low-volume wastewater
MCL	Maximum Contaminant Level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NAVD88	North American Vertical Datum 1988
NPDES	National Pollutant Discharge Elimination System
NPP	Newton Power Plant
NRT/OBG	Natural Resource Technology, an OBG Company
PAP	Primary Ash Pond
PMP	potential migration pathway
QA/QC	quality assurance/quality control
Ramboll	Ramboll Americas Engineering Solutions, Inc.
RCRA	Resource Conservation and Recovery Act
RISC	Risk Integrated System of Closure

RTK	real-time kinematic
SAP	Sampling and Analysis Plan
SI	surface impoundment
SMA	sediment management area
SOP	standard operating procedures
SPLP	synthetic precipitation leaching procedure
SVOC	semi-volatile organic compounds
TBD	To Be Determined
TDS	total dissolved solids
TOC	total organic solids
TSD	Treatment, Storage, and Disposal
TSS	total suspended solids
UA	uppermost aquifer
UCU	upper confining unit
UD	upper drift
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
VOC	volatile organic compounds
XRD	x-ray diffraction
XRF	x-ray fluorescence

EXECUTIVE SUMMARY

Groundwater samples collected at the Newton Power Plant (NPP) Primary Ash Pond (PAP) during April 2023 for the Quarter 2, 2023 compliance sampling event (Event 1 [E001]) were evaluated for exceedances of the groundwater protection standards (GWPS) described in Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845.600. Exceedances were identified in the following hydrostratigraphic units and wells:

- Detected uppermost aquifer (UA) Exceedances:
  - Chloride at APW15
  - Sulfate at APW10
- Detected Upper Drift (UD) (potential migration pathway [PMP]) Exceedances:
  - Lithium at APW02
  - Sulfate at APW02, APW04, and APW05S
  - Total dissolved solids (TDS) at APW02, APW04, and APW05S

An alternative source demonstration (ASD) was completed for the chloride exceedance at UA monitoring well APW15. The Illinois Environmental Protection Agency (IEPA) did not concur with the ASD. The non-concurrence was appealed, and the Illinois Pollution Control Board (IPCB) granted a stay on January 18, 2024.

As required by 35 I.A.C. § 845.650(d)(1) this Report characterizes the nature and extent of sulfate, lithium, and TDS, and relevant site conditions to determine how they may affect the corrective measures ultimately selected for the PAP and documents the additional measures taken in accordance with 35 I.A.C. § 845.650(d).

Sulfate (and TDS) above the GWPS was encountered within the two hydrostratigraphic units: the shallow UD and associated PMP, and in the UA where it occurs at it's highest elevation. In both units, the extent of sulfate above the GWPS is defined laterally by existing wells and Newton Lake, and vertically by the presence of low permeability tills or deeper wells that do not have GWPS exceedances. The sulfate concentrations are attenuated physically through dilution and dispersion; and may be geochemically attenuated by sorption to iron oxides. The sulfate and TDS concentrations in Newton Lake were evaluated and they do not present unacceptable risk [1].

Lithium above the GWPS was encountered only within the shallow UD at APW02. The extent of lithium above the GWPS is currently being further defined laterally with additional wells but is ultimately defined by Newton Lake. Vertically, the extent of lithium above the GWPS is limited by presence of low permeability tills and defined by deeper wells that do not have GWPS exceedances. The lithium concentrations are attenuated physically through dilution and dispersion and may be geochemically attenuated by sorption to and incorporation into clay minerals. The lithium concentrations in Newton Lake were evaluated and they do not present unacceptable risk [1].

1. INTRODUCTION

35 I.A.C. § 845.650(d)(1) requires the owner or operator of a coal combustion residuals (CCR) surface impoundment (SI) to characterize the nature and extent of a release and relevant site conditions that may affect the remedy ultimately selected for a CCR SI if any constituent regulated under 35 I.A.C. § 845 is found to exceed the GWPS. This report documents the nature and extent of constituents detected above the GWPS that are attributable to the NPP PAP.

The groundwater data and analysis in this report includes results from historical sampling (initiated in 2015) through E001, which was completed on April 28, 2023. Results of the E001 event were submitted and placed in the facility's operating record by August 7, 2023 as required by 35 I.A.C. § 845.800(d)(15), within 60 days of receiving final laboratory analytical data [2]. The statistical determination presented in the report identified the following exceedances of the GWPS at compliance groundwater wells in the following hydrostratigraphic units:

- Detected UA Exceedances:
  - Chloride at APW15
  - Sulfate at APW10
- Detected UD/PMP Exceedances:
  - Lithium at APW02
  - Sulfate at APW02, APW04, and APW05S
  - Total dissolved solids (TDS) at APW02, APW04, and APW05S

An Alternative Source Demonstration (ASD), as allowed by 35 I.A.C. § 845.650(e) was completed for the chloride exceedance at UA monitoring well APW15 [3]. The Illinois Environmental Protection Agency (IEPA) did not concur with the ASD in a letter dated November 7, 2023 due to the following data gaps:

1. Source characterization of the CCR at the PAP must include total solids sampling in accordance with SW846.
2. Hydraulic conductivities from laboratory or in-situ testing must be collected, analyzed and presented with the hydrogeologic characterization of bedrock unit.
3. Characterization to include sample and analysis in accordance with 35 I.A.C. § 845.640 of alternative source must be provided with the ASD.

On December 15, 2023, Illinois Power Generating Company (IPGC) submitted a Petition for Review [4] of the non-concurrence with the chloride ASD and Motion for Stay to the IPCB. The IPCB granted a stay on January 18, 2024. Therefore, the nature and extent of chloride is not discussed in this document. This Nature and Extent Report discusses in detail the extent of the sulfate, lithium, and TDS exceedances as well as a geochemical conceptual site model (GCSM) describing the nature of these exceedances.

2. UNIT BACKGROUND

2.1 Site Location and Description

The NPP is located in Jasper County in the southeastern part of central Illinois, approximately seven miles southwest of the town of Newton (**Figure 2-1**). The NPP operates as a coal-fired power plant with three CCR units present, including the PAP and two landfills: the Phase 1 Landfill (LF 1) located northwest and west of the PAP, and the Phase 2 Landfill (LF 2) located to the west of the PAP. The PAP is located within Section 26 and the west half of Section 25, Township 6 North, Range 8 East. The PAP is located south of the NPP and surrounded by Newton Lake to the south, east, and west (**Figure 2-2**). Beyond the lake is additional agricultural land.

2.2 Description of CCR Unit

The PAP is an unlined CCR SI used to manage CCR and non-CCR waste streams at the NPP. The PAP was constructed in 1977 and has a design capacity of approximately 9,715 acre-feet. There is also a non-CCR 83.6 acre-feet Secondary Pond located immediately south of the PAP. The PAP has a surface area of 404 acres and the Secondary Pond has an area of 9.3 acres. The PAP currently receives stormwater runoff, bottom ash, fly ash, and low-volume wastewater (LVW) from the plant's two coal-fired boilers. The SI is operated per National Pollutant Discharge Elimination System (NPDES) Permit No. IL0049191, Outfall 001 (located at the Secondary Pond).

Prior to PAP construction, an incised stream gully existed at the site of the PAP. Areas within the impoundment were excavated during construction for native materials used to build the containment berms in 1977.

Initial operation of the NPP, beginning with Unit 1 being put into service in 1977, included combustion of Illinois coal until 1997-1998, at which point the plant switched to low sulfur coal from the Powder River Basin. Both fly and bottom ash were sluiced wet to the PAP until 1979 when the wet scrubber (including sodium carbonate injection) came online. The fly ash was then mixed with the scrubber cake and placed in the Phase I landfill while bottom ash continued to be sluiced to the PAP. The scrubber was shut down in the Fall of 1996 and fly ash was sluiced wet to the PAP again. Fly ash and bottom ash have both been sluiced to the PAP since the plant began operation in 1977. Emission controls consisting of injection of halogenated activated carbon to reduce mercury emissions were implemented prior to 2009 under an agreement with IEPA. The Newton Landfill Phase 1 (closed) and Phase 2 (operational) receive the wastes generated from the emissions controls. Review of historic aerial imagery of the PAP (observations summarized in **Figure 2-3**) illustrate the extent of CCR deposition through time as well as potential CCR variability (based on observed differences in color). Characterization of the CCR material including total metals analysis of eight samples of materials within the PAP and completion of monitoring wells screened within the CCR was completed in areas of the PAP that were safely accessible in 2021 to meet the requirements of 35 I.A.C. § 845 (**Figure 2-4**) (Hydrogeologic Site Characterization Report [5]).

2.3 Geology and Hydrogeology

Significant site investigation has been completed at the NPP to characterize the geology, hydrogeology, and groundwater quality. Based on extensive investigation and monitoring, the PAP has been well characterized and detailed in the Hydrogeologic Site Characterization Report [5].

2.3.1 Hydrostratigraphic Units

Materials at the site have been categorized into six hydrostratigraphic units at the PAP based on stratigraphic relationships, geologic composition, and common hydrogeologic properties. The units, listed from surface downward, are summarized as follows:

- **CCR:** CCR consists of fly and bottom ash within the PAP and may be present from the surface (approximately 545 to 555 feet[1]) to a minimum elevation of approximately 485 feet NAVD88 (**Figure 2-5**). CCR material is lowest in elevation along a historic drainage feature that runs approximately through the center of the PAP. Groundwater elevations measured in piezometers screened within the PAP indicate that the phreatic surface ranges from approximately 535 to 547 feet, which is above groundwater measured outside the CCR unit in the surrounding monitoring wells.
- **Upper Drift (UD)/Potential Migration Pathway (PMP):** The UD is composed of the low permeability silts and clays of the Peoria Silt and Sangamon Soil and the sandier soils of the Hagarstown Member (*i.e.,* PMP).
  - **Hagarstown Member/PMP:** The Hagarstown Member consists of discontinuous sandier deposits of the UD, where present, and overlies the Vandalia Till.
- **Upper Confining Unit (UCU):** This unit consists of the low permeability clay and silt of the Vandalia Till Member (Vandalia Till).
- **Uppermost Aquifer (UA):** This unit is composed of the Mulberry Grove Formation, which has been classified onsite as poorly graded sand, silty sand, clayey sand, and gravel.
- **Lower Confining Unit (LCU):** This unit is comprised of low permeability silt and clay of the Smithboro Till Member (Smithboro Till) and the Banner Formation.
- **Bedrock Unit:** Shale bedrock of the Pennsylvanian-age Mattoon Formation [6] was encountered at the NPP during recent and historical investigations. Based on boring logs, the bedrock surface elevation at the NPP ranges from 408 feet (B141) to 445 feet (APW13) (Ramboll, 2023). The locations of these wells and measured bedrock elevations indicate the bedrock surface is highest in the southeast portion of the site and slopes downward to the west and north beneath the PAP.

2.3.2 Uppermost Aquifer

The UA includes the Mulberry Grove Member in the vicinity of the PAP. Groundwater monitoring for the UA is focused on this zone because it is continuous, exhibits moderate permeability, and is likely to indicate potential impacts from the PAP. The top of UA was evaluated with respect to the location restrictions in 2018 [7] and provided in **Figure 2-6**. Based on the geologic information, the top of the aquifer is highest in elevation nearest the base of the CCR in the eastern portion of the pond (along a NW-SE trending line between APW05 to APW10), with an elevation of approximately 482 feet. The top of the UA is separated from overlying CCR material by the low permeability Vandalia Till which was encountered at thicknesses up to 59 feet and an average thickness of 26 feet (**Figures 2-7** to **2-9**). The base of the UA is the top of the LCU, which contains the low permeability Smithboro Till and the Banner Formation.

[1] All elevations in this report are referenced to North American Vertical Datum of 1988 (NAVD88) unless otherwise noted.

2.3.3 Potential Migration Pathways

The UD consists mostly of low permeability clays and silts of the Peoria Silt, Sangamon Soil, and sandy clay of the Hagarstown Member which also includes discontinuous sand lenses. Monitoring wells APW02, APW03, and APW04 are screened in sandy clay at the interface with the Vandalia Till, while APW05S and APW12 are screened within the sandier deposits of the UD. These wells are generally screened at similar elevations and provide representative groundwater samples to monitor shallow PMPs adjacent to the PAP.

2.3.4 Regional Bedrock Geology

Bedrock investigation at the site has been limited given the depth to bedrock, presence of low permeability confining units underlying the UA and above the bedrock, the low permeability of the bedrock unit, and generally non-potable groundwater. There are no known monitoring wells or production wells screened within the bedrock at NPP. Bedrock has been encountered at three borings on-site (APW13, APW14, and historic boring B141), with elevations ranging from 408 feet (B141) to 445 feet (APW13). A literature review was completed to supplement the site geology. Groundwater available from bedrock units is mostly mineralized and rarely used as a source for potable water [8]. Lithium is naturally occurring in shale bedrock and overlying regolith and is released to groundwater during weathering processes [9]. Regional investigations of the Illinois Basin have also identified bedrock (specifically brines within the bedrock formations) as a source of chloride in groundwater [10, 11]. Studies by Cartwright [12] and Siegel [13] indicate that groundwater migrates toward the center of the Illinois Basin and discharges upward through overlying confining units. The "Saline groundwater and brines can be brought near or to the land surface by natural conditions, such as migrating up prominent fractures and/or faults in bedrock, or by anthropogenic activities, such as exploration for and exploitation of petroleum. The mixing of upward-migrating saline groundwater with fresh groundwater from shallow aquifers can make groundwater from private wells undrinkable and can present a very expensive problem for municipalities" [14]. A saline spring was identified in Clay County [10] approximately 10 miles south of the NPP and is adjacent to the Clay City Anticline which runs north into Jasper County and east of the NPP. Concentrations of chloride in groundwater collected from the Pennsylvanian shale in Jasper County range from 100 to 5,000 milligrams per liter (mg/L) [11].

2.3.5 Water Table Elevation and Groundwater Flow Direction

The elevations of water within the PAP (as observed in XPW01 through XPW04, and XSG01) are greater than the surrounding areas. The phreatic surface within the PAP in 2023 averaged 539 feet, ranging from approximately 547 feet in XPW02 (located along the northern portion of the PAP) to 530 feet in XSG01 (staff gage located along the southern portion of the PAP) (**Figure 2-10)**.

As indicated in Section 2.3.2 the groundwater in the UA is separated from overlying CCR material by an average thickness of 26 feet of the low permeability Vandalia Till. Groundwater flow in the UA is generally from the north near background wells APW05 and APW06 to the southwest toward a historic drainage feature and southeast toward Newton Lake. Specifically, groundwater flow is north to south beneath the center of the PAP (from APW05/APW06 toward APW09/APW15). Beneath the western portion of the PAP, flow is west to southwest converging towards a former surface drainage feature located west of the PAP (**Figure 2-10**) and an area where the UA is lowest in elevation and has the highest hydraulic conductivity. Beneath the eastern portion of the PAP, groundwater flows east to southeast (from APW05 toward APW11-

APW14). Groundwater elevations exhibit limited variability, generally less than one to two feet per year. Spatially across the PAP they range from approximately 490 feet in the southern portion of the site to 530 feet in the northern portion of the site. Flow directions are generally consistent between seasons [5].

Groundwater elevations in PMP wells are above those in the UA, exhibit more variability, (1-4 feet per year), and range from approximately 518 feet (APW05S) to 535 feet (APW05S). Groundwater elevations within the UCU, LCU, and bedrock unit are unknown because no wells are screened within these low hydraulic conductivity units. Groundwater flow within the aquitards of the UCU and LCU will be primarily vertical based on heads above and below these units.

2.3.5.1 Vertical Hydraulic Gradients

Vertical hydraulic gradients calculated using available groundwater elevation data from February to August 2021 at nested well locations within the UD (*i.e.,* PMP) and UA wells indicated downward gradients [5], which was consistent with historical results [15]. Recent data collected through April 2023 is also consistent with these results. The results of the vertical hydraulic gradient calculations for these hydrostratigraphic units are summarized below:

- UD (*i.e.,* PMP) to UA:
  - Gradients calculated between APW05S (PMP) and APW05 (UA) were downward for all events.
  - Gradients calculated between APW04 (PMP) and APW10 (UA) were downward for all events.
  - Gradients calculated between APW03 (PMP) and APW09 (UA) were downward for all events.
  - Gradients calculated between APW02 (PMP) and APW17 (UA) were downward for all events.

2.3.5.2 Impact of Surface Water Bodies on Groundwater Flow

The surface water elevation at Newton Lake measured from February 15, 2021 to October 9, 2023 ranged from 503.56 to 504.84 feet at location SG02 near the outfall from the Secondary Pond. Groundwater flow in the UA generally flows southwest across the PAP with potentiometric surface elevations at downgradient wells around 491 feet (approximately 10-15 feet lower than the Newton Lake elevation). The separation observed in groundwater and surface water elevations (and observed downward vertical gradients) indicates groundwater within the UA does not flow into Newton Lake along the western portion of the site.

Groundwater elevations observed at APW10 located on the east side of the site are approximately 2 feet higher than surface water in Newton Lake (506 feet versus 504 feet) indicating groundwater migrates toward the Lake along the eastern boundary of the Unit. Based on the stratigraphic interpretations, the UA slopes upward in this area and approaches the former land surface, now beneath Newton Lake. As illustrated in cross-section B-B' (**Figure 2-8**), the UA may intersect the base of Newton Lake.

2.3.6 Hydraulic Conductivities

2.3.6.1 Field Hydraulic Conductivities

Field hydraulic conductivity tests were conducted by Ramboll during the 2021 investigation [5]. The results are summarized in **Table 2-1**, and discussed below:

- **CCR**: Results of field hydraulic tests in wells screened within the CCR (XPW01 through XPW04) ranged from 1.0×10^{-3} to 2.3×10^{-1} centimeters per second (cm/s), with a geometric mean of 2.0×10^{-2} cm/s.
- **UD**: Previous field hydraulic conductivity tests conducted by NRT in 2017 in wells screened within the Sangamon Soil of the UD (APW02, APW03, and APW04) ranged from 5.14×10^{-6} to 4.53×10^{-5} cm/s, with a geometric mean hydraulic conductivity of 1.5×10^{-5} cm/s [15].
  - **PMP**: Results of field hydraulic tests in wells screened within the Hagarstown PMP (APW05S and APW12) ranged from 6.1×10^{-4} to 1.5×10^{-2} cm/s, with a geometric mean hydraulic conductivity of 3.1×10^{-3} cm/s.
- **UCU**: No field hydraulic conductivity tests were performed as there are no wells screened within the UCU.
- **UA**: Results of field hydraulic tests in wells screened within the UA (APW11, APW13, APW14, APW15, APW16, APW17, and APW18) ranged from 2.0×10^{-4} to 1.5×10^{-1} cm/s, with a geometric mean of 6.8×10^{-3} cm/s. Previous field hydraulic conductivity tests conducted in 2017 obtained similar results with a geometric mean hydraulic conductivity of 1.2×10^{-3} cm/s [15]. The highest conductivities are measured in APW15, APW16, and APW17, which is consistent with groundwater flow toward these wells. In addition, the grain-size analyses of the UA materials from two samples collected at APW17 were amongst the highest observed at the Site, with sand and gravel contents of 91.1 and 93.3 percent.
- **LCU**: No field hydraulic conductivity tests were performed as there are no wells screened within the LCU.
- **Bedrock**: No field hydraulic conductivity tests were performed as there are no wells screened within the bedrock unit.

2.3.6.2 Laboratory Hydraulic Conductivities

Falling head permeability tests (ASTM D5084 Method F) were performed in the laboratory on samples collected during the 2021 investigations [5]. The results are summarized in **Table 2-2** and discussed below.

- **CCR**: Eight samples were collected from CCR borings XPW01 through XPW04, located within the PAP. However, the two samples collected from XPW02 (8 to 8.5 and 16.5 to 17 feet bgs) were general fill not CCR fill and are not included in summary of CCR characteristics. Laboratory falling head permeability test results for the six CCR samples indicated a geometric mean vertical hydraulic conductivity of 3.1×10^{-4} cm/s with a range of 1.6×10^{-5} to 1.3×10^{-3} cm/s.
- **UD**: One sample was collected from the Sangamon Soil at borings APW11 and APW15. Laboratory falling head permeability test results in the UD indicated a geometric mean vertical hydraulic conductivity of 5.9×10^{-8} cm/s and ranged from 3.1×10^{-8} to 8.6×10^{-8}

cm/s. These values are lower than previous samples collected in 2017 from APW02 AND APW04, which reported a geometric mean hydraulic conductivity of 1.3 x 10^{-5} cm/s [15].

- **PMP**: Three samples were collected from the Hagarstown Member, a PMP within the UD, at borings APW12 and APW13. Laboratory falling head permeability test results for the Hagarstown Member indicated a geometric mean vertical hydraulic conductivity of 3.5 x 10^{-5} cm/s and ranged from 1.1 x 10^{-7} to 9.6 x 10^{-5} cm/s.
- **UCU**: Four samples were collected from the Vandalia Till at borings APW14, APW17, SB300/APW18, and SB301. Laboratory falling head permeability test results for the UCU samples indicated a geometric mean vertical hydraulic conductivity of 6.7 x 10^{-8} cm/s and ranged from 3.3 x 10^{-8} to 9.7 x 10^{-8} cm/s. These values are similar to a previous investigation completed in 1997 that reported hydraulic conductivity values ranging from 6.3 x 10^{-9} to 2.1 x 10^{-8} cm/s with a geometric mean hydraulic conductivity of 1.1 x 10^{-8} cm/s [8].
- **UA**: Five samples were collected from the Mulberry Grove Formation at borings APW13, APW15, APW17, and APW18. Laboratory falling head permeability test results for the Mulberry Grove Formation indicated a geometric mean vertical hydraulic conductivity of 3.2 x 10^{-4} cm/s and ranged from 3.5 x 10^{-6} to 7.2 x 10^{-4} cm/s.
- **LCU**: Eight samples were collected from the glacial tills of the Smithboro Till at borings APW11, APW12, APW14, APW15, APW18, and SB301. Laboratory falling head permeability test results for the Smithboro Till indicated a geometric mean vertical hydraulic conductivity of 9.3 x 10^{-8} cm/s and ranged from 2.4 x 10^{-8} to 2.7 x 10^{-7} cm/s. No samples were collected from the Banner Formation of the LCU.
- **Bedrock**: No bedrock samples were analyzed.

2.4 Groundwater Monitoring

The monitoring system for the PAP is shown on **Figure 2-2** and consists of two background monitoring wells (APW05 and APW06), 16 compliance monitoring wells (APW02, APW03, APW04, APW05S, APW07, APW08, APW09, APW10, APW11, APW12, APW13, APW14, APW15, APW16, APW17, and APW18), and two temporary water level only surface water staff gages (XSG01 and SG02) to monitor potential impacts from the PAP [16]. These monitoring wells are screened within the UD/PMP (APW02, APW03, APW04, APW05S, and APW12) and the UA (APW05, APW06, APW07, APW08, APW09, APW10, APW11, APW13, APW14, APW15, APW16, APW17, and APW18) along the perimeter of the PAP. Porewater samples are collected from locations XPW01 and XPW02 on the northern side of the PAP, and from XPW03 and XPW04 on the northeastern side of the PAP (**Figure 2-2**).

2.5 Hydrogeologic Conceptual Site Model

The HCR [5] and information provided above forms the foundation of the PAP hydrogeological setting. The PAP overlies a potential recharge area for the underlying transmissive geologic media, which are composed of unlithified deposits. Recharge migrates downward into and through the UD and UCU into the UA. In locations where recharge intersects the Hagarstown, it mixes with groundwater and migrates within the unit, which is also monitored as a PMP in addition to the UA.

The silts of the UD and sands of the PMP are hydraulically connected and considered a single hydrostratigraphic unit although groundwater migration will be variable based on localized

hydraulic properties. The groundwater flow in the silts and clays of the UD and confining units of the UCU, LCU, and BCU is expected to be primarily vertical. The Hagarstown member PMP and sands of the UA are the primary units where the majority of the horizontal groundwater migration is expected to occur. The geologic conceptual model for the site used for the groundwater modeling [17] consists of the following layers:

- Silts and Clays (UD) – silt and clayey silt of the Peoria Silt and Sangamon Soil which extends beneath the topsoil.
- Discontinuous sands (PMP) – sandier soils of the Hagarstown Member.
- Vandalia Till (UCU) – a thick layer of low permeability till consisting of the Vandalia Till.
- Sands (UA) – sands and gravels of the Mulberry Grove Formation, laterally continuous sand and gravel deposit identified beneath the site.
- Smithboro Till (LCU) – composed of lean clay Smithboro Till and Banner Formation.
- BCU – lowermost unit identified at the site and underlies all unlithified deposits. This unit is composed of low permeability shale of the Mattoon Formation.
- Alluvial deposits of the Cahokia formation may replace UD and UCU deposits along the southeastern boundary of the PAP.

The United States Geological Survey (USGS) National Map places the NPP within the upper Illinois-Little Wabash watershed subbasin (Hydrologic Unit Code 05120114). The PAP hydrogeologic CSM extent is bounded by a hydrological catchment (watershed) divide to the east based on watershed data from USGS. The Newton Lake water levels are managed such that they remain at an elevation between 504.23 and 504.82 feet. Newton Lake is the receiving body of water for surface water.

Precipitation infiltrates and recharges the groundwater table throughout the site and upgradient. Groundwater in the UD migrates downward into the discontinuous sands of the Hagarstown Formation. The Hagarstown Formation, where present, is considered a PMP for groundwater adjacent to the PAP and localized lateral migration of groundwater may occur. The sands of the UA are separated from the Hagarstown Formation PMP and the base of CCR in the PAP by the laterally continuous low permeability UCU. The UA receives water from the overlying geologic units and potentially through its interpreted connection with Newton Lake. Water that percolates downward from layers overlying the UA is most likely to travel laterally from the site within the UA due to the lateral continuity, relatively high permeability, and horizontal gradients present within the UA as described above. Further downward migration is also limited by the relatively thick and low permeability LCU.

Based on the geology and hydrogeology, monitoring wells at the PAP can be separated into three distinct groupings which exhibit similar geologic and hydraulic characteristics. Monitoring well groupings are summarized as follows:

- UD/PMP wells: shallow wells (generally less than 40 feet bgs) screened in low to moderate permeability materials (generally $\leq 10^{-4}$ cm/s) including APW02, APW03, APW04, and APW05S. Based on the water levels measured within the PAP, UD/PMP wells are downgradient of the PAP.

Eastern UA wells: wells located on the eastern half of the PAP (APW05, APW10, APW11, APW13, and APW14) where the top of the UA is slightly shallower (~40 to 60 feet bgs). Results indicate that the hydraulic conductivity of the UA is lowest where the UA is shallowest at monitoring wells APW05 and APW10. Groundwater flow directions indicate these wells are currently downgradient of the former drainage feature that was present prior to construction of the PAP.

- Western UA wells: wells located on the western half of the PAP (APW06, APW07, APW08, APW15, APW16, APW17, and APW18) where the top of the UA is slightly deeper (~60 to 90 feet bgs). Several of these wells had high hydraulic conductivities. Groundwater flow directions indicate these wells represent groundwater from the western portion of the PAP and from areas located west of the PAP.

3. OCCURRENCE AND DISTRIBUTION OF GROUNDWATER EXCEEDANCES (EXTENT)

Results from groundwater samples collected from the PAP during E001 were received on June 8, 2023. In accordance with 35 I.A.C. § 845.610(b)(3)(C), comparison of statistically derived values with the GWPSs described in 35 I.A.C. § 845.600 to determine exceedances of the GWPS was completed [2]. Exceedances for which an ASD was not completed include the following parameters and wells by hydrostratigraphic unit:

- UA (**Figure 3-1**):
  - Sulfate at APW10
- UD (PMP; **Figure 3-2**):
  - Lithium at APW02
  - Sulfate at APW02, APW04, and APW05S
  - TDS at APW02, APW04, and APW05S

3.1 Additional Investigation to Define Nature and Extent

Following initial sampling in 2021, potential exceedances of the GWPS were identified for the parameters and locations identified above [18]. Additional investigation was completed in 2021 to collect soil samples and surface water samples to further evaluate the concentrations and potential attenuation mechanisms near the PAP (**Appendix A** and **Appendix B**).

A total of seven borings were advanced adjacent to locations with potential exceedances (APW02, APW04, APW05S, and APW10), and porewater wells (XPW01 and XPW04). Solids samples were collected and analyzed for the following:

- 6010B for 7-step sequential extraction (Iron, Aluminum, Arsenic, Manganese, Lead, Lithium, Molybdenum, Cobalt, Calcium, Beryllium, Selenium, and Chromium);
- EPA 6010B for Total Metals (Iron, Aluminum, Arsenic, Manganese, Lead, Lithium, Molybdenum, Cobalt, Calcium, Beryllium, Selenium, and Chromium);
- Bulk Mineralogy by Reitveld x-ray diffraction (XRD) Analysis;
- Cation Exchange Capacity (CEC) Analysis;
- Total Organic Carbon Analysis; and,
- SPLP Method 1312 Leachability Test (for CCR source samples only).

In addition, 28 surface water samples were collected to characterize the water quality in Newton Lake. Surface water samples were analyzed for 35 I.A.C. § 845.600 parameters (total and dissolved), ferrous and ferric iron, major ions, and monitored natural attenuation parameters. Data from this investigation has been incorporated into this report where applicable.

3.2 Extent in the Uppermost Aquifer

Groundwater samples are evaluated quarterly and exceedances are identified following comparison of lower confidence limits (LCLs) to the GWPSs described in 35 I.A.C. § 845.600. The

LCLs vary as the dataset is updated to include additional quarterly events (**Table 3-1**). The discussion below includes ranges of concentrations measured in wells with exceedances, because there is no single value for LCLs.

3.2.1 Sulfate

Sulfate exceedances in the UA are limited to APW10. Monitoring well APW10 is located on the southeast berm of the unit, between the PAP and Newton Lake. Concentrations of sulfate in APW10 range from 390 to 540 mg/L. The extents of concentrations above the GWPS are defined laterally in the UA to the southwest by monitoring well APW13 (**Figure 3-1**). The boring log from APW12 (location shown on **Figure 2-10**) indicates that the UA is not present northeast of APW10, and exceedances are not expected to extend a significant distance in this direction due to observed groundwater flow directions and the absence of UA materials observed at APW12. Newton Lake is located approximately 100 feet downgradient of APW10 and comparison of water elevations indicates that groundwater migrates toward Newton Lake. The extent of sulfate is defined downgradient by surface water samples collected near APW10 which indicate concentrations of sulfate are 39 mg/L (**Appendix B**), comparable to concentrations measured for sulfate in ambient portions of the lake distant from the PAP.

Downward migration of sulfate in the UA at APW10 is inhibited by the underlying Smithboro Till which has a thickness of greater than 10 feet. Vertical permeability tests completed on samples of the LCU beneath the UA indicate a geometric mean vertical hydraulic conductivity of 9.3×10^{-8} cm/s with a range from 2.4×10^{-8} to 2.7×10^{-7} cm/s. This is very low relative to the horizontal hydraulic conductivity measured within APW10 (5.5×10^{-4} cm/s). The significant contrast in permeability (greater than two orders of magnitude) indicates groundwater will preferentially migrate horizontally toward Newton Lake and the elevated sulfate concentrations will not extend into the underlying till and shale bedrock.

3.3 Extents in Upper Drift /Potential Migration Pathways

3.3.1 Sulfate

Concentrations of sulfate exceed the GWPS (400 mg/L) at UD/PMP wells APW02, APW04, and APW05S. Concentrations and the extent of sulfate at these locations (**Figure 3-2**) are summarized as follows:

- APW02 – Concentrations range from 1,500 to 3,200 mg/L. The lateral and downgradient extent of sulfate concentrations near APW02 is currently being investigated but is ultimately limited downgradient by Newton Lake. Concentrations of sulfate in Newton Lake near this location were 38 mg/L (**Appendix B**), comparable to concentrations measured for sulfate in ambient portions of the lake distant from the PAP. Vertically, the extent of sulfate is limited by the low permeability Vandalia Till which underlies this well (APW17 [40 to 42 feet bgs], 3.4×10^{-8} cm/s), and is supported by the low sulfate concentrations reported in APW17 (non-detect to 64 mg/L) which is nested with APW02 and screened in the UA beneath the PMP.
- APW04 – Concentrations range from 760 to 990 mg/L. The lateral extent of sulfate concentrations in the UD near APW04 is defined to the north by APW12 (56 to 712 mg/L) and to the southwest by APW03 (110 to 190 mg/L). APW04 is located approximately 100 feet from Newton Lake. As discussed for APW10, concentrations of sulfate in the adjacent area of

Newton Lake were 39 mg/L. Vertical extents at this location were discussed in the previous section regarding APW10.

- APW05S – Concentrations range from 200 to 2,100 mg/L. The lateral and downgradient extent of sulfate concentrations near APW05S is currently being investigated to the north and east but is defined by APW12 (56 to 712 mg/L) to the east. Vertically, the extent of sulfate is limited by the low permeability Vandalia Till which underlies this well (range of 6.3×10^{-9} to 9.7×10^{-8} cm/s measured in the till onsite). Lack of vertical migration is also supported by the low sulfate concentrations reported in APW05 (non-detect at 15 mg/L) which is nested with APW05S and screened in the UA beneath the PMP.

3.3.2 Lithium

Monitoring well APW02 is located near the southwest corner of the PAP and screened within the low conductivity materials of the UD. Concentrations of lithium range from 0.079 to 0.3 mg/L. The lateral and downgradient extent of lithium concentrations near APW02 is limited downgradient by Newton Lake and additional data is currently being collected to further evaluate the extent of lithium and sulfate concentrations in groundwater. Concentrations of lithium were not detected in Newton Lake near this location (<0.02 mg/L; **Appendix B**). Vertically, the extent of lithium is limited by the low permeability Vandalia Till which underlies this well (APW17 [40 to 42 feet bgs], 3.4×10^{-8} cm/s), and is supported by the low lithium concentrations reported in APW17 (non-detect to 0.0099 mg/L) which is nested with APW02 and screened in the UA beneath the PMP.

3.3.3 Total Dissolved Solids

TDS results indicate the mass of dissolved material in the groundwater and is a representation of multiple constituents present in the groundwater. Typically, major ions (such as sulfate) represent the primary contributors to TDS. TDS exceeded the GWPS at APW02 and APW04. Concentrations and the extent of TDS at these locations is summarized as follows:

- APW02 – Concentrations range from 1,910 to 5,500 mg/L. The lateral and downgradient extent of TDS concentrations near APW02 is currently being investigated but is limited downgradient by Newton Lake. Concentrations of TDS in Newton Lake near this location were 170 mg/L (**Appendix B**). Vertically, the extent of sulfate is limited by the low permeability Vandalia Till which underlies this well (APW17 [40 to 42 feet bgs], 3.4×10^{-8} cm/s), and is supported by the low TDS concentrations reported in APW17 which is nested with APW02 and screened in the UA beneath the PMP.
- APW05S - Concentrations range from 3,200 to 4,000 mg/L. The lateral and downgradient extent of TDS concentrations near APW05S is currently being investigated to the north and east but is defined by APW12 (990 to 1,740 mg/L) to the east. Vertically, the extent of TDS is limited by the low permeability Vandalia Till which underlies this well (range of 6.3×10^{-9} to 9.7×10^{-8} cm/s measured in till onsite) and is supported by the low TDS concentrations reported in APW05 (470 to 1,000 mg/L) which is nested with APW05S and screened in the UA beneath the PMP. Concentrations above the GWPS do not extend past the waste boundary downgradient as evidenced by concentrations in wells APW03 and APW04.

4. GEOCHEMICAL CONCEPTUAL SITE MODEL (NATURE)

A GCSM was developed to describe the conditions of the groundwater in the vicinity of the NPP PAP and is summarized here (full analysis presented in **Appendix C**). The GCSM describes the geochemical processes that contribute to the mobilization, distribution, and attenuation of chemicals in the environment. Only parameters that have exceeded the GWPS in PAP groundwater and will be addressed in the corrective action plan are included in the GCSM. As discussed in previous sections the exceedances observed at the PAP include sulfate, TDS, and lithium.

The GCSM includes two hydrostratigraphic units: the shallow UD/PMP and the deeper UA. The UA is shallowest (*i.e.*, in closest proximity to the upper drift/primary migration pathway) on the east side of the PAP. Groundwater in the UD/PMP and eastern UA wells tend to be geochemically similar: groundwater from these locations tends to be more oxidizing, exhibit lower pH, and have a cation signature dominated by calcium and magnesium. Groundwater in the rest of the UA tends to be more reducing (exhibiting higher dissolved iron concentrations), have higher pH, and have a greater contribution of sodium and potassium to the cation signature. These results suggest some degree of hydraulic connection between the UD/PMP and UA east of the PAP.

Sulfate is the major contributor to TDS in the PAP groundwater. Therefore, processes that control sulfate concentrations also control TDS. Elevated sulfate concentrations were observed in shallow groundwater wells (screened in the upper drift/primary migration pathway) and UA wells located east of the PMP. Sulfate in CCR porewater and the UD/PMP groundwater is correlated with sodium, indicating that dissolution of sodium sulfate from the CCR material is the primary source of sulfate to the CCR porewater. Sulfate exceedances in the UA, which occur exclusively on the east side of the PAP, are consistent with water migration from the UD/PMP. Potential sulfate attenuation mechanisms at the NPP PAP include sorption to solid-phase iron oxides. Based on results from laboratory batch testing, sulfate sorption may be more likely in the UA.

Lithium concentrations in groundwater are highest in UD/PMP and eastern UA groundwater. Although lithium was identified in solid samples located both upgradient and downgradient of the PAP, the similar distributions of lithium and sulfate suggest that CCR porewater is the primary source of lithium to the groundwater. The difference in groundwater lithium concentrations may be due to variability in porewater concentration or in attenuation to aquifer solids. Lithium in groundwater may be attenuated by sorption to exchangeable sites (readily reversible) or incorporation in clay mineral matrices (poorly reversible). According to results from laboratory batch testing, lithium may sorb to both UA/PMP and UA solids.

5. COMBINED GEOCHEMICAL AND HYDROGEOLOGIC CONCEPTUAL SITE MODELS

5.1 Sulfate and TDS Conceptual Site Model

The CSM describing current conditions at the PAP combining the hydrogeologic and geochemical CSMs for sulfate and TDS is as follows. Surface water within the PAP comes into contact with CCR and once it enters the pore spaces within the CCR we characterize it as porewater within the unlined CCR unit. Porewater containing elevated concentrations of sulfate mixes with groundwater of the UD. Groundwater within the UD/PMP in the vicinity of the PAP travels horizontally outward from the PAP, ultimately migrating toward Newton Lake, or vertically into the clay of the UCU that separates the UD from the UA. Sulfate concentrations are attenuated physically through dilution and dispersion; and may be geochemically attenuated by sorption to iron oxides. The limit of sulfate exceedances is defined by wells in the UA with concentrations below the GWPS and Newton Lake, where sulfate concentrations near APW10 are 39 mg/L (**Appendix B**). The sulfate concentrations in Newton Lake were evaluated and they do not present unacceptable risk [1]. Sulfate exceedances of the GWPS have been observed in 3 of 5 UD wells and 1 of 13 UA wells. The presence or absence of exceedances can be attributed to variability in both sulfate concentration within the CCR of the PAP and the extent of water migration between the UD/PMP and UA.

5.2 Lithium Conceptual Site Model

The CSM describing current conditions at the PAP combining the hydrogeologic and geochemical CSMs for lithium is as follows. Surface water within the PAP comes into contact with CCR and once it enters the pore spaces within the CCR we characterize it as porewater within the unlined CCR unit. Porewater containing elevated concentrations of lithium mixes with groundwater of the UD/PMP. Groundwater within the UD in the vicinity of the PAP travels horizontally outward from the PAP, ultimately migrating toward Newton Lake, or vertically into the clay of the UCU that separates the UD from the UA. Lithium concentrations are attenuated physically through dilution and dispersion and may be geochemically attenuated by sorption to and incorporation into clay minerals. The lithium exceedance is limited to one location (APW02) and is being further investigated laterally, but is limited in extent by Newton Lake, where concentrations in surface water were < 0.02 mg/L (**Appendix B**). The lithium concentrations in Newton Lake were evaluated and they do not present unacceptable risk [1]. Lithium exceedances of the GWPS have only been observed in UD well APW02 located along the western side of the PAP, which is the same side of the PAP where the highest concentrations of lithium were observed in porewater (XPW01), indicating exceedances at APW02 may be a result of proximity to portions of the PAP where CCR porewater contains relatively higher concentrations of lithium.

6. CONCLUSIONS AND FUTURE ACTIVITIES

In accordance with 35 I.A.C. § 845.650(d)(1), the nature and extent of GWPS exceedances of sulfate, TDS, and lithium have been described in sufficient detail to support a complete and accurate assessment of the corrective measures necessary to effectively clean up all releases from the PAP.

The lateral extents of exceedances are illustrated in **Figures 3-1 and 3-2**. As discussed in Sections 3.3.1 and 3.3.2, the horizontal delineation of lithium at APW02 is ongoing, as well as additional characterization of sulfate exceedances at APW04, APW05S, and APW10. Wells will be installed upgradient of APW05S; downgradient of APW02, APW04, and APW10; and along the NEW PAP waste boundary, adjacent to APW02 in 2024. Findings from the installation and sampling of these additional wells will be incorporated into the final Corrective Action Plan Permit application, which will be submitted in 2025.

Sulfate was selected for modeling source control presented in the Final Closure Plan and was identified as a surrogate for the exceedances of lithium and TDS, as described in the Groundwater Modeling Report (GMR) [17]. For modeling purposes it was assumed that sulfate would not significantly sorb or chemically react with aquifer solids (soil adsorption coefficient [Kd] was set to 0 milliliters per gram [mL/g]), which is a conservative estimate for predicting contaminant transport times in the model. Additional geochemical modeling will be completed to evaluate how sorption to solid phases may affect sulfate and lithium mobility and therefore the time to reach the GWPS for these parameters.

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TABLES

TABLE 2-1. FIELD HYDRAULIC CONDUCTIVITIES
NATURE AND EXTENT REPORT
NEWTON POWER STATION
PRIMARY ASH POND
NEWTON, ILLINOIS

Well ID	Gradient Position	Bottom of Screen Elevation (ft NAVD88)	Screen Length [1] (ft)	Field Identified Screened Material	Slug Type	Analysis Method	Falling Head (Slug In) K (cm/s)			Rising Head (Slug Out) K (cm/s)			Minimum Hydraulic Conductivity (cm/s)	Maximum Hydraulic Conductivity (cm/s)	Hydraulic Conductivity Geometric Mean (cm/s)
							1	2	3	1	2	3			
Upper Drift Unit/Potential Migration Pathway															
APW5S	U	521.05	10	SP	Solid	C-B-P	8.9E-04	7.4E-04		6.1E-04	8.5E-04		6.1E-04	1.5E-02	3.1E-03
APW12	U	513.33	10	SP	Solid	C-B-P	1.3E-02	9.8E-03		1.3E-02	1.5E-02				
Uppermost Aquifer															
APW11	U	471.05	5	SP-SC/GP	Solid	KGS Model	6.8E-03	5.9E-03		3.5E-03	7.8E-03		2.0E-04	1.5E-01	6.8E-03
APW13	D	471.66	5	SM	Solid	C-B-P	1.6E-03	1.5E-03	3.3E-03	3.8E-03	3.4E-03				
APW14	D	468.85	5	SC	Solid	KGS Model	3.9E-03	4.3E-03		3.2E-04	3.2E-04	2.8E-03			
APW15	D	419.06	5	SP-SM	Solid	KGS Model	4.9E-04	2.0E-04	1.4E-01	1.5E-01	1.5E-01				
APW16	D	443.66	5	SP	Solid	B-Z	1.24E-01	1.41E-01		7.60E-02	7.96E-02				
APW17	D	437.84	5	(SW)g/(SP)g	Solid	C-B-P	1.13E-01	1.15E-02							
APW18	D	460.55	5	(SW)g/SC	Solid	C-B-P	2.67E-04								
Ash Pond															
XPW01	CCR	531.62	10	(SW)g	Solid	Bouwer-Rice	1.8E-01	1.3E-02		2.4E-02	1.4E-02		1.0E-03	2.3E-01	2.0E-02
XPW02	CCR	535.97	10	(SW)g	Solid	Bouwer-Rice	2.0E-03	2.6E-03							
XPW03	CCR	530.81	10	(SW)g/SP	Solid	Bouwer-Rice	5.7E-02	7.2E-02	2.3E-01	1.5E-01	1.2E-01	1.4E-01			
XPW04	CCR	531.90	10	(SW)g	Solid	KGS Model		2.1E-03		1.2E-03	1.0E-03				

[O: SSW 7/1/20; U:SSW 8/20/21; C:LDC 08/31/21]

Notes:
[1] All wells are constructed from 2 inch PVC with 0.01 inch slotted screens.
Test not analyzed/performed
B-Z = Butler-Zhan Test Solution
C-B-P = Cooper-Bredehoeft-Papadopulos Slug Test Solution
CCR = coal combustion residuals
cm/s = centimeters per second
D = downgradient
ft = foot/feet
K = hydraulic conductivity
KGS = Kansas Geological Survey
NAVD88 = North American Vertical Datum of 1988
U = upgradient

USCS = Unified Soil Classification System
GP = Poorly Graded Gravel
SC = Clayey Sand
SM = Silty Sand
SP = Poorly Graded Sand
SP-SC = Poorly Graded Sand to Clayey Sand
SP-SM = Poorly Graded Sand with Silt
(SW)g = Well Graded Sand with Gravel

TABLE 2-2. GEOTECHNICAL DATA SUMMARY
NATURE AND EXTENT REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Sample ID	Field Location ID	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	HSU	Moisture Content (%)	Dry Density (pcf)	Specific Gravity	Calculated Porosity [1] (%)	Vertical Hydraulic Conductivity (cm/s)	LL	PL	PI	Laboratory USCS	Gravel (%)	Sand (%)	Fines (%)
Sangamon Soil																
APW11	APW11	10	12	UD	17.8	111.7	2.645	32	8.57E-08	28	12	16	CL	1.1	45.1	53.8
APW15	APW15	20	22	UD	18.5	109.8	2.686	34	3.21E-08	33	10	23	CL	0.0	40.8	59.2
Hagarstown Member																
APW12	APW12	20	22	UD/PMP	15.1	118.3	2.694	30	1.07E-07	27	12	15	SC	7.4	46.8	45.8
APW12	APW12	25.5	26	UD/PMP	8.4	113.0	2.654	32	8.43E-06	10	13	NP	SP-SM	24.3	69.5	6.2
APW13	APW13	25	27	UD/PMP	21.2	87.1	2.649	47	9.63E-05	9	10	NP	SP-SM	0.0	88.9	11.1
Vandalia Till Member																
APW14	APW14	45	47	UCU	12.4	119.6	2.706	29	9.65E-08	26	14	12	CL	4.4	32.3	63.3
APW17	APW17	40	42	UCU	16.6	108.8	2.709	36	3.34E-08	26	13	13	CL	1.3	27.6	71.1
SB300	APW18	50	52	UCU	12.9	122.7	2.700	27	7.29E-08	32	12	20	CL	0.8	22.4	76.8
SB301	SB301	48	50	UCU	14.1	117.3	2.697	30	6.63E-08	27	14	13	CL	0.4	34.2	65.4
Mulberry Grove Member																
APW13	APW13	60.5	61	UA	14.5	114.3	2.661	31	2.18E-04	8	13	NP	SM	0.3	75.2	24.5
APW15	APW15	100.5	101	UA	12.1	116.4	2.665	30	3.50E-06	15	12	3	SM	4.4	49.8	45.8
APW17	APW17	71	71.5	UA	7.8	110.2	2.660	34	7.21E-04	5	9	NP	SW-SM	14.3	76.8	8.9
APW17	APW17	90.5	91	UA	6.1	116.8	2.672	30	6.39E-04	6	8	NP	SP-SM	28.2	65.1	6.7
SB300	APW18	61	61.5	UA	13.6	109.6	2.686	35	1.85E-05	5	9	NP	SM	4.7	78.2	17.1
Smithboro Till Member																
APW11	APW11	61	61.5	LCU	17.8	110.5	2.686	34	1.87E-07	27	18	9	CL	0.0	21.4	78.6
APW11	APW11	80	82	LCU	16.5	116.1	2.705	31	2.94E-08	32	14	18	CL	0.0	21	79
APW12	APW12	85	87	LCU	14.4	116.4	2.711	31	2.36E-08	29	14	15	CL	0.3	19.5	80.2
APW14	APW14	55.5	56	LCU	18.0	104.6	2.709	38	2.74E-07	25	15	10	CL	0.0	27.8	72.2
APW15	APW15	105	107	LCU	19.1	107.8	2.695	36	8.20E-08	29	13	16	CL	0.0	23.8	76.2
SB300	APW18	62.5	63	LCU	11.1	124.6	2.659	25	4.32E-06	20	14	6	CL-ML	0.0	42.4	57.6
SB300	APW18	105	107	LCU	14.1	116.4	2.710	31	4.28E-08	28	13	15	CL	0.0	30.7	69.3
SB301	SB301	68.5	69	LCU	13.1	121.3	2.723	29	4.05E-08	23	14	9	CL	0.0	31.3	68.7
SB301	SB301	98	100	LCU	15.7	118.2	2.720	30	6.13E-08	37	15	22	CL	0.0	17.8	82.2
CCR																
XPW01	XPW01	8.5	9	CCR	18.6	87.7	2.675	47	1.71E-04	47	57	NP	SP-SM	37.1	51.1	11.8
XPW01	XPW01	15.5	16	CCR	12.6	84.4	2.741	51	1.58E-05	35	17	18	CL	4.6	34.1	61.3
XPW03	XPW03	6	6.5	CCR	17.4	75.3	2.663	55	1.34E-03	33	27	6	SM	6.8	71.7	21.5
XPW03	XPW03	15.5	16	CCR	16.7	103.6	2.689	38	9.70E-05	12	19	NP	SM	16.4	67.3	16.3
XPW04	XPW04	6.5	7	CCR	31.1	73.9	2.697	56	1.61E-04	41	38	3	SM	1.6	84.5	13.9
XPW04	XPW04	15.5	16	CCR	31.1	80.8	2.650	51	7.83E-05	46	42	4	SM	15.7	51	33.3

TABLE 2-2. GEOTECHNICAL DATA SUMMARY
NATURE AND EXTENT REPORT
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Sample ID	Field Location ID	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	HSU	Moisture Content (%)	Dry Density (pcf)	Specific Gravity	Calculated Porosity [1] (%)	Vertical Hydraulic Conductivity (cm/s)	LL	PL	PI	Laboratory USCS	Gravel (%)	Sand (%)	Fines (%)
Fill																
XPW02	XPW02	8	8.5	CCR	29.1	92.9	2.691	45	6.07E-08	36	16	20	CL	0.3	44.8	54.9
XPW02	XPW02	16.5	17	CCR	21.8	103.7	2.694	38	7.38E-08	36	14	22	CL	0.0	19.8	80.2

[O: SSW 04/22/21, U:EDP 08/23/21, U: SSW 08/26/21, C: LDC 08/31/21; U: LDC 09/16/21, C: SSW 09/21/21]

Notes:
[1] Porosity calculated as relationship of bulk density to particle density (n = 100[1- (pb/pd)])
% = Percent
bgs = below ground surface
CCR = coal combustion residuals
cm/s = centimeters per second
ft = foot/feet
in = inch
LL = Liquid limit
NP = Non Plastic
pcf = pounds per cubic foot
PI = Plastic Index
PL = Plasticity Limit

HSU = Hydrostratigraphic Unit
LCU = lower confining unit
PMP = potential migration pathway
UA = uppermost aquifer
UCU = upper confining unit
UD = upper drift

USCS = Unified Soil Classification System
CL - Lean Clay
CL-ML = Silty Lean Clay
SC = Clayey Sand
SM = Silty Sand
SP-SM = Poorly Graded Sand with Silt
SW-SM = Well Graded Sand with Silt

Table 3-1. Exceedance Parameter Statistical Results
Nature and Extent Report
Newton Power Plant
Primary Ash Pond
Newton, Illinois

Location	Parameter	Unit	Groundwater Protection Standard	2023 Q1 LCL	2023 Q2 LCL	2023 Q3 LCL
APW02	Lithium, total	mg/L	0.04	0.09	0.09	0.10
APW02	Sulfate, total	mg/L	400	2,900	2,860	2,860
APW02	Total Dissolved Solids	mg/L	1,200	5,180	5,000	5,000
APW04	Sulfate, total	mg/L	400	844	837	832
APW04	Total Dissolved Solids	mg/L	1,200	1,710	1,720	1,720
APW05S	Sulfate, total	mg/L	400	640	640	640
APW05S	Total Dissolved Solids	mg/L	1,200	3,450	3,390	3,360
APW10	Total Dissolved Solids	mg/L	400	410	410	410

Notes:
LCL - Lower Confidence Level

Table 3-2. Summary of Groundwater Data
Nature and Extent Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Parameter	Unit	Sample Count	Non-Detect Results	Percent Non-Detect Results	First Sample	Last Sample	Minimum	Median	Mean	Maximum
UD	APW02	C	Lithium, total	mg/L	12	0	0	2021/02/17	2023/10/10	0.0790	0.11	0.14	0.300
UD	APW02	C	Sulfate, total	mg/L	12	0	0	2021/02/17	2023/10/10	1,500	3100	2900	3,200
UD	APW02	C	Total Dissolved Solids	mg/L	36	0	0	2010/11/30	2023/10/10	1,910	5100	5000	5,500
UD	APW03	C	Lithium, total	mg/L	12	2	17	2021/02/18	2023/10/10	0.00960	0.017	0.018	0.0350
UD	APW03	C	Sulfate, total	mg/L	12	0	0	2021/02/18	2023/10/10	110	170	150	190
UD	APW03	C	Total Dissolved Solids	mg/L	36	0	0	2010/11/30	2023/10/10	520	640	710	3,000
UD	APW04	C	Lithium, total	mg/L	12	1	8	2021/02/18	2023/10/10	<0.0099	0.021	0.023	0.0450
UD	APW04	C	Sulfate, total	mg/L	12	0	0	2021/02/18	2023/10/10	760	900	890	990
UD	APW04	C	Total Dissolved Solids	mg/L	36	0	0	2010/11/30	2023/10/10	1,600	1900	2000	3,100
UA	APW05	B	Lithium, total	mg/L	22	9	41	2015/12/15	2023/10/10	<0.005	0.0099	0.012	0.0230
UA	APW05	B	Sulfate, total	mg/L	33	8	24	2015/12/15	2023/10/10	<0.12	1.3	3.0	15.0
UA	APW05	B	Total Dissolved Solids	mg/L	32	0	0	2015/12/15	2023/10/10	470	550	550	1,000
UD	APW05S	C	Lithium, total	mg/L	11	0	0	2021/02/17	2023/10/10	0.0328	0.039	0.045	0.0910
UD	APW05S	C	Sulfate, total	mg/L	11	0	0	2021/02/17	2023/10/10	200	1900	1700	2,100
UD	APW05S	C	Total Dissolved Solids	mg/L	11	0	0	2021/02/17	2023/10/10	3,200	3600	3600	4,000
UA	APW06	B	Lithium, total	mg/L	22	8	36	2015/12/15	2023/10/10	<0.005	0.011	0.013	0.0300
UA	APW06	B	Sulfate, total	mg/L	33	4	12	2015/12/15	2023/10/10	<0.062	6.1	5.4	17.0
UA	APW06	B	Total Dissolved Solids	mg/L	32	0	0	2015/12/15	2023/10/10	420	500	500	640
UA	APW07	C	Lithium, total	mg/L	14	11	79	2015/12/15	2023/10/10	<0.0001	<0.0001	0.0020	0.00580
UA	APW07	C	Sulfate, total	mg/L	25	4	16	2015/12/15	2023/10/10	<0.12	7.5	12	66.0
UA	APW07	C	Total Dissolved Solids	mg/L	24	0	0	2015/12/15	2023/10/10	340	540	530	640
UA	APW08	C	Lithium, total	mg/L	14	7	50	2015/12/15	2023/10/10	<0.0001	0.0050	0.0057	0.0170
UA	APW08	C	Sulfate, total	mg/L	25	0	0	2015/12/15	2023/10/10	30.0	42	42	57.0
UA	APW08	C	Total Dissolved Solids	mg/L	24	0	0	2015/12/15	2023/10/10	490	600	590	700
UA	APW09	C	Lithium, total	mg/L	14	9	64	2015/12/15	2023/10/10	<0.0001	<0.0001	0.0032	0.0100
UA	APW09	C	Sulfate, total	mg/L	25	2	8	2015/12/15	2023/10/10	<0.12	9.7	77	1,500
UA	APW09	C	Total Dissolved Solids	mg/L	25	0	0	2015/12/15	2023/10/10	300	760	780	3,200
UA	APW10	C	Lithium, total	mg/L	16	0	0	2015/12/16	2023/10/10	0.0180	0.022	0.023	0.0300
UA	APW10	C	Sulfate, total	mg/L	27	0	0	2015/12/16	2023/10/10	390	410	420	540
UA	APW10	C	Total Dissolved Solids	mg/L	28	0	0	2015/12/16	2023/10/10	840	1000	1000	1,200
UA	APW11	C	Lithium, total	mg/L	12	0	0	2021/02/18	2023/10/10	0.0190	0.022	0.024	0.0380
UA	APW11	C	Sulfate, total	mg/L	12	0	0	2021/02/18	2023/10/10	140	280	270	300
UA	APW11	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/18	2023/10/10	780	840	850	940

Confidential

Table 3-2. Summary of Groundwater Data
Nature and Extent Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

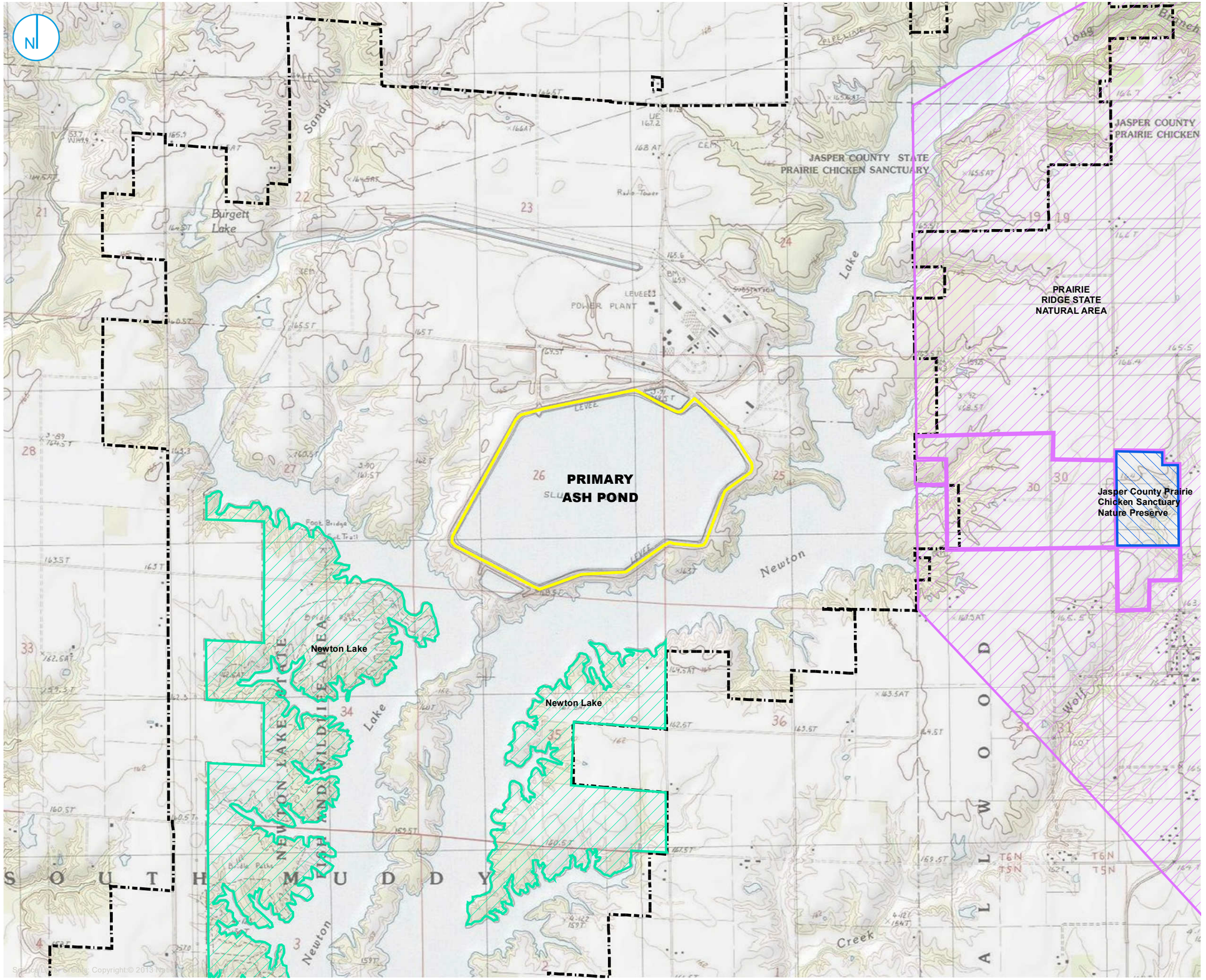
HSU	Location	Well Type	Parameter	Unit	Sample Count	Non-Detect Results	Percent Non-Detect Results	First Sample	Last Sample	Minimum	Median	Mean	Maximum
UD	APW12	C	Lithium, total	mg/L	12	0	0	2021/02/17	2023/10/11	0.0240	0.028	0.031	0.0460
UD	APW12	C	Sulfate, total	mg/L	12	0	0	2021/02/17	2023/10/11	56.0	420	420	712
UD	APW12	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/17	2023/10/11	990	1300	1400	1,740
UA	APW13	C	Lithium, total	mg/L	12	0	0	2021/02/22	2023/10/10	0.0210	0.031	0.033	0.0540
UA	APW13	C	Sulfate, total	mg/L	12	0	0	2021/02/22	2023/10/10	210	220	220	250
UA	APW13	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/22	2023/10/10	760	860	860	940
UA	APW14	C	Lithium, total	mg/L	12	0	0	2021/02/22	2023/10/10	0.0160	0.030	0.031	0.0510
UA	APW14	C	Sulfate, total	mg/L	12	0	0	2021/02/22	2023/10/10	310	330	340	380
UA	APW14	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/22	2023/10/10	830	970	950	1,000
UA	APW15	C	Lithium, total	mg/L	12	6	50	2021/02/23	2023/10/10	0.00610	0.0099	0.011	0.0220
UA	APW15	C	Sulfate, total	mg/L	12	8	67	2021/02/23	2023/10/10	<0.18	<0.18	2.5	16.0
UA	APW15	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/23	2023/10/10	1,000	1100	1100	1,200
UA	APW16	C	Lithium, total	mg/L	12	10	83	2021/02/23	2023/10/10	0.00250	0.0099	0.0079	<0.0099
UA	APW16	C	Sulfate, total	mg/L	12	7	58	2021/02/23	2023/10/10	<0.18	1.90	2.2	14.0
UA	APW16	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/23	2023/10/10	610	750	780	1,300
UA	APW17	C	Lithium, total	mg/L	12	10	83	2021/02/23	2023/10/10	0.00240	0.0099	0.0078	<0.0099
UA	APW17	C	Sulfate, total	mg/L	12	1	8	2021/02/23	2023/10/10	<4.6	40	40	64.0
UA	APW17	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/23	2023/10/10	620	660	660	700
UA	APW18	C	Lithium, total	mg/L	12	9	75	2021/02/23	2023/10/10	<0.005	0.0099	0.0083	<0.0099
UA	APW18	C	Sulfate, total	mg/L	12	2	17	2021/02/23	2023/10/10	<0.18	11	21	52.0
UA	APW18	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/23	2023/10/10	450	570	570	660

Notes:
B = Background
C = Compliance
HSU = Hydrostratigraphic Unit
UA = Uppermost Aquifer
UD = Upper Drift

Confidential

FIGURES

Y:\Mapping\Projects\221228\MXD\Nature_and_Extent\NEW\Nature_and_Extent_Report\Figure 2-1_Site Location Map.mxd



REGULATED UNIT (SUBJECT UNIT)

JASPER COUNTY PRAIRIE CHICKEN SANCTUARY NATURE PRESERVE

NEWTON LAKE STATE FISH AND WILDLIFE AREA

PRAIRIE RIDGE STATE NATURAL AREA

PROPERTY BOUNDARY

0 1,000 2,000 Feet

SITE LOCATION MAP

NATURE AND EXTENT REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: 169000XXXX | DATED: 3/7/2024 | DESIGNER: GALARNMC

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- PORE WATER WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, LAKE
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- PROPERTY BOUNDARY

0 500 1,000 Feet

SITE MAP

NATURE AND EXTENT REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

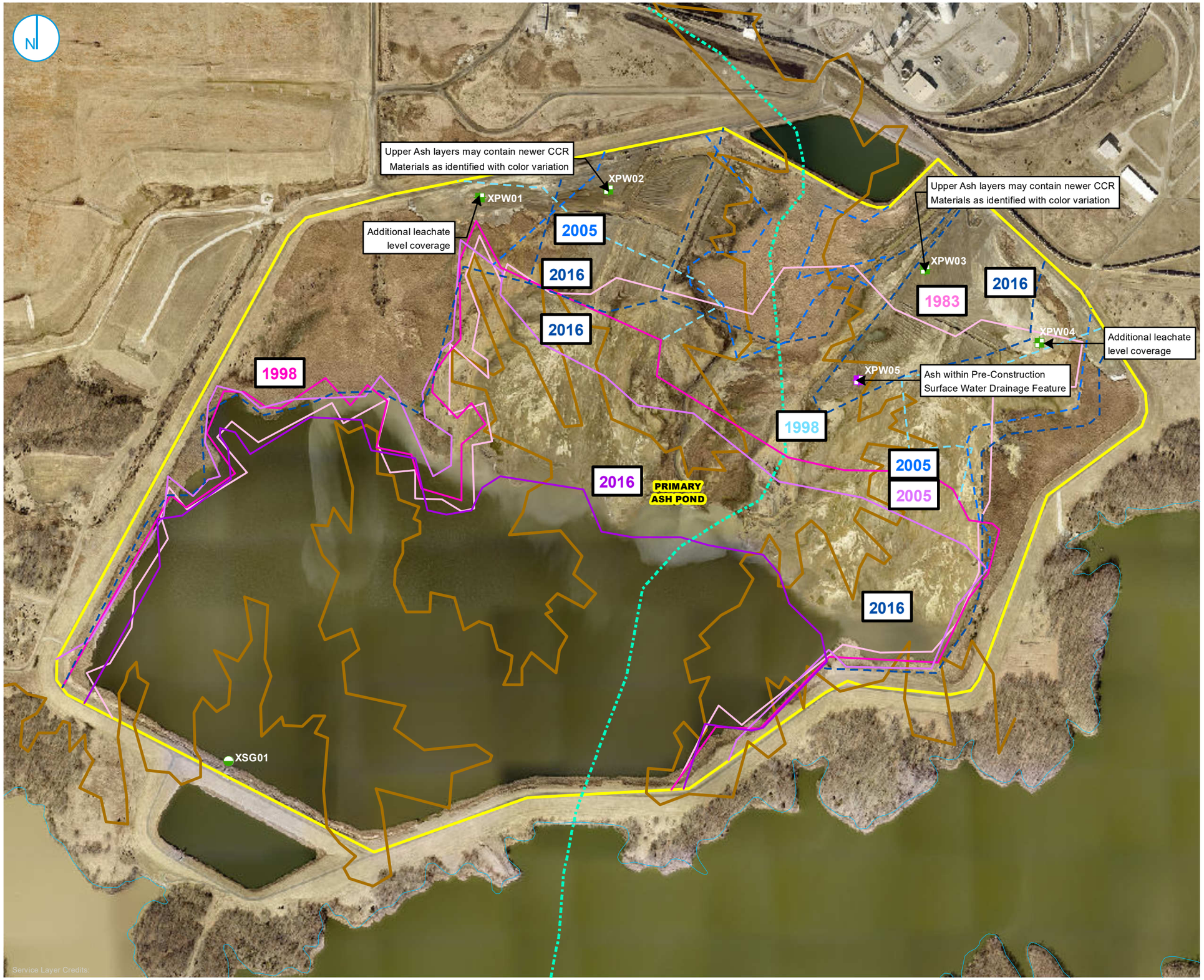
FIGURE 2-2

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\22885\MXD\Nature_and_Extent\NEW\Nature_and_Extent_Report\Figure 2-2. Site Map.mxd

PROJECT: 169000XXX | DATED: 3/13/2024 | DESIGNER: GALARNMC



PORE WATER WELL

STAFF GAGE, CCR UNIT

PROPOSED LOCATION COULD NOT BE ACCESSED

APPROXIMATE LOCATION OF STREAM BASED ON 1953 TOPOGRAPHIC MAP (BASE OF STREAM ELEVATION DECREASES SOUTH TOWARD NEWTON LAKE)

APPROXIMATE LOCATION OF 530 FOOT GROUND SURFACE ELEVATION CONTOUR BASED ON 1953 TOPOGRAPHIC MAP (PRE-CONSTRUCTION SURFACE WATER DRAINAGE FEATURE)

APPROXIMATE LIMITS OF ASH BASED ON 1983 AERIAL

APPROXIMATE LIMITS OF ASH BASED ON 1998 AERIAL

APPROXIMATE LIMITS OF ASH BASED ON 2005 AERIAL

APPROXIMATE LIMITS OF ASH BASED ON 2016 AERIAL

APPROXIMATE LIMITS OF VARIANCE IN CCR MATERIAL COLORATION AS OBSERVED IN 1998 AERIAL

APPROXIMATE LIMITS OF VARIANCE IN CCR MATERIAL COLORATION AS OBSERVED IN 2005 AERIAL

APPROXIMATE LIMITS OF VARIANCE IN CCR MATERIAL COLORATION AS OBSERVED IN 2016 AERIAL

SURFACE WATER FEATURE

REGULATED UNIT (SUBJECT UNIT)

0 275 550
Feet

CCR OBSERVATIONS

NATURE AND EXTENT REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-3

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\22851MXD\Nature_and_Extent\NEW\Nature_and_Extent_Report\Figure 2-3. CCR Observations.mxd

PROJECT: 169000XXXX | DATED: 3/7/2024 | DESIGNER: GALARNMC

PORE WATER WELL
STAFF GAGE, CCR UNIT
PROPOSED LOCATION COULD NOT BE COMPLETED
540 ELEVATION CONTOUR
ACTIVE SLUICE AREA
LIMITED ACCESS AREA
LOW LYING VEGETATION AREA
RECENT SLUICE AREA
ELEVATION BELOW 540FT
REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE

0 275 550
Feet

CCR ACCESS SUMMARY

NATURE AND EXTENT REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-4

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\2285\MXD\Nature_and_Extent\NEW\Nature_and_Extent_Report\Figure 2-4. CCR Access Summary.mxd

PROJECT: 169000XXXX | DATED: 3/5/2024 | DESIGNER: GALARNMC

SOIL BORING AND BOTTOM OF ASH ELEVATION

10 FOOT HISTORIC ELEVATION CONTOUR

2 FOOT HISTORIC ELEVATION CONTOUR

CONSTRUCTION DRAWING S-69 INDICATES DRAINAGE FEATURE WAS TO BE FILLED TO MAX ELEVATION 508 PRIOR TO OPERATION OF THE UNIT.

REGULATED UNIT (SUBJECT UNIT)

SITE FEATURE

PROPERTY BOUNDARY

NOTES

1. CONTOUR LINES ARE A HISTORIC LAND SURFACE. THIS SURFACE IS BEING FURTHER EVALUATED AS THE CONSTRUCTION PERMIT IS BEING DEVELOPED.

0 400 800
Feet

BASE OF CCR

NATURE AND EXTENT REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-5

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\22851\MXD\Nature_and_Extent\NEW\Nature_and_Extent_Report\Figure 2-5_Base of CCR.mxd

PROJECT: 169000XXXX | DATED: 3/7/2024 | DESIGNER: GALARNMC

MONITORING WELL

UPPERMOST AQUIFER ELEVATION (10-FOOT INTERVAL)

REGULATED UNIT (SUBJECT UNIT)

SITE FEATURE

PROPERTY BOUNDARY

NOTES:
* = NOT USED FOR CONTOURING
ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

0 400 800
Feet

TOP OF UPPERMOST AQUIFER

NATURE AND EXTENT REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

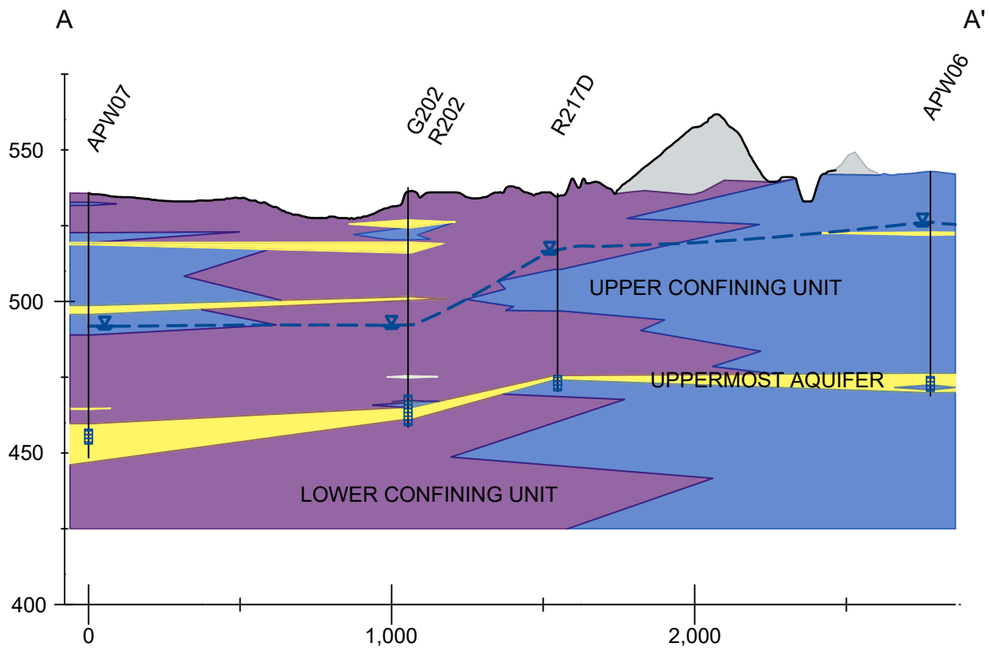
FIGURE 2-6

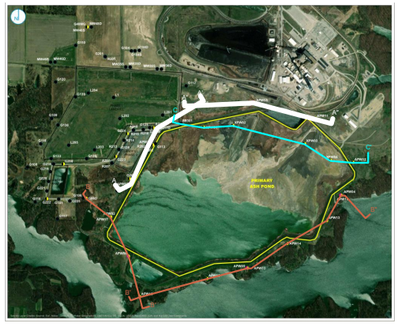
RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\2285\MXD\Nature_and_Extent\NEW\Nature_and_Extent_Report\Figure 2-6_Top of Uppermost Aquifer.mxd

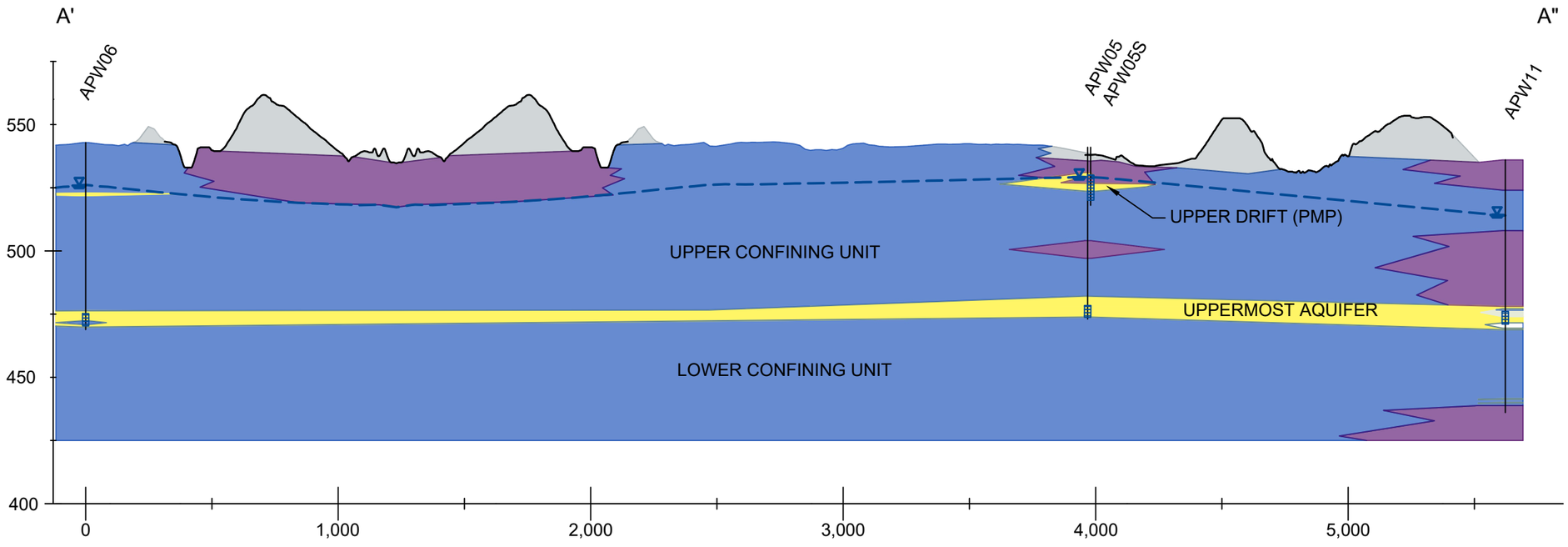
PROJECT: 169000XXXX | DATED: 3/7/2024 | DESIGNER: GALARNMC





NOTES

1. This profile was developed by interpolation between widely spaced boreholes. Only at the borehole location should it be considered as an approximately accurate representation and then only to the degree implied by the notes on the borehole logs.
2. Scale is approximate.
3. Vertical scale is exaggerated 10X.
4. Groundwater elevations measured on June 24, 2021.
5. PMP = potential migration pathway



LEGEND

- FILL
- CLAY (CL/CH)
- SILT (ML)
- SAND (SP/SM/SW)
- GRAVEL (GP/GW)
- WELL SCREEN INTERVAL
- UPPERMOST AQUIFER POTENTIOMETRIC SURFACE
- UPPERMOST AQUIFER GROUNDWATER ELEVATION

50'
0
500'

GEOLOGIC CROSS SECTION
A-A' & A'-A"

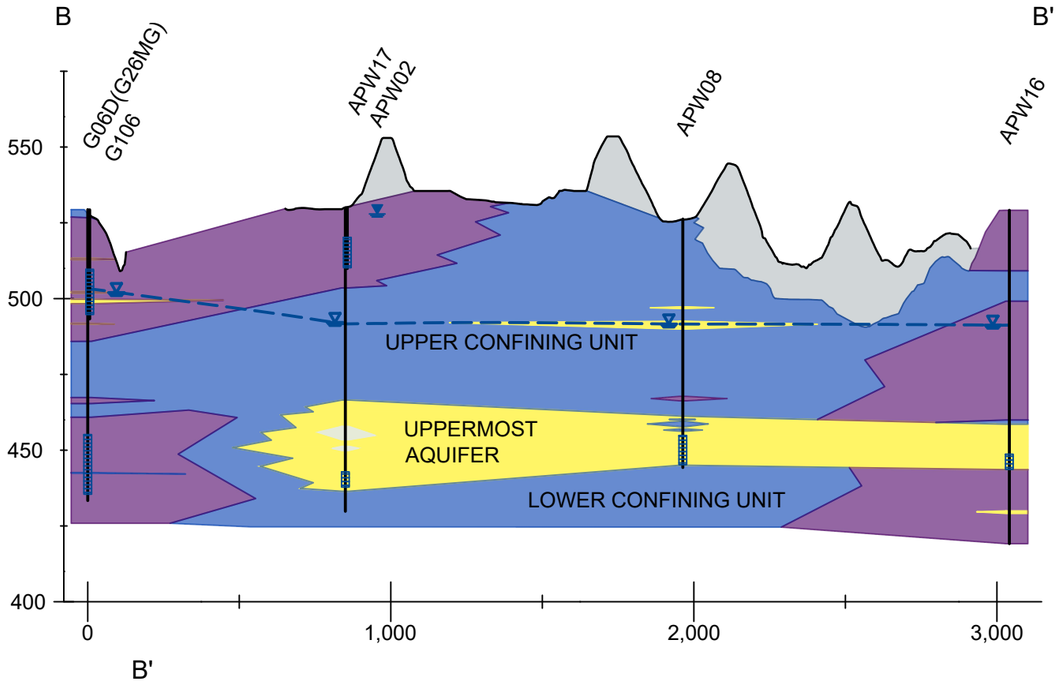
NATURE AND EXTENT REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-7

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: #### \\ramboll.sharepoint.com@SSL\DavWWWRoot\sites\NewtonHydrogeoEVS\working files\CAD\Cross Sections\Newton-Cross Sections.dwg
DATE: 10/18/2022 \\ramboll.sharepoint.com@SSL\DavWWWRoot\sites\NewtonHydrogeoEVS\Shared Documents\-CCR GWDeliverables\Part 845 Operating Permits\Sites\Newton\Hydrogeo\EVS\working files\CAD\Cross Sections\Newton-Cross Sections.dwg

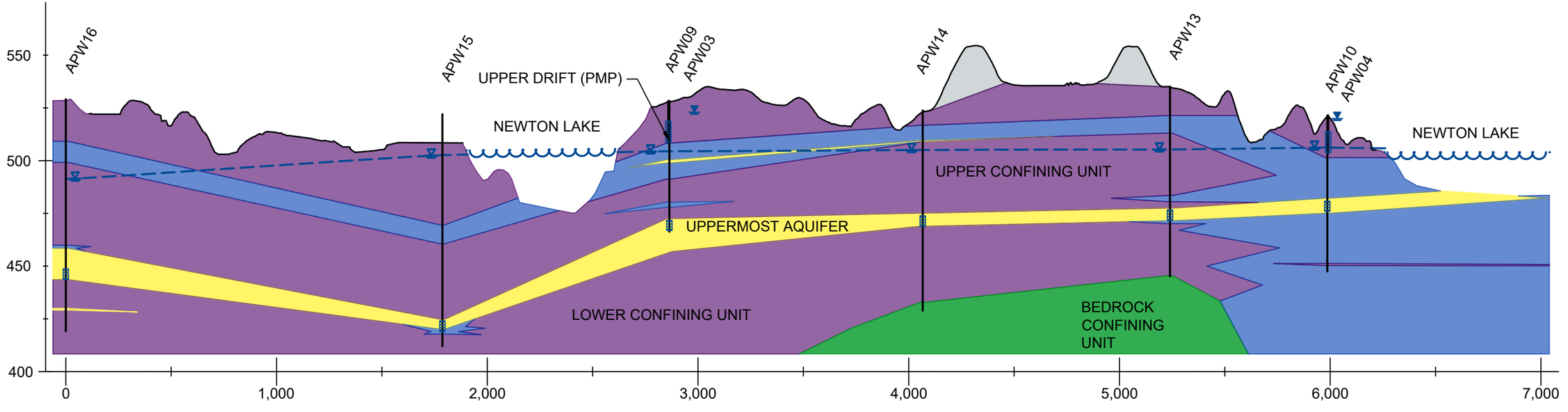


NOTES

1. This profile was developed by interpolation between widely spaced boreholes. Only at the borehole location should it be considered as an approximately accurate representation and then only to the degree implied by the notes on the borehole logs.
2. Scale is approximate.
3. Vertical scale is exaggerated 10X.
4. Groundwater elevations measured on June 24, 2021.
5. PMP = potential migration pathway

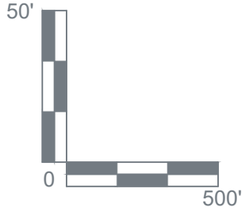
B'

B"



LEGEND

- FILL
- CLAY (CL/CH)
- SILT (ML)
- SAND (SP/SM/SW)
- GRAVEL (GP/GW)
- BEDROCK / WEATHERED BEDROCK (SHALE)
- WELL SCREEN INTERVAL
- UPPERMOST AQUIFER POTENTIOMETRIC SURFACE
- UPPERMOST AQUIFER GROUNDWATER ELEVATION
- BEDROCK GROUNDWATER / OTHER GROUNDWATER / SURFACE WATER ELEVATION(S)



GEOLOGIC CROSS SECTION
B-B' & B'-B"

NATURE AND EXTENT REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-8

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: ####
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DATE: 10/8/2021 TIME: 10:49:00 AM USER: JWEBB
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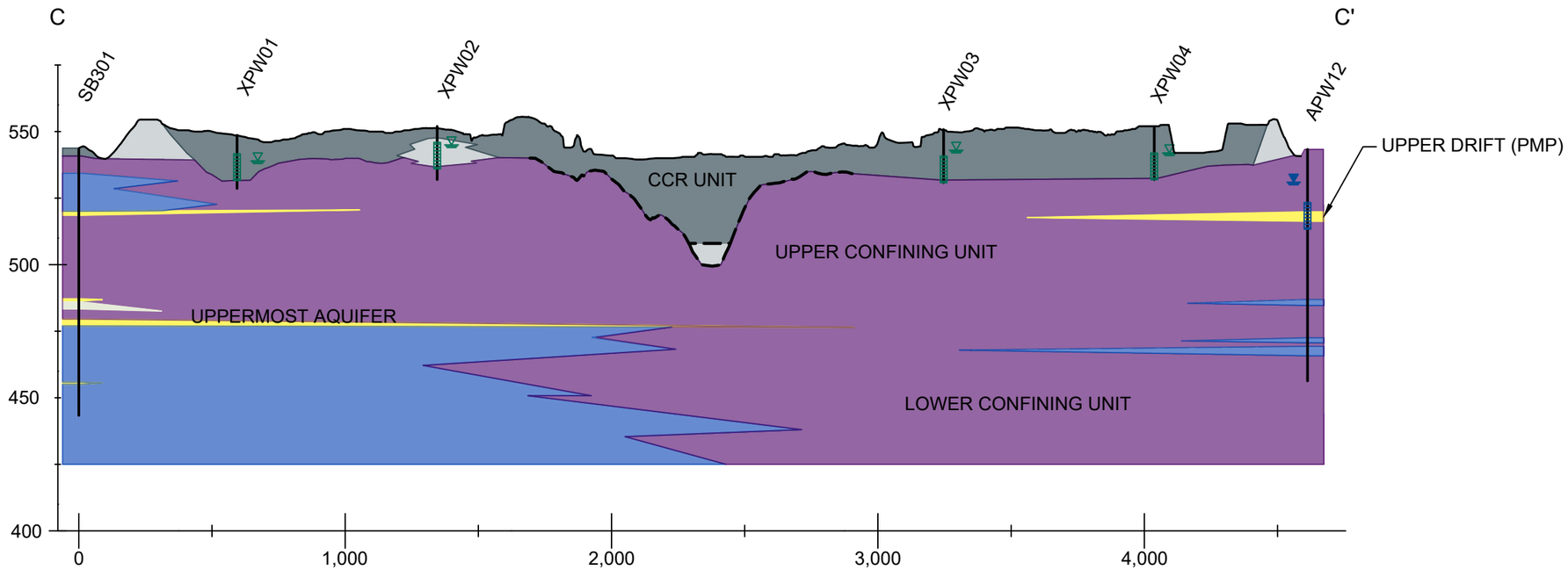
NOTES

1. This profile was developed by interpolation between widely spaced boreholes. Only at the borehole location should it be considered as an approximately accurate representation and then only to the degree implied by the notes on the borehole logs.
2. Scale is approximate.
3. Vertical scale is exaggerated 10X.
4. Base of CCR Unit is based on historic land surface contours. This surface is being further evaluated as the construction permit is being developed.
5. Groundwater elevations measured on June 24, 2021.
6. PMP = potential migration pathway



LEGEND

- COAL COMBUSTION RESIDUALS (CCR)
- FILL
- CLAY (CL/CH)
- SILT (ML)
- SAND (SP/SM/SW)
- GRAVEL (GP/GW)
- WELL SCREEN INTERVAL
- POREWATER ELEVATION
- BEDROCK GROUNDWATER / OTHER GROUNDWATER / SURFACE WATER ELEVATION(S)

50' 0 500'

GEOLOGIC CROSS SECTION
C-C'

NATURE AND EXTENT REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-9

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: ####
\\ramboll.share.com\data\USSL\Projects\####\Shared Documents\-CCR GWDeliverables\Part 845 Operating Permits\Sites\Newton\Hydrogeo\EVS\working files\CAD\Cross Sections\Newton-Cross Sections.dwg
DATE: 10/8/2021 DESIGNER: ####

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- MONITORING WELL
- PORE WATER WELL
- LEACHATE WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, LAKE
- GROUNDWATER ELEVATION CONTOUR (5-FT CONTOUR INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE

NOTES:

1.ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.

2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

0 400 800
Feet

UPPERMOST AQUIFER GROUNDWATER ELEVATION CONTOURS - APRIL 2023 (E001)

NATURE AND EXTENT REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-10

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\222\2285\MXD\Nature_and_Extent\NEW\Nature_and_Extent_Report\Figure 2-10_Uppermost Aquifer GWE Contours E001.mxd
PROJECT: 169000XXXX | DATED: 3/7/2024 | DESIGNER: GALARNMC

TOTAL SULFATE EXCEEDANCE

COMPLIANCE WELL WITHOUT EXCEEDANCE

REGULATED UNIT (SUBJECT UNIT)

SITE FEATURE

0 400 800
Feet

GWPS EXCEEDANCE MAP
UPPERMOST AQUIFER

NATURE AND EXTENT REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 3-1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: 169000XXXX | DATED: 3/7/2024 | DESIGNER: GALARNMC

Y:\Mapping\Projects\2212285\MXD\Nature_and_Extent\NEW\Nature_and_Extent_Report\Figure 3-1. GWPS UA.mxd

TOTAL LITHIUM EXCEEDANCE

TOTAL SULFATE EXCEEDANCE

TOTAL DISSOLVED SOLIDS EXCEEDANCE

COMPLIANCE WELL WITHOUT EXCEEDANCE

REGULATED UNIT (SUBJECT UNIT)

SITE FEATURE

0 400 800 Feet

GWPS EXCEEDANCE MAP UPPER DRIFT AND POTENTIAL MIGRATION PATHWAYS

NATURE AND EXTENT REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 3-2

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\222285\MXD\Nature_and_Extent\NEW\Nature_and_Extent_Report\Figure 3-2. GWPS UD.mxd

PROJECT: 169000XXXX | DATED: 3/7/2024 | DESIGNER: GALARNMC

APPENDICES

APPENDIX A
Technical Memorandum - Monitored Natural Attenuation Field Investigation Status Update

GOLDER
MEMBER OF WSP

TECHNICAL MEMORANDUM

DATE December 15, 2021 **Project No.** 21454831

TO David Mitchell, Stu Cravens, Vic Modeer
Illinois Power Generating Company (IPGC)

CC Brian Hennings - Ramboll

FROM Pat Behling, Jeffrey Ingram - Golder **EMAIL Jingram@golder.com**

MONITORED NATURAL ATTENUATION FIELD INVESTIGATION STATUS UPDATE, PRIMARY ASH POND (CCR UNIT 501) NEWTON POWER PLANT, JASPER COUNTY, ILLINOIS

1.0 INTRODUCTION AND BACKGROUND

The following Technical Memorandum summarizes the results received to date from the Monitored Natural Attenuation (MNA) Field Investigation completed by Golder Associates USA Inc. (Golder) for the Primary Ash Pond (PAP, CCR Unit 501) located at the Newton Power Plant (NPP or Site) operated by Illinois Power Generating Company (IPGC) in Jasper County, Illinois. Data collected as a part of this investigation will be an integral part of the MNA Feasibility Demonstration for the PAP and will be used for IPGC's Illinois Part 845 Coal Combustion Residual (CCR) compliance program. A Site plan showing the PAP, existing Part 845 monitoring wells, and the MNA boring locations is provided in **Figure 1**.

This memorandum only includes laboratory analytical data that has been received to date. Golder will update this memorandum when the remaining data has been received and reviewed.

2.0 PROJECT SCOPE OF WORK

As part of the MNA Feasibility Demonstration, and ongoing discussions with IPGC, Golder completed the following activities as part of this Field Investigation:

- Screened for potential underground utilities in the vicinity of the proposed borings prior to completing any drilling or ground disturbance activities.
- Advanced a total of seven (7) soil borings ranging in depth from 15 to 90 feet below ground surface (ft bgs).
- Collected ten (10) soil samples from seven (7) soil borings for laboratory analysis.
- Collected groundwater samples from five (5) existing monitoring wells for laboratory analysis.

3.0 FIELD INVESTIGAITON

3.1 Private Utility Locate

Prior to conducting any work onsite, Golder reviewed Site plans/drawings provided by IPGC and/or Site representatives and met with Site representatives to assist in identifying underground utility locations in the vicinity

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13515 Barrett Parkway Drive, Suite 260, Ballwin, Missouri, USA 63021 T: +1 314 984-8800 F: +1 314 984-8770

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of the proposed borings. Golder also sub-contracted with GPRS to provide ground penetrating radar (GPR) and electromagnetic (EM) tracing services to screen the proposed boring locations in the field. All boring locations were cleared by GPRS personnel before drilling commenced.

3.2 Drilling and Aquifer Solids Sampling

Drilling was completed by Cascade Environmental Drilling (Cascade) using a roto-sonic drill rig under direct supervision of a Golder Geologist from August 17 – 21, 2021. Continuous soil core samples were obtained at each borehole location and were logged in the field by Golder personnel. Soils were classified according to the Unified Soil Classification System (USCS) and in accordance with the standard Golder Soil Logging Technical Procedure.

During the field investigation, seven (7) soil borings were advanced at the locations shown on **Figure 1**. Soil boring logs are provided in **Attachment A**. The following units were encountered during the field investigation (unit names are consistent with the Groundwater Monitoring Plan (Ramboll, 2021) in the Newton Part 845 Operating Permit):

- Shallow Saturated Zone – This zone is made up of the Upper Drift and the Upper Confining Units. The Upper Drift consists of low permeability silts and clays of the Peoria Silt and Sangamon Soil and the Hagarstown Member (Potential Migration Pathway) which consists of discontinuous sandier deposits. Below the Upper Drift is the Upper Confining unit, which consists of low permeability clay and silt of the Vandalia Till. The contact between the Upper Confining Unit and the underlying Uppermost aquifer ranges from approximately 467 feet above mean sea level (FT MSL) to 483 FT MSL in the borings completed for this investigation. Samples from the shallow saturated zone are shown in **Table 1**.
- Uppermost Aquifer – This zone consists of the Mulberry Grove Formation and is generally made up of fine to coarse, poorly to well graded sands, with occasional clayey sand layers and gravels. The formation is present between approximately 449 and 483 FT MSL. Samples collected from the uppermost aquifer are shown in **Table 1**.
- Lower Confining Unit – This unit consists of the Smithboro Till and is generally made up of compact glacial till consisting of low permeability silty clays and clayey silts with trace sand and gravel. The Till was present directly below the Uppermost Aquifer and the contact between these two units ranges from approximately 449 FT MSL to 474 FT MSL. Drilling was terminated in the Lower Confining Unit in most boreholes, therefore, evaluation of the full thickness of the unit was not completed as a part of this investigation. There were no samples collected from the lower confining unit.

Methane was encountered in soil boring SB-02, on August 18, 2021, while retrieving the soil from 60 to 80 feet below ground surface (FT BGS) within the bottom of the Shallow Saturated Zone and the top of the Uppermost Aquifer unit. Drilling was stopped until methane levels dropped below safe working levels and continued on August 19, 2021. Methane was only detected in this borehole during this investigation.

Ten (10) soil samples were collected for laboratory analysis from the soil borings (see **Figure 1** for sample location). Details regarding collected samples are included in **Table 1**.

Table 1: Laboratory Soil Sample Locations and Intervals Used for Laboratory Analysis

Borehole ID	Sample ID	Sample Depth (FT BGS)	Soil Type / Geologic Unit Sampled
N-SB-02	N-SB-02 (12.5 – 20.0)	12.5 - 20.0	Clayey Silt / Shallow Saturated Zone
	N-SB-02 (65.0 – 71.5)	65.0 – 71.5	Well Graded Sand /Uppermost Aquifer
N-SB-04	N-SB-04 (12.0 – 18.0)	12.0 – 18.0	Sandy Silty Clay / Shallow Saturated Zone
	N-SB-04 (38.8 – 45.4)	38.8 – 45.4	Clayey Sand / Uppermost Aquifer
N-SB-05	N-SB-05 (18.0 – 20.0)	18.0 – 20.0	Poorly Graded Sand / Shallow Saturated Zone
	N-SB-05 (60.0 – 67.1)	60.0 – 67.1	Poorly Graded Sand / Uppermost Aquifer
N-SB-14	N-SB-14 (44.2 – 52.0)	44.2 – 52.0	Sandy Clay / Uppermost Aquifer
N-SB-18	N-SB-18 (77.5 – 80.0)	77.5 – 80.0	Well Graded Sand / Uppermost Aquifer
N-SB-XPW01	N-SB-XPW01 (10.0 – 12.7)	10.0 – 12.7	CCR
N-SB-XPW04	N-SB-XPW04 (10.0 – 15.0)	10.0 – 15.0	CCR

Notes

1) FT BGS – Feet Below Ground Surface.

3.2.1 Soil Laboratory Analysis

Soil samples collected during the field investigation were placed in clean containers and properly labeled with sample location, depth, project name, sampler initials, analyses to be performed, date, and time of collection. Sample information was logged on a chain of custody (COC) and shipped to the following laboratories for analysis:

- Eurofins TestAmerica for 7-Step Sequential Extraction; and
- SiREM for the Batch Testing, Total Metals, Reitveld X-Ray Diffraction (XRD), leachability, Cation Exchange Capacity (CEC), and Total Organic Carbon (TOC) analyses.

The following laboratory analyses were conducted for each soil sample:

- 6010B for 7-step sequential extraction (Iron, Aluminum, Arsenic, Manganese, Lead, Lithium, Molybdenum, Cobalt, Calcium, Beryllium, Selenium, and Chromium);
- EPA 6010B for Total Metals (Iron, Aluminum, Arsenic, Manganese, Lead, Lithium, Molybdenum, Cobalt, Calcium, Beryllium, Selenium, and Chromium);
- Bulk Mineralogy by Reitveld XRD Analysis;
- Cation Exchange Capacity (CEC) Analysis;
- Total Organic Carbon Analysis; and,
- SPLP Method 1312 Leachability Test (for CCR source samples only).

Currently, only the results from Test America have been received, and are included in **Attachment B**. A separate Technical Memorandum will be provided when results from SiREM are completed.

3.2.2 Borehole Survey

On September 1, 2021, IngenAE completed a survey of the boring locations including the longitude/latitude of and elevation of each borehole location. Survey information is included in the boring logs in **Appendix A**.

3.3 Groundwater Sampling

Groundwater sampling was completed by Golder personnel on August 31, 2021. Five (5) existing monitoring wells were sampled, provided in **Figure 1**. Groundwater sample locations and adjacent borehole sample intervals for the MNA evaluation are included in **Table 2**.

Table 2: Groundwater Sample Locations

Well ID	Adjacent Borehole Sample
APW-02	N-SB-02 (12.5 – 20.0)
APW-04	N-SB-04 (12.0 – 18.0)
APW-05S (background)	N-SB-05 (18.0 – 20.0)
APW-05 (background)	N-SB-05 (60.0 – 67.1)
APW-14	N-SB-14 (44.2 – 52.0)

3.3.1 Groundwater Sample Laboratory Analysis

Groundwater samples collected during the field investigation were placed in clean containers and properly labeled with well ID, project name, sampler initials, analyses to be performed, date, and time of collection. Sample information was logged on a chain of custody (COC) and shipped to SiREM Laboratories to be included in batch testing analysis along with soil samples collected at adjacent boreholes. Results for the batch testing has not yet been completed and will be provided in a separate Technical Memorandum.

4.0 CLOSING

Golder appreciates the opportunity to serve as your consultant on this project. If you have any questions concerning this technical memorandum or need additional information, please contact the undersigned

Golder Associates Inc.

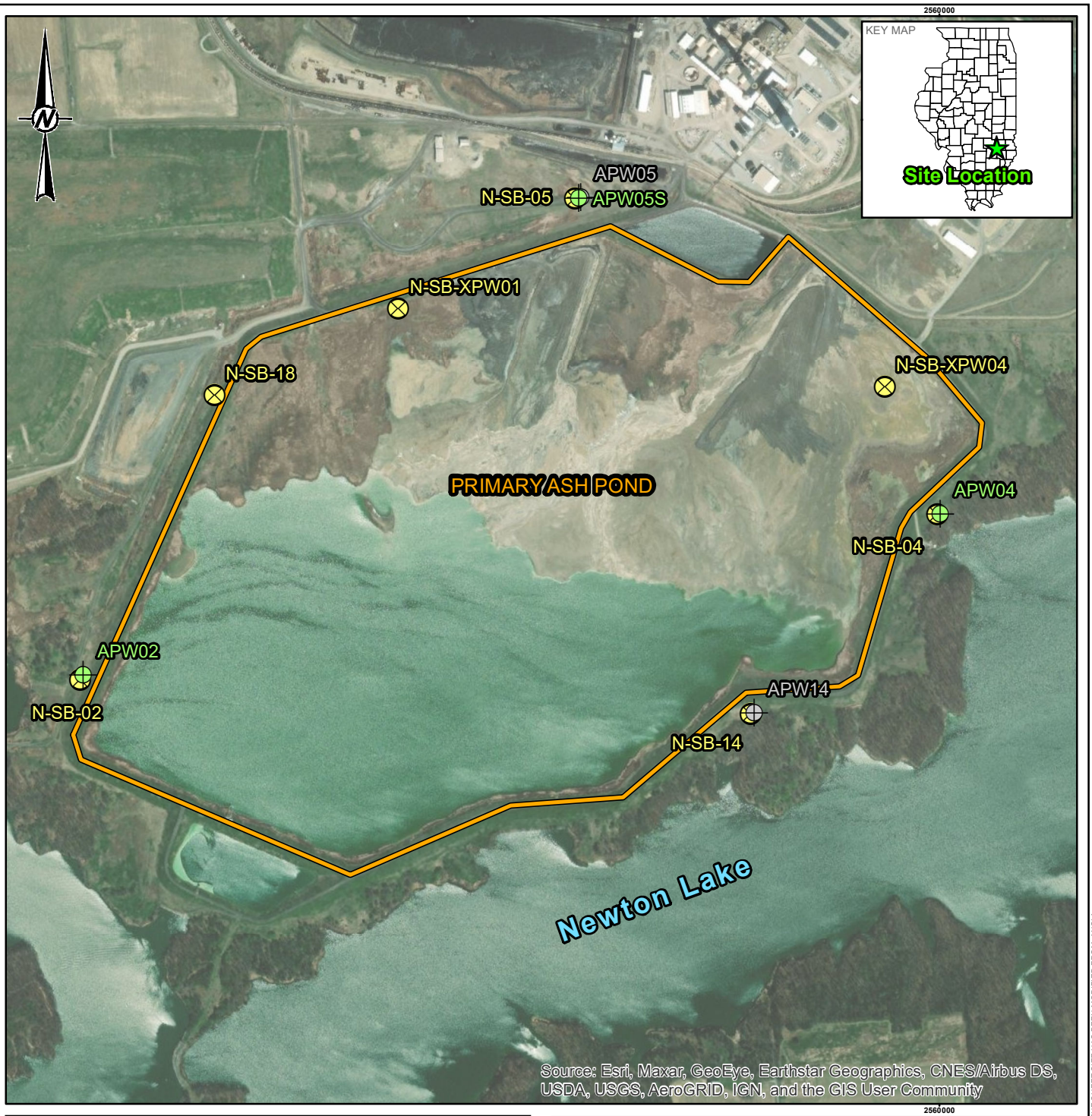
Jeffrey Ingram, R.G.
Senior Project Geologist

Pat Behlings, P.E.
Principal and Practice Leader

JSI/PJB

Attachments: Figure 1 – Newton Power Plant Monitored Natural Attenuation Boring and Groundwater Sample Locations
Appendix A – Soil Boring Logs
Appendix B – Eurofins TestAmerica Laboratory Data

Figures



LEGEND

- Primary Ash Pond - CCR Unit ID 501
- MNA Soil Boring Location
- Groundwater Sample Location - Part 845 Wells With No Potential Exceedances
- Groundwater Sample Location - Part 845 Wells With Potential Exceedances

0 3,000 Feet

NOTE(S)

1. SOIL BORING LOCATIONS SURVEYED BY INGENAE ON SEPTEMBER 1, 2021.

REFERENCE(S)

1. RAMBOLL 2021, TABLE 2 SUMMARY OF POTENTIAL EXCEEDANCES.
2. RAMBOLL 2021. GROUNDWATER MONITORING PLAN, PRIMARY ASH POND, NEWTON POWER PLANT, NEWTON ILLINOIS.

CLIENT
ILLINOIS POWER GENERATING COMPANY

PROJECT
NEWTON POWER PLANT MNA FEASABILITY STUDY

TITLE
MONITORED NATURAL ATTENUATION INVESTIGATION BORING AND GROUNDWATER SAMPLE LOCATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2021-11-23
DESIGNED	BTT
PREPARED	ETF
REVIEWED	EMS
APPROVED	PJB

PROJECT NO. 21454831 PHASE 0004 FIGURE 1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

1 in 0

PATH: C:\Users\ETVFornay\Golder Associates\21454831 Vistra IL MNA Part 845 Support - 5 Technical Work\Phase4 - Newton\4.11-Figures\MNA-Figures\Newton - Borehole Locations.mxd PRINTED ON: 2021-11-23 AT: 4:14:33 PM

APPENDIX A

Soil Boring Logs

RECORD OF BOREHOLE N-SB-02

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/18/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 822,655.44 E: 995,443.67

ELEVATION: 521.30
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
0	6" Sonic	(0.0-3.0) (CL) SILTY CLAY, low to medium plasticity fines, trace fine sub-rounded sand; dark yellowish orange (10YR 6/6); cohesive, w~PL, stiff.	CL		518.3				
		(3.0-10.0) (ML) CLAYEY SILT, non-plastic to low plasticity fines, some fine to course sub-rounded well graded- grained sand, trace sub-rounded gravel; moderate brown (5YR 4/4); cohesive, w<PL, hard.	ML		3.0	1	SO	10.0 / 10.0	
10					511.3				
	6" Sonic	(10.0-12.5) (ML) CLAYEY SILT, non-plastic to low plasticity fines, some fine sub-rounded poorly-graded sand; moderate yellowish brown (10YR 5/4); cohesive, w<PL, hard.	ML		10.0				
					508.8				
		(12.5-30.0) (ML) CLAYEY SILT, non-plastic to low plasticity fines, trace fine sub-rounded sand, trace coarse sub-rounded gravel; grayish orange (10YR 7/4) with dark yellowish orange (10YR 6/6) mottling; cohesive, w<PL, hard.			12.5				(12.5-20.0) Clayey Silt sample collected at 14:10 - 8/18/2021.
15						2	SO	10.0 / 10.0	
20					501.3				
		(20.0) Same As Above (SAA) except, light bluish gray (5B 7/1) with white (N9) mottling.	ML		20.0				
	6" Sonic					3	SO	10.0 / 10.0	
25									
30					491.3				

Log continued on next page

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-02

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant
DRILLING METHOD: Sonic
DRILLING DATE: 8/18/2021
DRILL RIG: Mini Sonic CC 150
DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 822,655.44 E: 995,443.67
ELEVATION: 521.30
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
30	6" Sonic	(30.0-32.5) (SW) SAND, fine to coarse sub-rounded well-graded sand, trace fine sub-rounded gravel, trace non-plastic fines; medium gray (N5); non-cohesive, moist, compact.	SW		30.0 / 488.8				
35	6" Sonic	(32.5-60.0) (CL) SILTY CLAY, low to medium plasticity fines, trace fine sub-rounded sand, trace fine to coarse sub-rounded gravel; medium gray (N5) with light bluish gray (5B 7/1) and white (N9) mottling; cohesive, w<PL, hard.	CL		32.5 / 481.3	4	SO	10.0 / 10.0	
40	6" Sonic	(40.0) SAA except, very stiff.	CL		40.0 / 471.3	5	SO	10.0 / 10.0	
45	6" Sonic		CL						
50	6" Sonic	(50.0) SAA except, with light olive brown (5Y 5/6) mottling.	CL		50.0 / 465.1	6	SO	10.0 / 10.0	
55	6" Sonic	(56.2) SAA except, with light brown (5YR 6/4) mottling.	CL		56.2 / 461.3				
60		Log continued on next page							

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-02

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/18/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 822,655.44 E: 995,443.67

ELEVATION: 521.30
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
60	6" Sonic	(60.0-71.5) (SW) SAND, fine to coarse sub-angular well-graded sand, some fine sub-rounded gravel, trace non-plastic fines, light gray (N7) to medium light gray (N6); non-cohesive, moist, compact.	SW		60.0	7	SO	10.0 / 20.0	(65.0-71.5) Sand sample collected at 12:00 - 8/19/2021.
65									
70									(60.0-80.0) Methane meter alarm is triggered with an LEL of 181 at 15:30 on August 18, 2021. Drilling stopped until methane dissipated. Drilling commenced on August 19, 2021 at 11:45. Following completion of drilling the hole was abandoned.
					449.8				
		(71.5-80.0) (SW&GW) SAND and GRAVEL, fine to coarse sub-angular to sub-rounded well-graded sand and gravel, trace non-plastic fines; medium dark gray (N4) to grayish brown (N2); non-cohesive, moist, compact.			71.5				
75			SW						
80					441.3				
		END OF BORING AT 80.0 FEET BELOW GROUND SURFACE.			80.0				
85									
90									

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-04

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/19/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 823,240.42 E: 1,001,362.51

ELEVATION: 521.91
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
0	6" Sonic	(0.0-10.0) (CL) CLAY, medium to high plasticity fines, trace fine sub-rounded sand, trace fine sub-rounded gravel; moderate yellowish brown (10YR 5/4); cohesive, w>PL, soft.	CH		511.9 / 10.0	1	SO	10.0 / 10.0	
10	6" Sonic	(10.0-20.0) (CL) sandy SILTY CLAY, low to medium plasticity fines, fine sub-rounded poorly graded sand, trace fine sub-rounded gravel; moderate yellowish brown (10YR 5/4); cohesive, w~PL, stiff.	CL		501.9 / 20.0	2	SO	10.0 / 10.0	(10.0) Drilling paused at 16:10 on August 20, 2021 due to drill rig breaking. Drilling resumed following repair of rig at 07:20 on August 21, 2021. (12.0-18.0) Silty clay sample collected at 07:35 - 8/21/2021.
20	6" Sonic	(20.0-38.7) (ML) CLAYEY SILT, non-plastic to low plasticity fines, some fine sub-rounded sand, trace fine sub-rounded gravel; dark yellowish brown (10YR 6/6) with light brown (5YR 6/4) and light bluish gray (5B 7/1) mottling; cohesive, w<PL, hard.	ML			3	SO	10.0 / 10.0	
30		Log continued on next page							

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-04

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/19/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 823,240.42 E: 1,001,362.51

ELEVATION: 521.91
INCLINATION: -90

DEPTH (feet)	BORING METHOD	DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	NUMBER	TYPE	REC / ATT	REMARKS
30	6" Sonic	(20.0-38.7) (ML) CLAYEY SILT, non-plastic to low plasticity fines, some fine sub-rounded sand, trace fine sub-rounded gravel; dark yellowish brown (10YR 6/6) with light brown (5YR 6/4) and light bluish gray (5B 7/1) mottling; cohesive, w<PL, hard. *(Continued)*	ML		483.2	4	SO	10.0 / 10.0	
		(38.7-41.0) (SP) SAND, fine sub-rounded poorly-graded sand, trace fine sub-rounded gravel, trace non-plastic fines; dark yellowish orange (10YR 6/6); non-cohesive, moist, compact.	SP		38.7 480.9				(38.7-45.4) Clayey sand sample collected at 08:10 - 8/21/2021.
40		(41.0-45.4) (SC) CLAYEY SAND, fine poorly-graded sub-rounded sand, low to medium plasticity fines, trace sub-rounded gravel; light brown (5YR 5/6); non-cohesive, moist, compact.	SC		41.0 476.5	5	SO	7.0 / 10.0	
45		(45.4-50.0) (CL) sandy SILTY CLAY, low to medium plasticity fines, fine sub-rounded poorly graded sand, trace sub-rounded gravel; dusky brown (5YR 2/2); cohesive, w~PL, very stiff.	CL		45.4 471.9				
50		(50.0-56.8) (ML) CLAYEY SILT, non-plastic to low plasticity fines, some fine sub-rounded poorly-graded sand, trace fine gravel; light gray (N6); cohesive, w~PL, very stiff.	ML		50.0 465.1	6	SO	10.0 / 10.0	
55		(56.8-60.0) (SC) CLAYEY SAND, fine sub-rounded poorly-graded sand, medium plasticity fines; light gray (N6); non-cohesive, moist, compact.	SC		56.8 461.9				
60		Log continued on next page							

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-04

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant
DRILLING METHOD: Sonic
DRILLING DATE: 8/19/2021
DRILL RIG: Mini Sonic CC 150
DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 823,240.42 E: 1,001,362.51
ELEVATION: 521.91
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
60		END OF BORING AT 60.0 FEET BELOW GROUND SURFACE.			60.0				
65									
70									
75									
80									
85									
90									

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon
LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-05

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/17/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 825,611.85 E: 997,833.22

ELEVATION: 529.39
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
0	6" Sonic	(0.0-1.5) FILL - (ML) gravelly SILT, non-plastic fines, fine to coarse sub-angular well-graded gravel, trace fine sub-rounded sand, trace organics (roots); dusky yellowish brown (10YR 5/4) TOPSOIL; non-cohesive, wet, loose,.	ML		527.9 1.5				
		(1.5-8.5) (ML) CLAYEY SILT, non-plastic fines, fine sub-rounded poorly-graded sand, trace fine sub-rounded gravel, trace low plasticity fines; dark yellowish brown (10YR 4/2); non-cohesive, dry, compact.	ML			1	SO	8.0 10.0	
		(8.5-9.5) (SP) SAND, fine to medium sub-rounded poorly-graded sand, trace non-plastic fines; dark yellowish orange (10YR 6/6); non-cohesive, dry, loose.	SP		520.9 8.5				
		(9.5-10.0) (CH) CLAY, high plasticity fines; medium dark gray (N4); cohesive, w<PL, very stiff.	CH		519.9 9.5				
		(10.0-18.0) (CL) SILTY CLAY, medium to high plasticity fines, trace fine sub-rounded sand, trace fine sub-rounded gravel; moderate yellowish brown (10YR 5/4); cohesive, w~PL, firm.	CL		519.4 10.0				
		(16.6) Same As Above (SAA) except, w<PL, some fine sand.			512.8 16.6	2	SO	10.0 10.0	
		(18.0-22.0) (SP) SAND, fine sub-rounded poorly-graded sand, trace non-plastic fines, trace native coal; moderate yellowish brown (10YR 5/4) with black (N1) coal pieces; non-cohesive, dry, loose.	SP		511.4 18.0				(18.0-20.0) Sand sample collected at 12:40 - 8/17/2021.
		(22.0-26.8) (CH) sandy CLAY, medium plasticity fines, fine sub-rounded poorly-graded sand; grayish orange (10YR 7/4); cohesive, w~PL, stiff.	CH		507.4 22.0	3	SO	10.0 10.0	(10.0-20.0) Over recovery due to expansion of clay material in sample bags (10.5 ft/10.0 ft).
		(26.8-59.3) (ML) CLAYEY SILT, non-plastic to low plasticity fines, trace fine sub-rounded sand; medium dark gray (N4); cohesive, w<PL, very stiff.	ML		502.6 26.8				

Log continued on next page

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-05

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant
DRILLING METHOD: Sonic
DRILLING DATE: 8/17/2021
DRILL RIG: Mini Sonic CC 150
DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 825,611.85 E: 997,833.22
ELEVATION: 529.39
INCLINATION: -90

DEPTH (feet)	BORING METHOD	DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	NUMBER	TYPE	REC / ATT	REMARKS
30	6" Sonic	(26.8-59.3) (ML) CLAYEY SILT, non-plastic to low plasticity fines, trace fine sub-rounded sand; medium dark gray (N4); cohesive, w<PL, very stiff. *(Continued)*							(20.0-30.0) Over recovery due to expansion of clay material in sample bags (12.0 ft/10.0 ft).
35		(34.9) SAA except, light gray (N6) to light bluish gray (5B 7/1) mottling.			494.5 34.9	4	SO	10.0 10.0	
40		(40.0) SAA except, trace sub-angular to sub-rounded fine gravel.			489.4 40.0				
45	6" Sonic		ML			5	SO	10.0 10.0	
50									
55	6" Sonic					6	SO	10.0 10.0	
60			SP		470.1 59.3				

Log continued on next page

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon
LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-05

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant
DRILLING METHOD: Sonic
DRILLING DATE: 8/17/2021
DRILL RIG: Mini Sonic CC 150
DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 825,611.85 E: 997,833.22
ELEVATION: 529.39
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
60	6" Sonic	(59.3-67.1) (SP) SAND, fine sub-rounded poorly-graded sand, trace angular gravel, trace non-plastic fines; dark gray (N3); non-cohesive, moist, compact. *(Continued)*	SP			7	SO	10.0 / 10.0	(60.0-67.1) Sand sample collected at 15:40 - 8/17/2021.
65					462.3 / 67.1				
		(67.1-70.0) (ML) SILT, non-plastic fines, trace coarse sub-rounded sand, trace fine sub-rounded gravel; dark yellowish brown (10YR 4/2); non-cohesive, moist, dense.	ML						
70		END OF BORING AT 70.0 FEET BELOW GROUND SURFACE.			459.4 / 70.0				
75									
80									
85									
90									

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-14

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/19/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 822,002.94 E: 999,969.76

ELEVATION: 540.51
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
0	6" Sonic	(0.0-8.5) (CH) sandy CLAY, high plasticity fines, some fine sub-rounded poorly-graded sand; moderate yellowish brown (10YR 5/4) with yellowish gray (5Y 7/2) mottling; cohesive, w>PL, stiff.	CH		532.0 / 8.5	1	SO	8.0 / 10.0	
		(8.5-10.0) (SM) SILTY SAND, fine sub-rounded poorly-graded sand, non-plastic fines; moderate yellowish brown (10YR 5/4); non-cohesive, dry, dense.	SP		530.5 / 10.0				
10	6" Sonic	(10.0-20.0) (CL) SILTY CLAY, non-plastic to low plasticity fines, trace fine sub-rounded sand, trace fine sub-rounded gravel, trace roots; dusky yellowish brown (10YR 2/2) with light brown (5YR 6/4) mottling; cohesive, w<PL, hard.	CL			2	SO	10.0 / 10.0	(18.7) Fine grained sand seam approximately 0.4' thick.
20	6" Sonic	(20.0-44.2) (CL) SILTY CLAY, low to medium plasticity fines, trace fine sub-rounded sand, trace fine sub-rounded gravel; dusky yellowish brown (10YR 2/2) with light brown (5YR 6/4) mottling; cohesive, w~PL, stiff. (21.1) Same As Above (SAA) except, moderate yellowish gray (5GY 7/4).	CL		520.5 / 20.0 519.4 / 21.1	3	SO	10.0 / 10.0	(20.4) Fine grained sand seam approximately 0.2' thick.
30		Log continued on next page							

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-14

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/19/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 822,002.94 E: 999,969.76

ELEVATION: 540.51
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
30	6" Sonic	(20.0-44.2) (CL) SILTY CLAY, low to medium plasticity fines, trace fine sub-rounded sand, trace fine sub-rounded gravel; dusky yellowish brown (10YR 2/2) with light brown (5YR 6/4) mottling; cohesive, w~PL, stiff. *(Continued)*	CL		509.9 30.6	4	SO	10.0 10.0	
		(30.6) SAA except, light gray (N7) mottling.							
40									(40.0-60.0) Driller pushed a 20 foot run due to material falling in on the run to 50 feet below ground surface.
					496.3				
		(44.2-52.0) (CL) sandy CLAY, medium to high plasticity fines, fine sub-rounded poorly-graded sand, trace fine sub-rounded gravel; dusky yellowish brown (10YR 4/2) with light brown (5YR 6/4) sand; cohesive w>PL, soft.	CH		44.2				(44.2-52.0) Sandy clay sample collected at 14:45 - 8/19/2021.
45									
		(48.1) SAA except, stiff.			492.4 48.1				
50	6" Sonic					5	SO	20.0 20.0	
					488.5				
		(52.0-60.0) (CL) CLAY, medium to high plasticity fines, trace fine sub-rounded sand, trace fine sub-rounded gravel; dark yellowish brown (10YR 4/2) with light gray (N7) to light blue (5B 7/6) mottling; cohesive, w~PL, hard.			52.0				
55			CH						
60					480.5				

Log continued on next page

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-14

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant
DRILLING METHOD: Sonic
DRILLING DATE: 8/19/2021
DRILL RIG: Mini Sonic CC 150
DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 822,002.94 E: 999,969.76
ELEVATION: 540.51
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
60		END OF BORING AT 60.0 FEET BELOW GROUND SURFACE.			60.0				
65									
70									
75									
80									
85									
90									

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-18

SHEET 1 of 4

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/18/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 824,503.66 E: 996,531.19

ELEVATION: 540.96
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
0	6" Sonic	(0.0-0.9) FILL - (CL) SILTY CLAY, low to medium plasticity fines, trace fine sub-rounded sand; dark yellowish orange (10YR 6/6) TOPSOIL; cohesive, w~PL, soft.	CL		540.1 / 0.9				
		(0.9-12.2) (CL-ML) SILTY CLAY, low to medium plasticity fines, some fine sub-rounded poorly-graded sand; dark yellowish orange (10YR 6/6) with light gray (N5) mottling; cohesive, w~PL, soft.	CL			1	SO	10.0 / 10.0	
10		(10.0) Same As Above (SAA) except, very stiff.			531.0 / 10.0				
	6" Sonic	(12.2-20.0) (ML) SILT, non-plastic fines, trace fine sub-rounded sand, trace coarse sub-rounded gravel; dusky yellowish brown (10YR 2/2) with light brown (5YR 5/6) mottling; non-cohesive, moist, compact.	ML		528.8 / 12.2	2	SO	10.0 / 10.0	
15		(18.1) SAA except, no mottling.			522.9 / 18.1				
20	6" Sonic	(20.0-23.1) (SW) SAND, fine to coarse sub-rounded well-graded sand, trace non-plastic fines; dark yellowish orange (10YR 6/6); non-cohesive, moist, compact.	SW		521.0 / 20.0	3	SO	10.0 / 10.0	
		(23.1-27.4) (ML) SILT, non-plastic fines, some sub-rounded poorly-graded sand; dusky yellowish brown (10YR 2/2) to dark yellowish brown (10YR 6/6); non-cohesive,moist, compact.	ML		517.9 / 23.1				
25		(27.4-30.0) (ML) CLAYEY SILT, non-plastic to low plasticity fines, trace fine sub-rounded sand; dark yellowish brown (10YR 4/2); cohesive, w~PL, stiff.	ML		513.6 / 27.4				
30					511.0				

Log continued on next page

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-18

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/18/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 824,503.66 E: 996,531.19

ELEVATION: 540.96
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
30	6" Sonic	(30.0-73.0) (ML) SILT, non-plastic fines, some fine to coarse sub-rounded well-graded sand, trace fine sub-rounded gravel; dark yellowish brown (10YR 4/2); non-cohesive, moist, dense.			30.0				
35						4	SO	10.0 / 10.0	
40		(40.0) SAA except, light gray (N7).			501.0 40.0				
45	6" Sonic		ML			5	SO	10.0 / 10.0	
50		(50.0) SAA except, trace coarse gravel; moderate reddish orange (10R 6/6) mottling; very stiff.	ML		491.0 50.0				
55	6" Sonic					6	SO	10.0 / 10.0	
60		Log continued on next page			481.0				

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

RECORD OF BOREHOLE N-SB-18

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant
DRILLING METHOD: Sonic
DRILLING DATE: 8/18/2021
DRILL RIG: Mini Sonic CC 150
DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 824,503.66 E: 996,531.19
ELEVATION: 540.96
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
60	6" Sonic	(30.0-73.0) (ML) SILT, non-plastic fines, some fine to coarse sub-rounded well-graded sand, trace fine sub-rounded gravel; dark yellowish brown (10YR 4/2); non-cohesive, moist, dense. *(Continued)* (60.0) SAA except, light gray (N7) to light bluish gray (5B 7/1).	ML		60.0	7	SO	9.0 / 10.0	(65.0) Approximately 1 foot of material fell on ground upon recovery.
65									
70					468.0				
75	6" Sonic	(73.0-77.5) (SC) CLAYEY SAND, fine sub-rounded poorly-graded sand, low to medium plasticity fines, trace fine sub-rounded gravel; light olive gray (5Y 5/2); non-cohesive, moist, compact.	SC		73.0	8	SO	10.0 / 10.0	
					463.5				
		(77.5-81.5) (SW) SAND, fine to coarse sub-rounded well-graded sand, trace fine sub-rounded gravel, trace non-plastic fines; yellowish gray (5Y 7/2); non-cohesive, moist, compact.	SW		77.5				(77.5-80.0) Sand sample collected at 10:00 - 8/18/2021.
80					459.5				
85	6" Sonic	(81.5-90.0) (CL) SILTY CLAY, medium to high plasticity fines, trace fine sub-rounded sand; light gray (N7) with dusky yellow green (5GY 5/2) mottling; cohesive, w<PL, very stiff.	CL		81.5	9	SO	10.0 / 10.0	
90					451.0				

Log continued on next page

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-18

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant
DRILLING METHOD: Sonic
DRILLING DATE: 8/18/2021
DRILL RIG: Mini Sonic CC 150
DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 824,503.66 E: 996,531.19
ELEVATION: 540.96
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
90		END OF BORING AT 90.0 FEET BELOW GROUND SURFACE.			90.0				
95									
100									
105									
110									
115									
120									

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-XPW01

SHEET 1 of 1

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/21/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 824,974.85 E: 997,833.22

ELEVATION: 548.42
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
0	6" Sonic	(0.0-10.0) CCR - (SM) gravelly SILTY SAND, fine sub-rounded poorly-graded sand, non-plastic fines, fine sub-rounded poorly-graded gravel; light brown (5YR 6/6) ASH; non-cohesive, dry, loose.	SM		538.4	1	SO	10.0 / 10.0	
10	6" Sonic	(10.0-12.7) CCR - (ML) CLAYEY SILT, non-plastic to low plasticity fines, trace fine sub-rounded sand; light gray (N7) to black (N1) ASH; cohesive, w<PL, very soft. (11.0) Same As Above (SAA) except, color change to medium light gray (N6) to black (N1).	ML		10.0 537.4 11.0 535.7				(10.0-12.7) CCR material sample collected at 10:10 - 8/21/2021.
15	6" Sonic	(12.7-20.0) (CH) CLAY, medium to high plasticity fines, trace fine sub-rounded sand, trace fine sub-rounded gravel; moderate yellowish brown (10YR 5/4) with light brown (5YR 5/6) and light gray (N7) mottling; cohesive, w~PL, firm. (17.8) SAA except, light gray (N7).	CH		12.7 530.6 17.8	2	SO	10.0 / 10.0	
20		END OF BORING AT 20.0 FEET BELOW GROUND SURFACE.			528.4 20.0				
25									
30									

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-XPW04

SHEET 1 of 1

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/21/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 824,141.21 E: 1,001,087.48

ELEVATION: 551.70
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
0	6" Sonic	(0.0-11.0) CCR - (SW) gravelly SAND, fine to coarse sub-rounded well-graded sand, some fine sub-rounded gravel, trace non-plastic fines; dusky brown (5Y 2/2) ASH; non-cohesive, dry, loose.	SW			1	SO	10.0 / 10.0	(3.0) Clay seam 0.3' thick.
5									
		(8.0) Same As Above (SAA) except, gray (N6).			543.7 / 8.0				
10	6" Sonic	(11.0-15.0) CCR - (ML) sandy SILT, non-plastic fines, fine sub-rounded poorly-graded sand, trace sub-rounded gravel; medium light gray (N6) to black (N1) ASH; non-cohesive, wet, very loose.	ML		540.7 / 11.0	2	SO	5.0 / 5.0	(10.0-15.0) CCR material sample collected at 09:20 - 8/21/2021.
15		END OF BORING AT 15.0 FEET BELOW GROUND SURFACE.			536.7 / 15.0				
20									
25									
30									

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

APPENDIX B

Eurofins TestAmerica Laboratory Data

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-24350-1
Client Project/Site: Newton Power Station - Illinois

For:
Golder Associates Inc.
13515 Barrett Parkway Drive
Suite 260
Ballwin, Missouri 63021

Attn: Jeffrey Ingram

Ryan Henry

Authorized for release by:
11/2/2021 4:41:43 PM

Ryan Henry, Project Manager I
(865)291-3000
williamr.henry@eurofinset.com

LINKS

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www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Qualifiers

Metals

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
B	Compound was found in the blank and sample.
F3	Duplicate RPD exceeds the control limit
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL, and the absolute difference between results is < the upper reporting limits for both.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
L	A negative instrument reading had an absolute value greater than the reporting limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 140-24350-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-24350-1

Receipt
The samples were received on 8/24/2021 at 9:40am and arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.4º C.

Metals
7 Step Sequential Extraction Procedure

These soil samples were prepared and analyzed using Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0008, "7 Step Sequential Extraction Procedure". SW-846 Method 6010B as incorporated in Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analyses.

An aliquot of each sample was sequentially extracted using the steps listed below:

· Step 1 - Exchangeable Fraction: A 5 gram aliquot of sample was extracted with 25 mL of 1M magnesium sulfate (MgSO4), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 2 - Carbonate Fraction: The sample residue from step 1 was extracted with 25 mL of 1M sodium acetate/acetic acid (NaOAc/HOAc) at pH 5, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 3 - Non-crystalline Materials Fraction: The sample residue from step 2 was extracted with 25 mL of 0.2M ammonium oxalate (pH 3), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 4 - Metal Hydroxide Fraction: The sample residue from step 3 was extracted with 25 mL of 1M hydroxylamine hydrochloride solution in 25% v/v acetic acid, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 5 - Organic-bound Fraction: The sample residue from step 4 was extracted three times with 25 mL of 5% sodium hypochlorite (NaClO) at pH 9.5, centrifuged and filtered. The resulting leachates were combined and 5 mL were digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 6 - Acid/Sulfide Fraction: The sample residue from step 5 was extracted with 25 mL of a 3:1:2 v/v solution of HCl-HNO3-H2O, centrifuged and filtered. 5 mL of the resulting leachate was diluted to 50 mL with reagent water and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 7 - Residual Fraction: A 1.0 g aliquot of the sample residue from step 6 was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Results are reported in mg/kg on a dry weight basis.

In addition, a 1.0 g aliquot of the original sample was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Total metal results are reported in mg/kg on a dry weight basis.

Results were calculated using the following equation:

Result, µg/g or mg/Kg, dry weight = (C × V × V1 × D) / (W × S × V2)

Where:
C = Concentration from instrument readout, µg/mL
V = Final volume of digestate, mL
D = Instrument dilution factor
V1 = Total volume of leachate, mL
V2 = Volume of leachate digested, mL
W = Wet weight of sample, g
S = Percent solids/100

A method blank, laboratory control sample and laboratory control sample duplicate were prepared and analyzed with each SEP step in

Job ID: 140-24350-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

order to provide information about both the presence of elements of interest in the extraction solutions, and the recovery of elements of interest from the extraction solutions. Results outside of laboratory QC limits do not reflect out of control performance, but rather the effect of the extraction solution upon the analyte.

A laboratory sample duplicate was prepared and analyzed with each batch of samples in order to provide information regarding the reproducibility of the procedure.

SEP Report Notes:

The final report lists the results for each step, the result for the total digestion of the sample, and a sum of the results of steps 1 through 7 by element.

Magnesium was not reported for step 1 because the extraction solution for this step (magnesium sulfate) contains high levels of magnesium. Sodium was not reported for steps 2 and 5 since the extraction solutions for these steps contain high levels of sodium. The sum of steps 1 through 7 is much higher than the total result for sodium and magnesium due to the magnesium and sodium introduced by the extraction solutions.

The digestates for steps 1, 2 and 5 were analyzed at a dilution due to instrument problems caused by the high solids content of the digestates. The reporting limits were adjusted accordingly.

Method 6010B: The sample duplicate (DUP) precision for preparation batch 140-54251 and analytical batch 140-55243 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 6010B: The serial dilution performed for the following samples associated with batch 140-55243 was outside control limits: (140-24350-A-1-A SD ^5) and (140-24350-A-1-A SD ^50)

Method 6010B: The following samples were diluted due to the presence of titanium which interferes with Cobalt and Lead: N-SB-04 (12.0-18.0) (140-24350-7), N-SB-XPW 04 (10.0-15.0) (140-24350-9) and N-SB-XPW 01 (10.0-12.7) (140-24350-10). Elevated reporting limits (RLs) are provided.

Method 6010B: The following sample was diluted due to the presence of silicon which interferes with Arsenic, Lead and Selenium: N-SB-02 (65.0-71.5) (140-24350-5). Elevated reporting limits (RLs) are provided.

Method 6010B: The following sample was diluted due to the presence of iron which interferes with Arsenic and Selenium: N-SB-02 (12.5-20.0) (140-24350-4). Elevated reporting limits (RLs) are provided.

Method 6010B: The following samples were diluted due to the nature of the sample matrix: N-SB-05 (18.0-20.0) (140-24350-1), N-SB-05 (60.0-67.1) (140-24350-2), N-SB-18 (77.5-80.0) (140-24350-3), N-SB-02 (12.5-20.0) (140-24350-4), N-SB-02 (65.0-71.5) (140-24350-5), N-SB-14 (44.2-52.0) (140-24350-6), N-SB-04 (12.0-18.0) (140-24350-7), N-SB-04 (38.7-45.4) (140-24350-8), N-SB-XPW 04 (10.0-15.0) (140-24350-9) and N-SB-XPW 01 (10.0-12.7) (140-24350-10). Elevated reporting limits (RLs) are provided for aluminum and calcium.

Method 6010B SEP: The sample duplicate (DUP) precision for preparation batch 140-54371 and 140-54400 and analytical batch 140-55087 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 6010B SEP: The sample duplicate (DUP) precision for preparation batch 140-54401, 140-54485, 140-54486 and 140-54566 and analytical batch 140-55146 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 6010B SEP: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 140-54486 and 140-54566 and analytical batch 140-55146 recovered outside control limits for the following analyte: Lithium. This analyte was biased high in the LCS/LCSD and was detected in the associated samples as an estimated value; therefore, the data have been

Job ID: 140-24350-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

reported.

Method 6010B SEP: The following sample was diluted to bring the concentration of target analyte, calcium, within the calibration range: N-SB-05 (60.0-67.1) (140-24350-2). Elevated reporting limits (RLs) are provided.

Method 6010B SEP: The following samples were diluted due to the presence of silicon which interferes with Arsenic, Lead and Selenium: N-SB-18 (77.5-80.0) (140-24350-3), N-SB-02 (65.0-71.5) (140-24350-5), N-SB-04 (12.0-18.0) (140-24350-7), N-SB-04 (38.7-45.4) (140-24350-8), N-SB-XPW 04 (10.0-15.0) (140-24350-9) and N-SB-XPW 01 (10.0-12.7) (140-24350-10). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-24350-1	N-SB-05 (18.0-20.0)	Solid	08/17/21 12:40	08/24/21 09:40
140-24350-2	N-SB-05 (60.0-67.1)	Solid	08/17/21 15:40	08/24/21 09:40
140-24350-3	N-SB-18 (77.5-80.0)	Solid	08/18/21 10:00	08/24/21 09:40
140-24350-4	N-SB-02 (12.5-20.0)	Solid	08/18/21 14:10	08/24/21 09:40
140-24350-5	N-SB-02 (65.0-71.5)	Solid	08/19/21 12:00	08/24/21 09:40
140-24350-6	N-SB-14 (44.2-52.0)	Solid	08/19/21 14:45	08/24/21 09:40
140-24350-7	N-SB-04 (12.0-18.0)	Solid	08/21/21 07:35	08/24/21 09:40
140-24350-8	N-SB-04 (38.7-45.4)	Solid	08/21/21 08:30	08/24/21 09:40
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Solid	08/21/21 09:20	08/24/21 09:40
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Solid	08/21/21 10:10	08/24/21 09:40

Client Sample ID: N-SB-05 (18.0-20.0)
Date Collected: 08/17/21 12:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-1
Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		44	7.1	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Arsenic	ND		2.2	0.58	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Beryllium	ND		1.1	0.34	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Calcium	**880**	**J B**	1100	8.4	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Chromium	ND		2.2	0.31	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Cobalt	ND		11	0.20	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Iron	ND		22	13	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Lead	ND		2.2	0.49	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Lithium	ND		11	0.66	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Manganese	**2.8**	**J**	3.3	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Molybdenum	ND		8.9	0.36	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Selenium	ND		2.2	0.75	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**16**	**J**	33	5.3	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Arsenic	ND		1.7	0.43	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Beryllium	ND		0.83	0.053	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Calcium	**16000**		830	7.3	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Chromium	ND		1.7	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Cobalt	**0.57**	**J**	8.3	0.21	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Iron	**36**		17	9.6	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Lead	**0.77**	**J**	1.7	0.37	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Lithium	ND		8.3	0.50	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Manganese	**84**		2.5	0.93	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Molybdenum	ND		6.6	0.27	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Selenium	ND		1.7	0.56	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**52**		11	2.3	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Arsenic	**0.26**	**J**	0.55	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Beryllium	ND		0.28	0.017	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Calcium	**9.2**	**J**	280	1.7	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Chromium	**0.31**	**J**	0.55	0.078	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Cobalt	**0.62**	**J**	2.8	0.050	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Iron	**240**		5.5	3.2	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Lead	ND		0.55	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Lithium	ND		2.8	0.17	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Manganese	**51**	**B**	0.83	0.030	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Molybdenum	ND		2.2	0.091	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**370**		11	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Arsenic	**1.2**		0.55	0.24	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Beryllium	**0.077**	**J**	0.28	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Calcium	**16000**		280	2.4	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Chromium	**1.6**		0.55	0.078	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1

Client Sample ID: N-SB-05 (18.0-20.0)
Date Collected: 08/17/21 12:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-1
Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.2	J	2.8	0.059	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Iron	3900		5.5	3.2	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Lead	2.7		0.55	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Lithium	0.99	J	2.8	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Manganese	93		0.83	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Molybdenum	0.45	J	2.2	0.091	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Selenium	ND		0.55	0.52	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	210	B	170	26	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Arsenic	ND		8.3	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Beryllium	ND		4.2	0.35	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Calcium	11000		4200	12	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Chromium	2.1	J	8.3	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Cobalt	ND		42	0.66	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Iron	ND		83	49	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Lead	ND		8.3	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Lithium	14	J B *+	42	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Manganese	5.2	J	12	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Molybdenum	ND		33	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Selenium	ND		8.3	2.9	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	2300		11	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Arsenic	2.2		0.55	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Beryllium	0.095	J	0.28	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Calcium	4500		280	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Chromium	3.9		0.55	0.078	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Cobalt	1.6	J	2.8	0.051	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Iron	4500		5.5	3.2	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Lead	2.0		0.55	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Lithium	3.9		2.8	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Manganese	61		0.83	0.28	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Molybdenum	0.24	J	2.2	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	25000		110	18	mg/Kg	☼	10/08/21 08:00	10/26/21 11:43	10
Arsenic	0.70		0.55	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Beryllium	0.37		0.28	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Calcium	3100		2800	29	mg/Kg	☼	10/08/21 08:00	10/26/21 11:43	10
Chromium	9.3		0.55	0.078	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Cobalt	0.15	J	2.8	0.029	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Iron	2800		5.5	4.5	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Lead	4.3		0.55	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Lithium	6.9		2.8	0.17	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Manganese	53		0.83	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1

Client Sample ID: N-SB-05 (18.0-20.0)

Date Collected: 08/17/21 12:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-1

Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.2	0.091	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**28000**		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	**4.4**		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	**0.55**		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	**52000**		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	**17**		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	**4.1**		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	**11000**		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	**9.8**		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	**26**		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	**350**		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	**0.69**	**J**	2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**26000**		110	18	mg/Kg	☼	09/29/21 08:00	10/27/21 11:28	10
Arsenic	**5.3**		0.55	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Beryllium	**0.55**		0.28	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Calcium	**51000**		2800	29	mg/Kg	☼	09/29/21 08:00	10/27/21 11:28	10
Chromium	**17**		0.55	0.078	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Cobalt	**3.2**		2.8	0.029	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Iron	**10000**		5.5	4.5	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Lead	**8.4**		0.55	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Lithium	**12**		2.8	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Manganese	**280**		0.83	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Molybdenum	**0.78**	**J**	2.2	0.091	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Selenium	ND		0.55	0.19	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1

Client Sample ID: N-SB-05 (60.0-67.1)
Date Collected: 08/17/21 15:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-2
Matrix: Solid
Percent Solids: 81.3

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		49	7.9	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Arsenic	ND		2.5	0.64	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Beryllium	ND		1.2	0.38	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Calcium	**560**	**J B**	1200	9.4	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Chromium	ND		2.5	0.34	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Cobalt	ND		12	0.22	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Iron	ND		25	14	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Lead	ND		2.5	0.54	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Lithium	ND		12	0.74	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Manganese	**2.7**	**J**	3.7	0.15	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Molybdenum	ND		9.8	0.40	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Selenium	ND		2.5	0.84	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**33**	**J**	37	5.9	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Arsenic	ND		1.8	0.48	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Beryllium	ND		0.92	0.059	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Calcium	**25000**		920	8.1	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Chromium	ND		1.8	0.26	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Cobalt	ND		9.2	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Iron	**380**		18	11	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Lead	**1.2**	**J**	1.8	0.41	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Lithium	ND		9.2	0.55	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Manganese	**85**		2.8	1.0	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Molybdenum	ND		7.4	0.30	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Selenium	ND		1.8	0.63	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**340**		12	2.6	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Arsenic	**0.31**	**J**	0.62	0.16	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Beryllium	**0.054**	**J**	0.31	0.018	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Calcium	**6.9**	**J**	310	1.8	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Chromium	**0.77**		0.62	0.086	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Cobalt	**0.67**	**J**	3.1	0.055	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Iron	**4100**		6.2	3.6	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Lead	**0.15**	**J**	0.62	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Lithium	ND		3.1	0.18	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Manganese	**42**	**B**	0.92	0.033	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Molybdenum	ND		2.5	0.10	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Selenium	ND		0.62	0.21	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**120**		12	2.0	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Arsenic	ND		0.62	0.27	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Beryllium	**0.026**	**J**	0.31	0.020	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Calcium	**59000**		620	5.4	mg/Kg	☼	10/05/21 08:00	10/25/21 17:56	2
Chromium	**0.80**		0.62	0.086	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1

Client Sample ID: N-SB-05 (60.0-67.1)
Date Collected: 08/17/21 15:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-2
Matrix: Solid
Percent Solids: 81.3

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.70	J	3.1	0.065	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Iron	3000		6.2	3.6	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Lead	4.5		0.62	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Lithium	0.95	J	3.1	0.18	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Manganese	350		0.92	0.16	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Molybdenum	ND		2.5	0.10	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Selenium	ND		0.62	0.58	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	64	J B	180	29	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Arsenic	ND		9.2	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Beryllium	ND		4.6	0.39	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Calcium	8700		4600	14	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Chromium	1.5	J	9.2	1.3	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Cobalt	ND		46	0.74	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Iron	ND		92	54	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Lead	ND		9.2	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Lithium	14	J B *+	46	2.7	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Manganese	5.4	J	14	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Molybdenum	ND		37	1.5	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Selenium	ND		9.2	3.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1800		12	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Arsenic	2.3		0.62	0.18	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Beryllium	0.076	J	0.31	0.015	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Calcium	7000		310	2.6	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Chromium	4.0		0.62	0.086	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Cobalt	2.0	J	3.1	0.057	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Iron	6300		6.2	3.6	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Lead	2.1		0.62	0.14	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Lithium	3.6		3.1	0.18	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Manganese	69		0.92	0.31	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Molybdenum	0.29	J	2.5	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Selenium	ND		0.62	0.21	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	27000		120	20	mg/Kg	☼	10/08/21 08:00	10/26/21 11:52	10
Arsenic	0.61	J	0.62	0.16	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Beryllium	0.52		0.31	0.020	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Calcium	4800		3100	32	mg/Kg	☼	10/08/21 08:00	10/26/21 11:52	10
Chromium	10		0.62	0.086	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Cobalt	0.34	J	3.1	0.032	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Iron	3400		6.2	5.0	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Lead	4.4		0.62	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Lithium	6.0		3.1	0.18	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Manganese	59		0.92	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-05 (60.0-67.1)
Date Collected: 08/17/21 15:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-2
Matrix: Solid
Percent Solids: 81.3

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.5	0.10	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Selenium	ND		0.62	0.21	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**29000**		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	**3.2**		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	**0.67**		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	**110000**		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	**17**		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	**3.7**		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	**17000**		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	**12**		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	**24**		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	**610**		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	**0.29**	**J**	2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**22000**		120	20	mg/Kg	☼	09/29/21 08:00	10/27/21 11:52	10
Arsenic	**2.5**		0.62	0.16	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Beryllium	**0.54**		0.31	0.020	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Calcium	**84000**		3100	32	mg/Kg	☼	09/29/21 08:00	10/27/21 11:52	10
Chromium	**13**		0.62	0.086	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Cobalt	**3.2**		3.1	0.032	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Iron	**14000**		6.2	5.0	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Lead	**9.9**		0.62	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Lithium	**9.6**		3.1	0.18	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Manganese	**380**		0.92	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Molybdenum	**0.31**	**J**	2.5	0.10	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Selenium	ND		0.62	0.21	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1

Client Sample ID: N-SB-18 (77.5-80.0)
Date Collected: 08/18/21 10:00
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-3
Matrix: Solid
Percent Solids: 91.3

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		44	7.0	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Arsenic	ND		2.2	0.57	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Beryllium	ND		1.1	0.34	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Calcium	**500**	**J B**	1100	8.3	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Chromium	ND		2.2	0.31	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Cobalt	ND		11	0.20	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Iron	ND		22	13	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Lead	ND		2.2	0.48	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Lithium	ND		11	0.66	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Manganese	**4.0**		3.3	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Molybdenum	ND		8.8	0.36	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Selenium	ND		2.2	0.74	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**20**	**J**	33	5.3	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Arsenic	ND		1.6	0.43	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Beryllium	ND		0.82	0.053	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Calcium	**12000**		820	7.2	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Chromium	ND		1.6	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Cobalt	**0.91**	**J**	8.2	0.21	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Iron	**440**		16	9.5	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Lead	**1.7**		1.6	0.36	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Lithium	ND		8.2	0.49	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Manganese	**82**		2.5	0.92	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Molybdenum	ND		6.6	0.27	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Selenium	ND		1.6	0.56	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**82**		11	2.3	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Arsenic	**0.91**		0.55	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Beryllium	**0.035**	**J**	0.27	0.016	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Calcium	**6.5**	**J**	270	1.6	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Chromium	**0.62**		0.55	0.077	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Cobalt	**0.53**	**J**	2.7	0.049	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Iron	**2500**		5.5	3.2	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Lead	**0.12**	**J**	0.55	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Lithium	ND		2.7	0.16	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Manganese	**69**	**B**	0.82	0.030	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Molybdenum	**0.13**	**J**	2.2	0.090	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**77**		11	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Arsenic	ND		0.55	0.24	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Beryllium	**0.030**	**J**	0.27	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Calcium	**39000**		270	2.4	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Chromium	**0.87**		0.55	0.077	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1

Client Sample ID: N-SB-18 (77.5-80.0)

Date Collected: 08/18/21 10:00
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-3

Matrix: Solid
Percent Solids: 91.3

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.48	J	2.7	0.058	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Iron	3800		5.5	3.2	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Lead	2.4		0.55	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Lithium	0.83	J	2.7	0.16	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Manganese	360		0.82	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Molybdenum	0.11	J	2.2	0.090	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Selenium	ND		0.55	0.51	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	63	J B	160	26	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Arsenic	ND		8.2	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Beryllium	ND		4.1	0.35	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Calcium	7700		4100	12	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Chromium	1.4	J	8.2	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Cobalt	ND		41	0.66	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Iron	ND		82	48	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Lead	ND		8.2	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Lithium	12	J B *+	41	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Manganese	39		12	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Molybdenum	ND		33	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Selenium	ND		8.2	2.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1200		11	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Arsenic	2.2		0.55	0.16	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Beryllium	0.084	J	0.27	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Calcium	25000		270	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Chromium	2.9		0.55	0.077	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Cobalt	1.5	J	2.7	0.050	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Iron	8500		5.5	3.2	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Lead	2.0		0.55	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Lithium	4.9		2.7	0.16	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Manganese	300		0.82	0.27	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Molybdenum	0.28	J	2.2	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	21000		110	18	mg/Kg	☼	10/08/21 08:00	10/26/21 11:57	10
Arsenic	0.66	J	1.1	0.28	mg/Kg	☼	10/08/21 08:00	10/26/21 14:50	2
Beryllium	0.29		0.27	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Calcium	4200		2700	28	mg/Kg	☼	10/08/21 08:00	10/26/21 11:57	10
Chromium	9.7		0.55	0.077	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Cobalt	0.71	J	2.7	0.028	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Iron	3300		5.5	4.5	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Lead	2.8		1.1	0.24	mg/Kg	☼	10/08/21 08:00	10/26/21 14:50	2
Lithium	5.9		2.7	0.16	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Manganese	52		0.82	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-18 (77.5-80.0)
Date Collected: 08/18/21 10:00
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-3
Matrix: Solid
Percent Solids: 91.3

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.2	0.090	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Selenium	ND		1.1	0.37	mg/Kg	☼	10/08/21 08:00	10/26/21 14:50	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**22000**		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	**3.8**		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	**0.44**		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	**89000**		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	**16**		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	**4.1**		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	**19000**		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	**8.9**		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	**24**		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	**910**		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	**0.52**	**J**	2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**19000**		110	18	mg/Kg	☼	09/29/21 08:00	10/27/21 11:57	10
Arsenic	**5.8**		0.55	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Beryllium	**0.38**		0.27	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Calcium	**83000**		2700	28	mg/Kg	☼	09/29/21 08:00	10/27/21 11:57	10
Chromium	**17**		0.55	0.077	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Cobalt	**5.0**		2.7	0.028	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Iron	**13000**		5.5	4.5	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Lead	**9.0**		0.55	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Lithium	**10**		2.7	0.16	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Manganese	**600**		0.82	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Molybdenum	**1.0**	**J**	2.2	0.090	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Selenium	ND	L	0.55	0.19	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1

Client Sample ID: N-SB-02 (12.5-20.0)
Lab Sample ID: 140-24350-4

Date Collected: 08/18/21 14:10
Matrix: Solid

Date Received: 08/24/21 09:40
Percent Solids: 93.1

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		43	6.9	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Arsenic	ND		2.1	0.56	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Beryllium	ND		1.1	0.33	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Calcium	**1200**	**B**	1100	8.2	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Chromium	ND		2.1	0.30	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Cobalt	ND		11	0.19	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Iron	ND		21	12	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Lead	ND		2.1	0.47	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Lithium	ND		11	0.64	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Manganese	**3.1**	**J**	3.2	0.13	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Molybdenum	ND		8.6	0.35	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Selenium	ND		2.1	0.73	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**12**	**J**	32	5.2	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Arsenic	ND		1.6	0.42	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Beryllium	ND		0.81	0.052	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Calcium	**18000**		810	7.1	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Chromium	ND		1.6	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Cobalt	**0.31**	**J**	8.1	0.20	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Iron	**19**		16	9.3	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Lead	**0.61**	**J**	1.6	0.35	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Lithium	ND		8.1	0.48	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Manganese	**150**		2.4	0.90	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Molybdenum	ND		6.4	0.26	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Selenium	ND		1.6	0.55	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**58**		11	2.3	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Arsenic	**0.24**	**J**	0.54	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Beryllium	ND		0.27	0.016	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Calcium	**9.7**	**J**	270	1.6	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Chromium	**0.25**	**J**	0.54	0.075	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Cobalt	**2.3**	**J**	2.7	0.048	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Iron	**310**		5.4	3.1	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Lead	ND		0.54	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Lithium	ND		2.7	0.16	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Manganese	**210**	**B**	0.81	0.029	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Molybdenum	**0.13**	**J**	2.1	0.088	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Selenium	ND		0.54	0.18	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**510**		11	1.7	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Arsenic	ND		0.54	0.24	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Beryllium	**0.17**	**J**	0.27	0.017	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Calcium	**19000**		270	2.4	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Chromium	**1.6**		0.54	0.075	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1

Client Sample ID: N-SB-02 (12.5-20.0)
Date Collected: 08/18/21 14:10
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-4
Matrix: Solid
Percent Solids: 93.1

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.1	J	2.7	0.057	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Iron	8000		5.4	3.1	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Lead	3.7		0.54	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Lithium	1.4	J	2.7	0.16	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Manganese	170		0.81	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Molybdenum	0.75	J	2.1	0.088	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Selenium	ND		0.54	0.50	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	140	J B	160	25	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Arsenic	3.4	J	8.1	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Beryllium	ND		4.0	0.34	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Calcium	12000		4000	12	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Chromium	2.6	J	8.1	1.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Cobalt	ND		40	0.64	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Iron	ND		81	47	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Lead	ND		8.1	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Lithium	10	J B *+	40	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Manganese	17		12	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Molybdenum	ND		32	1.3	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Selenium	ND		8.1	2.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	4000		11	1.7	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Arsenic	31		0.54	0.16	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Beryllium	0.23	J	0.27	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Calcium	5000		270	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Chromium	6.9		0.54	0.075	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Cobalt	3.3		2.7	0.049	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Iron	19000		5.4	3.1	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Lead	4.2		0.54	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Lithium	6.6		2.7	0.16	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Manganese	120		0.81	0.27	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Molybdenum	2.8		2.1	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Selenium	ND		0.54	0.18	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	29000		110	17	mg/Kg	☼	10/08/21 08:00	10/26/21 12:02	10
Arsenic	4.1		0.54	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Beryllium	0.57		0.27	0.017	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Calcium	2300		270	2.8	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Chromium	17		0.54	0.075	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Cobalt	0.44	J	2.7	0.028	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Iron	5200		5.4	4.4	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Lead	4.2		0.54	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Lithium	13		2.7	0.16	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Manganese	52		0.81	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-02 (12.5-20.0)
Date Collected: 08/18/21 14:10
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-4
Matrix: Solid
Percent Solids: 93.1

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.31	J	2.1	0.088	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Selenium	ND		0.54	0.18	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	34000		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	38		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	0.97		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	57000		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	28		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	7.4		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	33000		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	13		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	31		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	720		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	4.0		2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	31000		110	17	mg/Kg	☼	09/29/21 08:00	10/27/21 12:02	10
Arsenic	51		1.1	0.28	mg/Kg	☼	09/29/21 08:00	10/27/21 16:12	2
Beryllium	0.76		0.27	0.017	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Calcium	54000		2700	28	mg/Kg	☼	09/29/21 08:00	10/27/21 12:02	10
Chromium	22		0.54	0.075	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Cobalt	6.2		2.7	0.028	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Iron	34000		11	8.8	mg/Kg	☼	09/29/21 08:00	10/27/21 16:12	2
Lead	11		0.54	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Lithium	19		2.7	0.16	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Manganese	590		0.81	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Molybdenum	5.5		2.1	0.088	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Selenium	ND		1.1	0.37	mg/Kg	☼	09/29/21 08:00	10/27/21 16:12	2

Client Sample ID: N-SB-02 (65.0-71.5)
Lab Sample ID: 140-24350-5
Date Collected: 08/19/21 12:00
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 89.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		45	7.2	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Arsenic	ND		2.2	0.58	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Beryllium	ND		1.1	0.35	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Calcium	**300**	**J B**	1100	8.5	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Chromium	ND		2.2	0.31	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Cobalt	ND		11	0.20	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Iron	ND		22	13	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Lead	ND		2.2	0.49	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Lithium	ND		11	0.67	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Manganese	**3.5**		3.4	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Molybdenum	ND		9.0	0.37	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Selenium	ND		2.2	0.76	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**11**	**J**	34	5.4	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Arsenic	ND		1.7	0.44	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Beryllium	ND		0.84	0.054	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Calcium	**11000**		840	7.4	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Chromium	ND		1.7	0.24	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Cobalt	**0.29**	**J**	8.4	0.21	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Iron	**270**		17	9.8	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Lead	**1.3**	**J**	1.7	0.37	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Lithium	ND		8.4	0.50	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Manganese	**68**		2.5	0.94	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Molybdenum	ND		6.7	0.28	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Selenium	ND		1.7	0.57	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**45**		11	2.4	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Arsenic	**0.62**		0.56	0.15	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Beryllium	**0.034**	**J**	0.28	0.017	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Calcium	**6.2**	**J**	280	1.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Chromium	**0.44**	**J**	0.56	0.078	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Cobalt	**0.36**	**J**	2.8	0.050	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Iron	**3100**		5.6	3.3	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Lead	**0.16**	**J**	0.56	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Lithium	ND		2.8	0.17	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Manganese	**54**	**B**	0.84	0.030	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Molybdenum	ND		2.2	0.092	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Selenium	ND		0.56	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**79**		11	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Arsenic	ND		0.56	0.25	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Beryllium	ND		0.28	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Calcium	**40000**		280	2.5	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Chromium	**0.87**		0.56	0.078	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1

Client Sample ID: N-SB-02 (65.0-71.5)
Date Collected: 08/19/21 12:00
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-5
Matrix: Solid
Percent Solids: 89.2

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.30	J	2.8	0.059	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Iron	2200		5.6	3.3	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Lead	1.7		0.56	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Lithium	0.96	J	2.8	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Manganese	150		0.84	0.15	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Molybdenum	ND		2.2	0.092	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Selenium	ND		0.56	0.53	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	46	J B	170	26	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Arsenic	ND		8.4	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Beryllium	ND		4.2	0.35	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Calcium	7200		4200	12	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Chromium	ND		8.4	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Cobalt	ND		42	0.67	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Iron	ND		84	49	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Lead	ND		8.4	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Lithium	7.6	J B *+	42	2.5	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Manganese	14		13	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Molybdenum	ND		34	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Selenium	ND		8.4	2.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1200		11	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Arsenic	2.0		0.56	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Beryllium	0.040	J	0.28	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Calcium	25000		280	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Chromium	4.3		0.56	0.078	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Cobalt	1.3	J	2.8	0.052	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Iron	3400		5.6	3.3	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Lead	1.2		0.56	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Lithium	3.6		2.8	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Manganese	49		0.84	0.28	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Molybdenum	ND		2.2	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Selenium	ND		0.56	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	18000		110	18	mg/Kg	☼	10/08/21 08:00	10/26/21 12:21	10
Arsenic	0.72	J	1.1	0.29	mg/Kg	☼	10/08/21 08:00	10/26/21 14:55	2
Beryllium	0.25	J	0.28	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Calcium	4100		2800	29	mg/Kg	☼	10/08/21 08:00	10/26/21 12:21	10
Chromium	7.4		0.56	0.078	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Cobalt	0.078	J	2.8	0.029	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Iron	2500		5.6	4.6	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Lead	3.7		1.1	0.25	mg/Kg	☼	10/08/21 08:00	10/26/21 14:55	2
Lithium	11		2.8	0.17	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Manganese	45		0.84	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1

Client Sample ID: N-SB-02 (65.0-71.5)

Date Collected: 08/19/21 12:00
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-5

Matrix: Solid
Percent Solids: 89.2

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.2	0.092	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Selenium	ND		1.1	0.38	mg/Kg	☼	10/08/21 08:00	10/26/21 14:55	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**20000**		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	**3.4**		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	**0.32**		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	**88000**		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	**13**		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	**2.3**	**J**	2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	**12000**		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	**8.1**		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	**23**		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	**390**		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	ND		2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**13000**		110	18	mg/Kg	☼	09/29/21 08:00	10/27/21 12:07	10
Arsenic	**3.0**		1.1	0.29	mg/Kg	☼	09/29/21 08:00	10/27/21 16:18	2
Beryllium	**0.26**	**J**	0.28	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Calcium	**95000**		2800	29	mg/Kg	☼	09/29/21 08:00	10/27/21 12:07	10
Chromium	**10**		0.56	0.078	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Cobalt	**2.6**	**J**	2.8	0.029	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Iron	**14000**		5.6	4.6	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Lead	**6.8**		1.1	0.25	mg/Kg	☼	09/29/21 08:00	10/27/21 16:18	2
Lithium	**7.6**		2.8	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Manganese	**440**		0.84	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Molybdenum	**0.26**	**J**	2.2	0.092	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Selenium	ND		1.1	0.38	mg/Kg	☼	09/29/21 08:00	10/27/21 16:18	2

Client Sample ID: N-SB-14 (44.2-52.0)
Date Collected: 08/19/21 14:45
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-6
Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		44	7.1	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Arsenic	ND		2.2	0.58	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Beryllium	ND		1.1	0.34	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Calcium	**1100**	**B**	1100	8.4	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Chromium	ND		2.2	0.31	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Cobalt	ND		11	0.20	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Iron	ND		22	13	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Lead	ND		2.2	0.49	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Lithium	ND		11	0.66	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Manganese	**10**		3.3	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Molybdenum	ND		8.9	0.36	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Selenium	ND		2.2	0.75	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**31**	**J**	33	5.3	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Arsenic	ND		1.7	0.43	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Beryllium	ND		0.83	0.053	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Calcium	**25000**		830	7.3	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Chromium	**0.41**	**J**	1.7	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Cobalt	ND		8.3	0.21	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Iron	**160**		17	9.6	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Lead	**1.3**	**J**	1.7	0.37	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Lithium	ND		8.3	0.50	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Manganese	**130**		2.5	0.93	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Molybdenum	ND		6.6	0.27	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Selenium	ND		1.7	0.56	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**200**		11	2.3	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Arsenic	**0.32**	**J**	0.55	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Beryllium	**0.028**	**J**	0.28	0.017	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Calcium	**8.5**	**J**	280	1.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Chromium	**1.7**		0.55	0.078	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Cobalt	**0.39**	**J**	2.8	0.050	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Iron	**1700**		5.5	3.2	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Lead	ND		0.55	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Lithium	ND		2.8	0.17	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Manganese	**61**	**B**	0.83	0.030	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Molybdenum	**0.29**	**J**	2.2	0.091	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**300**		11	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Arsenic	ND		0.55	0.24	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Beryllium	**0.064**	**J**	0.28	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Calcium	**46000**		280	2.4	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Chromium	**1.6**		0.55	0.078	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1

Client Sample ID: N-SB-14 (44.2-52.0)

Date Collected: 08/19/21 14:45
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-6

Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.3	J	2.8	0.059	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Iron	2200		5.5	3.2	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Lead	2.8		0.55	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Lithium	1.6	J	2.8	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Manganese	300		0.83	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Molybdenum	0.28	J	2.2	0.091	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Selenium	ND		0.55	0.52	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	130	J B	170	26	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Arsenic	ND		8.3	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Beryllium	ND		4.2	0.35	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Calcium	14000		4200	12	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Chromium	2.0	J	8.3	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Cobalt	ND		42	0.66	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Iron	ND		83	49	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Lead	ND		8.3	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Lithium	8.2	J B *+	42	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Manganese	4.2	J	12	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Molybdenum	ND		33	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Selenium	ND		8.3	2.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	3000		11	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Arsenic	2.4		0.55	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Beryllium	0.13	J	0.28	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Calcium	5900		280	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Chromium	5.5		0.55	0.078	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Cobalt	2.8		2.8	0.051	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Iron	8100		5.5	3.2	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Lead	2.7		0.55	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Lithium	5.4		2.8	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Manganese	100		0.83	0.28	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Molybdenum	0.38	J	2.2	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	30000		110	18	mg/Kg	☼	10/08/21 08:00	10/26/21 12:26	10
Arsenic	0.88		0.55	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Beryllium	0.49		0.28	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Calcium	3600		2800	29	mg/Kg	☼	10/08/21 08:00	10/26/21 12:26	10
Chromium	14		0.55	0.078	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Cobalt	0.22	J	2.8	0.029	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Iron	4000		5.5	4.5	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Lead	3.8		0.55	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Lithium	8.8		2.8	0.17	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Manganese	62		0.83	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-14 (44.2-52.0)
Date Collected: 08/19/21 14:45
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-6
Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.2	0.091	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**33000**		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	**3.6**		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	**0.71**		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	**96000**		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	**25**		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	**4.7**		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	**16000**		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	**11**		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	**24**		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	**670**		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	**0.94**	**J**	2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**30000**		110	18	mg/Kg	☼	09/29/21 08:00	10/27/21 12:12	10
Arsenic	**30**		0.55	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Beryllium	**0.61**		0.28	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Calcium	**81000**		2800	29	mg/Kg	☼	09/29/21 08:00	10/27/21 12:12	10
Chromium	**21**		0.55	0.078	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Cobalt	**7.9**		2.8	0.029	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Iron	**19000**		5.5	4.5	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Lead	**9.2**		0.55	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Lithium	**15**		2.8	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Manganese	**420**		0.83	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Molybdenum	**8.3**		2.2	0.091	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Selenium	ND	L	0.55	0.19	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1

Client Sample ID: N-SB-04 (12.0-18.0)
Lab Sample ID: 140-24350-7

Date Collected: 08/21/21 07:35
Matrix: Solid

Date Received: 08/24/21 09:40
Percent Solids: 89.7

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		45	7.1	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Arsenic	ND		2.2	0.58	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Beryllium	ND		1.1	0.34	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Calcium	**1400**	**B**	1100	8.5	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Chromium	ND		2.2	0.31	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Cobalt	ND		11	0.20	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Iron	ND		22	13	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Lead	ND		2.2	0.49	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Lithium	ND		11	0.67	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Manganese	**0.62**	**J**	3.3	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Molybdenum	ND		8.9	0.37	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Selenium	ND		2.2	0.76	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**10**	**J**	33	5.4	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Arsenic	ND		1.7	0.43	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Beryllium	ND		0.84	0.054	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Calcium	**31000**		840	7.4	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Chromium	**0.32**	**J**	1.7	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Cobalt	ND		8.4	0.21	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Iron	ND		17	9.7	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Lead	**0.82**	**J**	1.7	0.37	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Lithium	ND		8.4	0.50	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Manganese	**170**		2.5	0.94	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Molybdenum	ND		6.7	0.27	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Selenium	ND		1.7	0.57	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**120**		11	2.3	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Arsenic	**0.42**	**J**	0.56	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Beryllium	**0.039**	**J**	0.28	0.017	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Calcium	**7.8**	**J**	280	1.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Chromium	**0.50**	**J**	0.56	0.078	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Cobalt	**2.6**	**J**	2.8	0.050	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Iron	**330**		5.6	3.2	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Lead	**0.13**	**J**	0.56	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Lithium	ND		2.8	0.17	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Manganese	**450**	**B**	0.84	0.030	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Molybdenum	**0.31**	**J**	2.2	0.091	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Selenium	ND		0.56	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**600**		11	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Arsenic	ND		0.56	0.25	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Beryllium	**0.16**	**J**	0.28	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Calcium	**28000**		280	2.5	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Chromium	**2.4**		0.56	0.078	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1

Client Sample ID: N-SB-04 (12.0-18.0)
Date Collected: 08/21/21 07:35
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-7
Matrix: Solid
Percent Solids: 89.7

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.9	J	2.8	0.059	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Iron	6700		5.6	3.2	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Lead	5.1		0.56	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Lithium	1.7	J	2.8	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Manganese	220		0.84	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Molybdenum	0.60	J	2.2	0.091	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Selenium	0.52	J	0.56	0.52	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	200	B	170	26	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Arsenic	ND		8.4	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Beryllium	ND		4.2	0.35	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Calcium	13000		4200	12	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Chromium	2.5	J	8.4	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Cobalt	ND		42	0.67	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Iron	ND		84	49	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Lead	ND		8.4	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Lithium	8.4	J B *+	42	2.5	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Manganese	11	J	13	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Molybdenum	ND		33	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Selenium	ND		8.4	2.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	5400		11	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Arsenic	4.5		0.56	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Beryllium	0.24	J	0.28	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Calcium	5300		280	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Chromium	8.7		0.56	0.078	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Cobalt	4.0		2.8	0.051	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Iron	13000		5.6	3.2	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Lead	3.8		0.56	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Lithium	8.5		2.8	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Manganese	130		0.84	0.28	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Molybdenum	0.57	J	2.2	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Selenium	ND		0.56	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	34000		110	18	mg/Kg	☼	10/08/21 08:00	10/26/21 12:31	10
Arsenic	1.4		1.1	0.29	mg/Kg	☼	10/08/21 08:00	10/26/21 15:00	2
Beryllium	0.58		0.28	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Calcium	1700		280	2.9	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Chromium	21		0.56	0.078	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Cobalt	0.36	J	5.6	0.058	mg/Kg	☼	10/08/21 08:00	10/26/21 15:00	2
Iron	4800		5.6	4.6	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Lead	3.1		1.1	0.25	mg/Kg	☼	10/08/21 08:00	10/26/21 15:00	2
Lithium	16		2.8	0.17	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Manganese	46		0.84	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1

Client Sample ID: N-SB-04 (12.0-18.0)

Date Collected: 08/21/21 07:35
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-7

Matrix: Solid
Percent Solids: 89.7

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.13	J	2.2	0.091	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Selenium	ND		1.1	0.38	mg/Kg	☼	10/08/21 08:00	10/26/21 15:00	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	40000		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	6.4		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	1.0		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	80000		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	35		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	8.8		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	25000		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	13		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	35		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	1000		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	1.6	J	2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	0.52		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	48000		110	18	mg/Kg	☼	09/29/21 08:00	10/27/21 12:17	10
Arsenic	8.3		0.56	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Beryllium	0.98		0.28	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Calcium	67000		2800	29	mg/Kg	☼	09/29/21 08:00	10/27/21 12:17	10
Chromium	36		0.56	0.078	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Cobalt	10		5.6	0.058	mg/Kg	☼	09/29/21 08:00	10/27/21 16:23	2
Iron	23000		5.6	4.6	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Lead	13		1.1	0.25	mg/Kg	☼	09/29/21 08:00	10/27/21 16:23	2
Lithium	28		2.8	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Manganese	770		0.84	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Molybdenum	1.7	J	2.2	0.091	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Selenium	ND	L	0.56	0.19	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-04 (38.7-45.4)

Date Collected: 08/21/21 08:30
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-8

Matrix: Solid
Percent Solids: 86.5

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		46	7.4	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Arsenic	ND		2.3	0.60	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Beryllium	ND		1.2	0.36	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Calcium	**800**	**J B**	1200	8.8	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Chromium	ND		2.3	0.32	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Cobalt	ND		12	0.21	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Iron	ND		23	13	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Lead	ND		2.3	0.51	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Lithium	ND		12	0.69	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Manganese	**9.1**		3.5	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Molybdenum	ND		9.2	0.38	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Selenium	ND		2.3	0.79	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**13**	**J**	35	5.5	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Arsenic	ND		1.7	0.45	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Beryllium	ND		0.87	0.055	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Calcium	**19000**		870	7.6	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Chromium	ND		1.7	0.24	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Cobalt	ND		8.7	0.22	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Iron	**40**		17	10	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Lead	**0.97**	**J**	1.7	0.38	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Lithium	ND		8.7	0.52	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Manganese	**120**		2.6	0.97	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Molybdenum	ND		6.9	0.28	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Selenium	ND		1.7	0.59	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**52**		12	2.4	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Arsenic	ND		0.58	0.15	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Beryllium	**0.026**	**J**	0.29	0.017	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Calcium	**8.5**	**J**	290	1.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Chromium	**0.22**	**J**	0.58	0.081	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Cobalt	**0.069**	**J**	2.9	0.052	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Iron	**180**		5.8	3.4	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Lead	ND		0.58	0.13	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Lithium	ND		2.9	0.17	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Manganese	**23**	**B**	0.87	0.031	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Molybdenum	ND		2.3	0.095	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Selenium	ND		0.58	0.20	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**470**		12	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Arsenic	ND		0.58	0.25	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Beryllium	**0.10**	**J**	0.29	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Calcium	**15000**		290	2.5	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Chromium	**1.8**		0.58	0.081	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-04 (38.7-45.4)
Date Collected: 08/21/21 08:30
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-8
Matrix: Solid
Percent Solids: 86.5

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.3	J	2.9	0.061	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Iron	5600		5.8	3.4	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Lead	3.1		0.58	0.13	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Lithium	1.1	J	2.9	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Manganese	100		0.87	0.15	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Molybdenum	1.6	J	2.3	0.095	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Selenium	ND		0.58	0.54	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	160	J B	170	27	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Arsenic	ND		8.7	2.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Beryllium	ND		4.3	0.36	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Calcium	8800		4300	13	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Chromium	1.9	J	8.7	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Cobalt	ND		43	0.69	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Iron	ND		87	51	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Lead	ND		8.7	1.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Lithium	8.0	J B *+	43	2.5	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Manganese	3.4	J	13	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Molybdenum	ND		35	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Selenium	ND		8.7	3.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	2700		12	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Arsenic	4.0		0.58	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Beryllium	0.12	J	0.29	0.014	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Calcium	5300		290	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Chromium	5.2		0.58	0.081	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Cobalt	2.6	J	2.9	0.053	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Iron	12000		5.8	3.4	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Lead	3.1		0.58	0.13	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Lithium	4.5		2.9	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Manganese	94		0.87	0.29	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Molybdenum	3.5		2.3	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Selenium	ND		0.58	0.20	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	31000		120	18	mg/Kg	☼	10/08/21 08:00	10/26/21 12:36	10
Arsenic	1.2		1.2	0.30	mg/Kg	☼	10/08/21 08:00	10/26/21 15:05	2
Beryllium	0.54		0.29	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Calcium	5700		2900	30	mg/Kg	☼	10/08/21 08:00	10/26/21 12:36	10
Chromium	17		0.58	0.081	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Cobalt	0.96	J	2.9	0.030	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Iron	5800		5.8	4.7	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Lead	4.9		1.2	0.25	mg/Kg	☼	10/08/21 08:00	10/26/21 15:05	2
Lithium	7.5		2.9	0.17	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Manganese	91		0.87	0.13	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-04 (38.7-45.4)
Date Collected: 08/21/21 08:30
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-8
Matrix: Solid
Percent Solids: 86.5

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.28	J	2.3	0.095	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Selenium	ND		1.2	0.39	mg/Kg	☼	10/08/21 08:00	10/26/21 15:05	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	35000		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	5.2		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	0.79		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	54000		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	27		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	4.9		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	24000		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	12		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	21		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	440		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	5.4		2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	27000		120	18	mg/Kg	☼	09/29/21 08:00	10/27/21 12:21	10
Arsenic	4.1		0.58	0.15	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Beryllium	0.55		0.29	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Calcium	61000		2900	30	mg/Kg	☼	09/29/21 08:00	10/27/21 12:21	10
Chromium	15		0.58	0.081	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Cobalt	3.3		2.9	0.030	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Iron	15000		5.8	4.7	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Lead	8.5		0.58	0.13	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Lithium	10		2.9	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Manganese	330		0.87	0.13	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Molybdenum	2.6		2.3	0.095	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Selenium	ND		0.58	0.20	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1

Client Sample ID: N-SB-XPW 04 (10.0-15.0)
Date Collected: 08/21/21 09:20
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-9
Matrix: Solid
Percent Solids: 56.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		71	11	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Arsenic	ND		3.6	0.93	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Beryllium	ND		1.8	0.55	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Calcium	**3700**	**B**	1800	14	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Chromium	**0.52**	**J**	3.6	0.50	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Cobalt	ND		18	0.32	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Iron	ND		36	21	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Lead	ND		3.6	0.78	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Lithium	ND		18	1.1	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Manganese	ND		5.3	0.22	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Molybdenum	**1.8**	**J**	14	0.58	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Selenium	ND		3.6	1.2	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**9000**		53	8.5	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Arsenic	**3.5**		2.7	0.69	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Beryllium	**0.30**	**J**	1.3	0.085	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Calcium	**32000**		1300	12	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Chromium	**6.9**		2.7	0.37	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Cobalt	**0.49**	**J**	13	0.34	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Iron	**2000**		27	15	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Lead	**1.2**	**J**	2.7	0.59	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Lithium	**1.4**	**J**	13	0.80	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Manganese	**12**		4.0	1.5	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Molybdenum	**0.75**	**J**	11	0.44	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Selenium	**0.99**	**J**	2.7	0.91	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**6200**		18	3.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Arsenic	**0.87**	**J**	0.89	0.23	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Beryllium	**0.027**	**J**	0.44	0.027	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Calcium	**42**	**J**	440	2.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Chromium	**8.4**		0.89	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Cobalt	**0.91**	**J**	4.4	0.080	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Iron	**2400**		8.9	5.2	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Lead	ND		0.89	0.20	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Lithium	**0.61**	**J**	4.4	0.27	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Manganese	**2.7**	**B**	1.3	0.048	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Molybdenum	**1.2**	**J**	3.6	0.15	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Selenium	**0.98**		0.89	0.30	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**21000**		18	2.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Arsenic	**1.5**		0.89	0.39	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Beryllium	**1.7**		0.44	0.028	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Calcium	**42000**		440	3.9	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Chromium	**26**		0.89	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1

Client Sample ID: N-SB-XPW 04 (10.0-15.0)
Date Collected: 08/21/21 09:20
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-9
Matrix: Solid
Percent Solids: 56.2

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	8.0		4.4	0.094	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Iron	12000		8.9	5.2	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Lead	13		0.89	0.20	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Lithium	9.9		4.4	0.27	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Manganese	91		1.3	0.23	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Molybdenum	3.7		3.6	0.15	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Selenium	ND		0.89	0.84	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	330	B	270	42	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Arsenic	ND		13	3.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Beryllium	ND		6.7	0.56	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Calcium	26000		6700	20	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Chromium	11	J	13	1.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Cobalt	ND		67	1.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Iron	ND		130	78	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Lead	ND		13	2.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Lithium	14	J B *+	67	3.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Manganese	9.2	J	20	3.3	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Molybdenum	ND		53	2.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Selenium	6.4	J	13	4.6	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	27000		18	2.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Arsenic	10		0.89	0.27	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Beryllium	0.52		0.44	0.021	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Calcium	17000		440	3.7	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Chromium	8.4		0.89	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Cobalt	8.0	J	22	0.41	mg/Kg	☼	10/07/21 08:00	10/25/21 18:01	5
Iron	12000		8.9	5.2	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Lead	24		4.4	0.98	mg/Kg	☼	10/07/21 08:00	10/25/21 18:01	5
Lithium	16		4.4	0.27	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Manganese	60		1.3	0.44	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Molybdenum	0.65	J	3.6	0.18	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Selenium	ND		0.89	0.30	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	29000		180	28	mg/Kg	☼	10/08/21 08:00	10/26/21 12:40	10
Arsenic	1.8		1.8	0.46	mg/Kg	☼	10/08/21 08:00	10/26/21 15:09	2
Beryllium	0.25	J	0.44	0.028	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1
Calcium	10000		4400	46	mg/Kg	☼	10/08/21 08:00	10/26/21 12:40	10
Chromium	11		0.89	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1
Cobalt	3.3	J	8.9	0.093	mg/Kg	☼	10/08/21 08:00	10/26/21 15:09	2
Iron	6000		8.9	7.3	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1
Lead	12		1.8	0.39	mg/Kg	☼	10/08/21 08:00	10/26/21 15:09	2
Lithium	19		4.4	0.27	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1
Manganese	39		1.3	0.20	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-XPW 04 (10.0-15.0)
Date Collected: 08/21/21 09:20
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-9
Matrix: Solid
Percent Solids: 56.2

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.16	J	3.6	0.15	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1
Selenium	ND		1.8	0.61	mg/Kg	☼	10/08/21 08:00	10/26/21 15:09	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	93000		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	18		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	2.8		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	130000		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	72		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	21		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	35000		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	51		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	61		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	210		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	8.2		2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	8.3		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	73000		180	28	mg/Kg	☼	09/29/21 08:00	10/27/21 12:26	10
Arsenic	16		0.89	0.23	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Beryllium	1.9		0.44	0.028	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Calcium	130000		4400	46	mg/Kg	☼	09/29/21 08:00	10/27/21 12:26	10
Chromium	54		0.89	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Cobalt	20	J	22	0.23	mg/Kg	☼	09/29/21 08:00	10/27/21 16:28	5
Iron	27000		8.9	7.3	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Lead	43		4.4	0.98	mg/Kg	☼	09/29/21 08:00	10/27/21 16:28	5
Lithium	34		4.4	0.27	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Manganese	160		1.3	0.20	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Molybdenum	6.7		3.6	0.15	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Selenium	4.9		0.89	0.30	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-XPW 01 (10.0-12.7)

Date Collected: 08/21/21 10:10
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-10

Matrix: Solid
Percent Solids: 77.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		52	8.3	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Arsenic	ND		2.6	0.67	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Beryllium	ND		1.3	0.40	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Calcium	**520**	**J B**	1300	9.8	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Chromium	ND		2.6	0.36	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Cobalt	ND		13	0.23	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Iron	ND		26	15	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Lead	ND		2.6	0.57	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Lithium	ND		13	0.78	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Manganese	**3.5**	**J**	3.9	0.16	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Molybdenum	**0.86**	**J**	10	0.42	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Selenium	ND		2.6	0.88	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**210**		39	6.2	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Arsenic	ND		1.9	0.51	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Beryllium	**0.11**	**J**	0.97	0.062	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Calcium	**1700**		970	8.5	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Chromium	**0.52**	**J**	1.9	0.27	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Cobalt	**0.94**	**J**	9.7	0.24	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Iron	**1600**		19	11	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Lead	**2.5**		1.9	0.43	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Lithium	ND		9.7	0.58	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Manganese	**190**		2.9	1.1	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Molybdenum	ND		7.8	0.32	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Selenium	ND		1.9	0.66	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**810**		13	2.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Arsenic	**3.9**		0.65	0.17	mg/Kg	☼	10/04/21 08:00	10/25/21 11:49	1
Beryllium	**0.24**	**J**	0.32	0.019	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Calcium	**7.7**	**J**	320	1.9	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Chromium	**1.5**		0.65	0.091	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Cobalt	**0.94**	**J**	3.2	0.058	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Iron	**2500**		6.5	3.8	mg/Kg	☼	10/04/21 08:00	10/25/21 11:49	1
Lead	**1.3**		0.65	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Lithium	ND		3.2	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Manganese	**120**	**B**	0.97	0.035	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Molybdenum	**0.43**	**J**	2.6	0.11	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Selenium	ND		0.65	0.22	mg/Kg	☼	10/04/21 08:00	10/25/21 11:49	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2500**		13	2.1	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Arsenic	**3.2**		0.65	0.28	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Beryllium	**0.21**	**J**	0.32	0.021	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Calcium	**800**		320	2.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Chromium	**4.2**		0.65	0.091	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1

Client Sample ID: N-SB-XPW 01 (10.0-12.7)
Date Collected: 08/21/21 10:10
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-10
Matrix: Solid
Percent Solids: 77.2

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	2.2	J	3.2	0.069	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Iron	5400		6.5	3.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Lead	6.9		0.65	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Lithium	2.0	J	3.2	0.19	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Manganese	140		0.97	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Molybdenum	0.84	J	2.6	0.11	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Selenium	0.66		0.65	0.61	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	64	J B	190	30	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Arsenic	ND		9.7	2.5	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Beryllium	ND		4.9	0.41	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Calcium	110	J	4900	14	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Chromium	3.4	J	9.7	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Cobalt	ND		49	0.78	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Iron	ND		97	57	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Lead	ND		9.7	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Lithium	8.8	J B *+	49	2.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Manganese	13	J	15	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Molybdenum	ND		39	1.6	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Selenium	ND		9.7	3.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	5200		13	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Arsenic	2.2		0.65	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Beryllium	0.095	J	0.32	0.016	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Calcium	110	J	320	2.7	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Chromium	4.8		0.65	0.091	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Cobalt	0.83	J	3.2	0.060	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Iron	4400		6.5	3.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Lead	2.2		0.65	0.14	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Lithium	3.6		3.2	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Manganese	23		0.97	0.32	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Molybdenum	0.16	J	2.6	0.13	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Selenium	ND		0.65	0.22	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	28000		130	21	mg/Kg	☼	10/08/21 08:00	10/26/21 12:45	10
Arsenic	2.0		1.3	0.34	mg/Kg	☼	10/08/21 08:00	10/26/21 15:19	2
Beryllium	0.19	J	0.32	0.021	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Calcium	1700		320	3.4	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Chromium	14		0.65	0.091	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Cobalt	ND		6.5	0.067	mg/Kg	☼	10/08/21 08:00	10/26/21 15:19	2
Iron	3500		6.5	5.3	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Lead	5.0		1.3	0.28	mg/Kg	☼	10/08/21 08:00	10/26/21 15:19	2
Lithium	9.2		3.2	0.19	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Manganese	51		0.97	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-XPW 01 (10.0-12.7)

Date Collected: 08/21/21 10:10
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-10

Matrix: Solid
Percent Solids: 77.2

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.15	J	2.6	0.11	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Selenium	ND		1.3	0.44	mg/Kg	☼	10/08/21 08:00	10/26/21 15:19	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	37000		10	1.6	mg/Kg			11/02/21 16:02	1
Arsenic	11		0.50	0.13	mg/Kg			11/02/21 16:02	1
Beryllium	0.85		0.25	0.0075	mg/Kg			11/02/21 16:02	1
Calcium	4900		250	0.74	mg/Kg			11/02/21 16:02	1
Chromium	29		0.50	0.070	mg/Kg			11/02/21 16:02	1
Cobalt	4.9		2.5	0.023	mg/Kg			11/02/21 16:02	1
Iron	17000		5.0	4.1	mg/Kg			11/02/21 16:02	1
Lead	18		0.50	0.11	mg/Kg			11/02/21 16:02	1
Lithium	23		2.5	0.15	mg/Kg			11/02/21 16:02	1
Manganese	540		0.75	0.052	mg/Kg			11/02/21 16:02	1
Molybdenum	2.4		2.0	0.082	mg/Kg			11/02/21 16:02	1
Selenium	0.66		0.50	0.17	mg/Kg			11/02/21 16:02	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	36000		130	21	mg/Kg	☼	09/29/21 08:00	10/27/21 12:31	10
Arsenic	9.4		0.65	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Beryllium	0.74		0.32	0.021	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Calcium	5100		3200	34	mg/Kg	☼	09/29/21 08:00	10/27/21 12:31	10
Chromium	23		0.65	0.091	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Cobalt	4.6	J	6.5	0.067	mg/Kg	☼	09/29/21 08:00	10/27/21 16:33	2
Iron	15000		6.5	5.3	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Lead	15		1.3	0.28	mg/Kg	☼	09/29/21 08:00	10/27/21 16:33	2
Lithium	13		3.2	0.19	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Manganese	350		0.97	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Molybdenum	2.3	J	2.6	0.11	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Selenium	0.58	J	0.65	0.22	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Prep: 3010A

SEP: Exchangeable

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.077	mg/Kg
Calcium	250	1.9	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.031	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Prep: 3010A

SEP: Carbonate

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Calcium	250	2.2	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.063	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.28	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Prep: 3010A

SEP: Non-Crystalline

Analyte	RL	MDL	Units
Aluminum	10	2.1	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.015	mg/Kg
Calcium	250	1.5	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.027	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.22	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Calcium	250	2.2	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.053	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.13	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.47	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Prep: 3010A

SEP: Organic-Bound

Analyte	RL	MDL	Units
Aluminum	30	4.7	mg/Kg
Arsenic	1.5	0.38	mg/Kg
Beryllium	0.75	0.063	mg/Kg
Calcium	750	2.2	mg/Kg
Chromium	1.5	0.21	mg/Kg
Cobalt	7.5	0.12	mg/Kg
Iron	15	8.8	mg/Kg
Lead	1.5	0.33	mg/Kg
Lithium	7.5	0.44	mg/Kg
Manganese	2.3	0.37	mg/Kg
Molybdenum	6.0	0.25	mg/Kg
Selenium	1.5	0.52	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 6

SEP: Acid/Sulfide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.15	mg/Kg
Beryllium	0.25	0.012	mg/Kg
Calcium	250	2.1	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.046	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.25	mg/Kg
Molybdenum	2.0	0.099	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Prep: Residual

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Prep: Residual

Analyte	RL	MDL	Units
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Calcium	250	2.6	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.026	mg/Kg
Iron	5.0	4.1	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.11	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Calcium	250	0.74	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.023	mg/Kg
Iron	5.0	4.1	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Prep: Total

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Calcium	250	2.6	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.026	mg/Kg
Iron	5.0	4.1	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.11	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Lab Sample ID: MB 140-54251/17-A
Matrix: Solid
Analysis Batch: 55243

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 54251

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Arsenic	ND		0.50	0.13	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Beryllium	ND		0.25	0.016	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Calcium	ND		250	2.6	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Chromium	ND		0.50	0.070	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Cobalt	ND		2.5	0.026	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Iron	ND		5.0	4.1	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Lead	ND		0.50	0.11	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Lithium	ND		2.5	0.15	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Manganese	ND		0.75	0.11	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Molybdenum	ND		2.0	0.082	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Selenium	ND		0.50	0.17	mg/Kg		09/29/21 08:00	10/27/21 10:49	1

Lab Sample ID: LCS 140-54251/18-A
Matrix: Solid
Analysis Batch: 55243

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 54251

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	99.3		mg/Kg		99	80 - 120
Arsenic	5.00	5.06		mg/Kg		101	80 - 120
Beryllium	2.50	2.57		mg/Kg		103	80 - 120
Calcium	2500	2560		mg/Kg		102	80 - 120
Chromium	10.0	10.6		mg/Kg		106	80 - 120
Cobalt	5.00	5.19		mg/Kg		104	80 - 125
Iron	50.0	52.2		mg/Kg		104	80 - 120
Lead	5.00	5.20		mg/Kg		104	80 - 120
Lithium	5.00	4.90		mg/Kg		98	80 - 120
Manganese	5.00	5.26		mg/Kg		105	80 - 120
Molybdenum	25.0	26.0		mg/Kg		104	80 - 125
Selenium	7.50	7.30		mg/Kg		97	80 - 120

Lab Sample ID: LCSD 140-54251/19-A
Matrix: Solid
Analysis Batch: 55243

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 54251

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	98.5		mg/Kg		98	80 - 120	1	30
Arsenic	5.00	4.94		mg/Kg		99	80 - 120	2	30
Beryllium	2.50	2.50		mg/Kg		100	80 - 120	3	30
Calcium	2500	2510		mg/Kg		100	80 - 120	2	30
Chromium	10.0	10.3		mg/Kg		103	80 - 120	3	30
Cobalt	5.00	5.05		mg/Kg		101	80 - 125	3	30
Iron	50.0	51.4		mg/Kg		103	80 - 120	2	30
Lead	5.00	5.14		mg/Kg		103	80 - 120	1	30
Lithium	5.00	4.86		mg/Kg		97	80 - 120	1	30
Manganese	5.00	5.13		mg/Kg		103	80 - 120	2	30
Molybdenum	25.0	25.4		mg/Kg		102	80 - 125	3	30
Selenium	7.50	7.21		mg/Kg		96	80 - 120	1	30

Method: 6010B - SEP Metals (ICP) - Total (Continued)

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55243

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Total/NA
Prep Batch: 54251

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	26000		28800		mg/Kg	☼	8	30
Calcium	51000		45400		mg/Kg	☼	12	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55243

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Total/NA
Prep Batch: 54251

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	5.3		5.81		mg/Kg	☼	8	30
Beryllium	0.55		0.571		mg/Kg	☼	4	30
Chromium	17		19.8		mg/Kg	☼	18	30
Cobalt	3.2		3.84		mg/Kg	☼	18	30
Iron	10000		11200		mg/Kg	☼	9	30
Lead	8.4		9.71		mg/Kg	☼	15	30
Lithium	12		13.0		mg/Kg	☼	9	30
Manganese	280		276		mg/Kg	☼	3	30
Molybdenum	0.78	J	1.31	J F5	mg/Kg	☼	51	30
Selenium	ND		ND		mg/Kg	☼	NC	30

Method: 6010B SEP - SEP Metals (ICP)

Lab Sample ID: MB 140-54252/17-B ^4
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Method Blank
Prep Type: Step 1
Prep Batch: 54333

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Arsenic	ND		2.0	0.52	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Beryllium	ND		1.0	0.31	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Calcium	20.3	J	1000	7.6	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Chromium	ND		2.0	0.28	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Cobalt	ND		10	0.18	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Iron	ND		20	12	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Lead	0.558	J	2.0	0.44	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Lithium	ND		10	0.60	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Manganese	ND		3.0	0.12	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Molybdenum	ND		8.0	0.33	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Selenium	ND		2.0	0.68	mg/Kg		09/30/21 08:00	10/22/21 11:17	4

Lab Sample ID: LCS 140-54252/18-B ^5
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 54333

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	103		mg/Kg		103	80 - 120
Arsenic	5.00	5.07		mg/Kg		101	80 - 120
Beryllium	2.50	2.68		mg/Kg		107	80 - 120
Calcium	2500	2560		mg/Kg		102	80 - 120
Chromium	10.0	10.2		mg/Kg		102	80 - 120

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-54252/18-B ^5
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 54333

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cobalt			5.00	4.98	J	mg/Kg		100	80 - 120		
Iron			50.0	52.2		mg/Kg		104	80 - 120		
Lead			5.00	4.96		mg/Kg		99	80 - 120		
Lithium			5.00	5.04	J	mg/Kg		101	80 - 120		
Manganese			5.00	5.28		mg/Kg		106	80 - 120		
Molybdenum			25.0	25.2		mg/Kg		101	80 - 120		
Selenium			7.50	7.34		mg/Kg		98	80 - 120		

Lab Sample ID: LCSD 140-54252/19-B ^5
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 1
Prep Batch: 54333

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	96.7		mg/Kg		97	80 - 120	7	30
Arsenic			5.00	4.84		mg/Kg		97	80 - 120	4	30
Beryllium			2.50	2.52		mg/Kg		101	80 - 120	6	30
Calcium			2500	2430		mg/Kg		97	80 - 120	5	30
Chromium			10.0	9.69		mg/Kg		97	80 - 120	5	30
Cobalt			5.00	4.92	J	mg/Kg		98	80 - 120	1	30
Iron			50.0	48.9		mg/Kg		98	80 - 120	6	30
Lead			5.00	5.13		mg/Kg		103	80 - 120	3	30
Lithium			5.00	4.54	J	mg/Kg		91	80 - 120	10	30
Manganese			5.00	4.96		mg/Kg		99	80 - 120	6	30
Molybdenum			25.0	25.0		mg/Kg		100	80 - 120	1	30
Selenium			7.50	7.48		mg/Kg		100	80 - 120	2	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 1
Prep Batch: 54333

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	ND			ND		mg/Kg	☼			NC	30
Arsenic	ND			ND		mg/Kg	☼			NC	30
Beryllium	ND			ND		mg/Kg	☼			NC	30
Calcium	880	J B		843	J	mg/Kg	☼			5	30
Chromium	ND			ND		mg/Kg	☼			NC	30
Cobalt	ND			ND		mg/Kg	☼			NC	30
Iron	ND			ND		mg/Kg	☼			NC	30
Lead	ND			ND		mg/Kg	☼			NC	30
Lithium	ND			ND		mg/Kg	☼			NC	30
Manganese	2.8	J		3.09	J	mg/Kg	☼			8	30
Molybdenum	ND			ND		mg/Kg	☼			NC	30
Selenium	ND			ND		mg/Kg	☼			NC	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-54334/17-B ^3
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Method Blank
Prep Type: Step 2
Prep Batch: 54370

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		30	4.8	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Arsenic	ND		1.5	0.39	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Beryllium	ND		0.75	0.048	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Calcium	ND		750	6.6	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Chromium	ND		1.5	0.21	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Cobalt	ND		7.5	0.19	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Iron	ND		15	8.7	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Lead	ND		1.5	0.33	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Lithium	ND		7.5	0.45	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Manganese	ND		2.3	0.84	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Molybdenum	ND		6.0	0.25	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Selenium	ND		1.5	0.51	mg/Kg		10/01/21 08:00	10/22/21 13:24	3

Lab Sample ID: LCS 140-54334/18-B ^5
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample
Prep Type: Step 2
Prep Batch: 54370

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	ND		mg/Kg		3	
Arsenic	5.00	3.62		mg/Kg		72	60 - 120
Beryllium	2.50	1.31		mg/Kg		52	40 - 70
Calcium	2500	641	J	mg/Kg		26	10 - 40
Chromium	10.0	7.44		mg/Kg		74	60 - 120
Cobalt	5.00	4.63	J	mg/Kg		93	80 - 120
Iron	50.0	ND		mg/Kg		4	
Lead	5.00	4.76		mg/Kg		95	70 - 120
Lithium	5.00	4.40	J	mg/Kg		88	80 - 120
Manganese	5.00	4.89		mg/Kg		98	80 - 120
Molybdenum	25.0	20.4		mg/Kg		82	70 - 120
Selenium	7.50	5.79		mg/Kg		77	70 - 120

Lab Sample ID: LCSD 140-54334/19-B ^5
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 2
Prep Batch: 54370

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	ND		mg/Kg		1		109	
Arsenic	5.00	3.80		mg/Kg		76	60 - 120	5	30
Beryllium	2.50	1.35		mg/Kg		54	40 - 70	3	30
Calcium	2500	648	J	mg/Kg		26	10 - 40	1	30
Chromium	10.0	7.61		mg/Kg		76	60 - 120	2	30
Cobalt	5.00	4.60	J	mg/Kg		92	80 - 120	1	30
Iron	50.0	ND		mg/Kg		2		52	
Lead	5.00	4.60		mg/Kg		92	70 - 120	3	30
Lithium	5.00	4.50	J	mg/Kg		90	80 - 120	2	30
Manganese	5.00	4.90		mg/Kg		98	80 - 120	0	30
Molybdenum	25.0	20.3		mg/Kg		81	70 - 120	0	30
Selenium	7.50	6.07		mg/Kg		81	70 - 120	5	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 2
Prep Batch: 54370

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	16	J	15.7	J	mg/Kg	☼	3	
Arsenic	ND		ND		mg/Kg	☼	NC	30
Beryllium	ND		ND		mg/Kg	☼	NC	30
Calcium	16000		15200		mg/Kg	☼	6	30
Chromium	ND		ND		mg/Kg	☼	NC	30
Cobalt	0.57	J	0.447	J	mg/Kg	☼	24	30
Iron	36		35.3		mg/Kg	☼	0.5	
Lead	0.77	J	1.01	J	mg/Kg	☼	26	30
Lithium	ND		ND		mg/Kg	☼	NC	30
Manganese	84		75.4		mg/Kg	☼	11	30
Molybdenum	ND		ND		mg/Kg	☼	NC	30
Selenium	ND		ND		mg/Kg	☼	NC	30

Lab Sample ID: MB 140-54371/17-B
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Method Blank
Prep Type: Step 3
Prep Batch: 54400

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	2.1	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Arsenic	ND		0.50	0.13	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Beryllium	ND		0.25	0.015	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Calcium	ND		250	1.5	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Chromium	ND		0.50	0.070	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Cobalt	ND		2.5	0.045	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Iron	ND		5.0	2.9	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Lead	ND		0.50	0.11	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Lithium	ND		2.5	0.15	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Manganese	0.0835	J	0.75	0.027	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Molybdenum	ND		2.0	0.082	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Selenium	ND		0.50	0.17	mg/Kg		10/04/21 08:00	10/22/21 15:23	1

Lab Sample ID: LCS 140-54371/18-B
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample
Prep Type: Step 3
Prep Batch: 54400

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	93.2		mg/Kg		93	80 - 120
Arsenic	5.00	4.81		mg/Kg		96	80 - 120
Beryllium	2.50	2.62		mg/Kg		105	80 - 120
Calcium	2500	38.3	J	mg/Kg		2	
Chromium	10.0	10.1		mg/Kg		101	80 - 120
Cobalt	5.00	5.01		mg/Kg		100	80 - 120
Iron	50.0	48.5		mg/Kg		97	80 - 120
Lead	5.00	0.139	J	mg/Kg		3	
Lithium	5.00	4.75		mg/Kg		95	80 - 120
Manganese	5.00	5.18		mg/Kg		104	80 - 120
Molybdenum	25.0	24.5		mg/Kg		98	80 - 120
Selenium	7.50	7.34		mg/Kg		98	80 - 120

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-54371/19-B
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 3
Prep Batch: 54400

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	95.6		mg/Kg		96	80 - 120	3	30
Arsenic			5.00	4.76		mg/Kg		95	80 - 120	1	30
Beryllium			2.50	2.60		mg/Kg		104	80 - 120	1	30
Calcium			2500	39.4	J	mg/Kg		2		3	
Chromium			10.0	10.0		mg/Kg		100	80 - 120	1	30
Cobalt			5.00	4.97		mg/Kg		99	80 - 120	1	30
Iron			50.0	50.8		mg/Kg		102	80 - 120	5	30
Lead			5.00	0.122	J	mg/Kg		2		13	
Lithium			5.00	4.95		mg/Kg		99	80 - 120	4	30
Manganese			5.00	5.15		mg/Kg		103	80 - 120	1	30
Molybdenum			25.0	24.2		mg/Kg		97	80 - 120	1	30
Selenium			7.50	7.31		mg/Kg		97	80 - 120	0	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 3
Prep Batch: 54400

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	52			55.7		mg/Kg	☼			8	30
Arsenic	0.26	J		0.285	J	mg/Kg	☼			10	30
Beryllium	ND			ND		mg/Kg	☼			NC	30
Calcium	9.2	J		9.35	J	mg/Kg	☼			1	
Chromium	0.31	J		0.452	J F5	mg/Kg	☼			38	30
Cobalt	0.62	J		0.294	J F5	mg/Kg	☼			72	30
Iron	240			258		mg/Kg	☼			6	30
Lead	ND			ND		mg/Kg	☼			NC	
Lithium	ND			ND		mg/Kg	☼			NC	30
Manganese	51	B		31.3	F3	mg/Kg	☼			48	30
Molybdenum	ND			ND		mg/Kg	☼			NC	30
Selenium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: MB 140-54401/17-B
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Method Blank
Prep Type: Step 4
Prep Batch: 54485

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Arsenic	ND		0.50	0.22	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Beryllium	ND		0.25	0.016	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Calcium	ND		250	2.2	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Chromium	ND		0.50	0.070	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Cobalt	ND		2.5	0.053	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Iron	ND		5.0	2.9	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Lead	ND		0.50	0.11	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Lithium	ND		2.5	0.15	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Manganese	ND		0.75	0.13	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Molybdenum	ND		2.0	0.082	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Selenium	ND		0.50	0.47	mg/Kg		10/05/21 08:00	10/25/21 11:34	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-54401/18-B
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample
Prep Type: Step 4
Prep Batch: 54485

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aluminum			100	99.5		mg/Kg		100	80 - 120		
Arsenic			5.00	4.99		mg/Kg		100	80 - 130		
Beryllium			2.50	2.68		mg/Kg		107	80 - 120		
Calcium			2500	2520		mg/Kg		101	80 - 120		
Chromium			10.0	10.3		mg/Kg		103	80 - 120		
Cobalt			5.00	5.10		mg/Kg		102	80 - 120		
Iron			50.0	51.2		mg/Kg		102	80 - 120		
Lead			5.00	5.11		mg/Kg		102	80 - 120		
Lithium			5.00	5.03		mg/Kg		101	80 - 120		
Manganese			5.00	5.14		mg/Kg		103	80 - 120		
Molybdenum			25.0	25.9		mg/Kg		104	80 - 120		
Selenium			7.50	0.568		mg/Kg		8			

Lab Sample ID: LCSD 140-54401/19-B
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 4
Prep Batch: 54485

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	101		mg/Kg		101	80 - 120	1	30
Arsenic			5.00	4.96		mg/Kg		99	80 - 130	1	30
Beryllium			2.50	2.67		mg/Kg		107	80 - 120	1	30
Calcium			2500	2520		mg/Kg		101	80 - 120	0	30
Chromium			10.0	10.2		mg/Kg		102	80 - 120	0	30
Cobalt			5.00	5.07		mg/Kg		101	80 - 120	1	30
Iron			50.0	51.0		mg/Kg		102	80 - 120	0	30
Lead			5.00	5.10		mg/Kg		102	80 - 120	0	30
Lithium			5.00	5.02		mg/Kg		100	80 - 120	0	30
Manganese			5.00	5.13		mg/Kg		103	80 - 120	0	30
Molybdenum			25.0	25.7		mg/Kg		103	80 - 120	1	30
Selenium			7.50	ND		mg/Kg		5		45	

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 4
Prep Batch: 54485

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	370			492		mg/Kg	☼			29	30
Arsenic	1.2			1.80	F3	mg/Kg	☼			41	30
Beryllium	0.077	J		0.0858	J	mg/Kg	☼			11	30
Calcium	16000			10800	F3	mg/Kg	☼			36	30
Chromium	1.6			1.84		mg/Kg	☼			13	30
Cobalt	1.2	J		1.32	J	mg/Kg	☼			10	30
Iron	3900			4250		mg/Kg	☼			9	30
Lead	2.7			2.62		mg/Kg	☼			4	30
Lithium	0.99	J		1.08	J	mg/Kg	☼			9	30
Manganese	93			86.5		mg/Kg	☼			8	30
Molybdenum	0.45	J		0.463	J	mg/Kg	☼			3	30
Selenium	ND			ND		mg/Kg	☼			NC	

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-54486/17-B ^5
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Method Blank
Prep Type: Step 5
Prep Batch: 54566

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	32.1	J	150	24	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Arsenic	ND		7.5	1.9	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Beryllium	ND		3.8	0.32	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Calcium	ND		3800	11	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Chromium	ND		7.5	1.1	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Cobalt	ND		38	0.60	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Iron	ND		75	44	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Lead	ND		7.5	1.7	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Lithium	8.44	J	38	2.2	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Manganese	ND		11	1.9	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Molybdenum	ND		30	1.3	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Selenium	ND		7.5	2.6	mg/Kg		10/07/21 08:00	10/25/21 13:37	5

Lab Sample ID: LCS 140-54486/18-B ^5
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample
Prep Type: Step 5
Prep Batch: 54566

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	300	ND		mg/Kg		6	
Arsenic	15.0	9.89		mg/Kg		66	60 - 100
Beryllium	7.50	3.89		mg/Kg		52	40 - 70
Calcium	7500	2030	J	mg/Kg		27	20 - 50
Chromium	30.0	30.5		mg/Kg		102	80 - 130
Cobalt	15.0	0.863	J	mg/Kg		6	1 - 60
Iron	150	ND		mg/Kg		-2	
Lead	15.0	9.28		mg/Kg		62	40 - 80
Lithium	15.0	23.8	J *+	mg/Kg		159	80 - 150
Manganese	15.0	2.78	J	mg/Kg		19	1 - 60
Molybdenum	75.0	53.6		mg/Kg		72	60 - 100
Selenium	22.5	22.8		mg/Kg		101	80 - 140

Lab Sample ID: LCSD 140-54486/19-B ^5
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 5
Prep Batch: 54566

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	300	28.1	J	mg/Kg		9		47	
Arsenic	15.0	10.3		mg/Kg		68	60 - 100	4	30
Beryllium	7.50	3.83		mg/Kg		51	40 - 70	2	30
Calcium	7500	2000	J	mg/Kg		27	20 - 50	2	30
Chromium	30.0	30.3		mg/Kg		101	80 - 130	1	30
Cobalt	15.0	0.840	J	mg/Kg		6	1 - 60	3	30
Iron	150	ND		mg/Kg		-1		53	
Lead	15.0	9.87		mg/Kg		66	40 - 80	6	30
Lithium	15.0	23.9	J *+	mg/Kg		159	80 - 150	0	30
Manganese	15.0	2.73	J	mg/Kg		18	1 - 60	2	30
Molybdenum	75.0	53.4		mg/Kg		71	60 - 100	0	30
Selenium	22.5	22.4		mg/Kg		100	80 - 140	2	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 5
Prep Batch: 54566

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	210	B	205		mg/Kg	☼	3	
Arsenic	ND		ND		mg/Kg	☼	NC	30
Beryllium	ND		ND		mg/Kg	☼	NC	30
Calcium	11000		10900		mg/Kg	☼	3	30
Chromium	2.1	J	1.68	J	mg/Kg	☼	20	30
Cobalt	ND		ND		mg/Kg	☼	NC	30
Iron	ND		ND		mg/Kg	☼	NC	
Lead	ND		ND		mg/Kg	☼	NC	30
Lithium	14	J B *+	13.4	J *+	mg/Kg	☼	3	30
Manganese	5.2	J	2.76	J F5	mg/Kg	☼	62	30
Molybdenum	ND		ND		mg/Kg	☼	NC	30
Selenium	ND		ND		mg/Kg	☼	NC	30

Lab Sample ID: MB 140-54567/17-A
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Method Blank
Prep Type: Step 6
Prep Batch: 54567

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Arsenic	ND		0.50	0.15	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Beryllium	ND		0.25	0.012	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Calcium	ND		250	2.1	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Chromium	ND		0.50	0.070	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Cobalt	ND		2.5	0.046	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Iron	ND		5.0	2.9	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Lead	ND		0.50	0.11	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Lithium	ND		2.5	0.15	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Manganese	ND		0.75	0.25	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Molybdenum	ND		2.0	0.099	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Selenium	ND		0.50	0.17	mg/Kg		10/07/21 08:00	10/25/21 15:37	1

Lab Sample ID: LCS 140-54567/18-A
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample
Prep Type: Step 6
Prep Batch: 54567

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	96.9		mg/Kg		97	80 - 120
Arsenic	5.00	5.01		mg/Kg		100	80 - 120
Beryllium	2.50	2.64		mg/Kg		106	80 - 120
Calcium	2500	2470		mg/Kg		99	80 - 120
Chromium	10.0	10.1		mg/Kg		101	80 - 120
Cobalt	5.00	5.00		mg/Kg		100	80 - 120
Iron	50.0	50.1		mg/Kg		100	80 - 120
Lead	5.00	5.10		mg/Kg		102	80 - 120
Lithium	5.00	4.95		mg/Kg		99	80 - 120
Manganese	5.00	5.09		mg/Kg		102	80 - 120
Molybdenum	25.0	25.1		mg/Kg		100	80 - 120
Selenium	7.50	7.68		mg/Kg		102	80 - 120

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-54567/19-A
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 6
Prep Batch: 54567

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	101		mg/Kg		101	80 - 120	4	30
Arsenic			5.00	5.07		mg/Kg		101	80 - 120	1	30
Beryllium			2.50	2.70		mg/Kg		108	80 - 120	2	30
Calcium			2500	2530		mg/Kg		101	80 - 120	2	30
Chromium			10.0	10.3		mg/Kg		103	80 - 120	2	30
Cobalt			5.00	5.10		mg/Kg		102	80 - 120	2	30
Iron			50.0	51.0		mg/Kg		102	80 - 120	2	30
Lead			5.00	5.24		mg/Kg		105	80 - 120	3	30
Lithium			5.00	5.04		mg/Kg		101	80 - 120	2	30
Manganese			5.00	5.20		mg/Kg		104	80 - 120	2	30
Molybdenum			25.0	25.8		mg/Kg		103	80 - 120	3	30
Selenium			7.50	7.82		mg/Kg		104	80 - 120	2	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 6
Prep Batch: 54567

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	2300			1960		mg/Kg	☼			14	30
Arsenic	2.2			1.82		mg/Kg	☼			19	30
Beryllium	0.095	J		0.0803	J	mg/Kg	☼			17	30
Calcium	4500			3620		mg/Kg	☼			21	30
Chromium	3.9			3.48		mg/Kg	☼			12	30
Cobalt	1.6	J		1.28	J	mg/Kg	☼			23	30
Iron	4500			3880		mg/Kg	☼			14	30
Lead	2.0			1.66		mg/Kg	☼			18	30
Lithium	3.9			3.31		mg/Kg	☼			17	30
Manganese	61			49.6		mg/Kg	☼			20	30
Molybdenum	0.24	J		0.198	J	mg/Kg	☼			21	30
Selenium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: MB 140-54607/17-A
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: Method Blank
Prep Type: Step 7
Prep Batch: 54607

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Arsenic	ND		0.50	0.13	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Beryllium	ND		0.25	0.016	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Calcium	ND		250	2.6	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Chromium	ND		0.50	0.070	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Cobalt	ND		2.5	0.026	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Iron	ND		5.0	4.1	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Lead	ND		0.50	0.11	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Lithium	ND		2.5	0.15	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Manganese	ND		0.75	0.11	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Molybdenum	ND		2.0	0.082	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Selenium	ND		0.50	0.17	mg/Kg		10/08/21 08:00	10/26/21 11:23	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-54607/18-A
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: Lab Control Sample
Prep Type: Step 7
Prep Batch: 54607

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aluminum			100	98.4		mg/Kg		98	80 - 120		
Arsenic			5.00	4.99		mg/Kg		100	80 - 120		
Beryllium			2.50	2.52		mg/Kg		101	80 - 120		
Calcium			2500	2510		mg/Kg		101	80 - 120		
Chromium			10.0	10.3		mg/Kg		103	80 - 120		
Cobalt			5.00	5.09		mg/Kg		102	80 - 125		
Iron			50.0	51.8		mg/Kg		104	80 - 120		
Lead			5.00	5.06		mg/Kg		101	80 - 120		
Lithium			5.00	4.99		mg/Kg		100	80 - 120		
Manganese			5.00	5.15		mg/Kg		103	80 - 120		
Molybdenum			25.0	25.7		mg/Kg		103	80 - 125		
Selenium			7.50	7.37		mg/Kg		98	80 - 120		

Lab Sample ID: LCSD 140-54607/19-A
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 7
Prep Batch: 54607

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	98.0		mg/Kg		98	80 - 120	0	30
Arsenic			5.00	5.04		mg/Kg		101	80 - 120	1	30
Beryllium			2.50	2.54		mg/Kg		102	80 - 120	1	30
Calcium			2500	2520		mg/Kg		101	80 - 120	0	30
Chromium			10.0	10.4		mg/Kg		104	80 - 120	1	30
Cobalt			5.00	5.16		mg/Kg		103	80 - 125	1	30
Iron			50.0	52.0		mg/Kg		104	80 - 120	0	30
Lead			5.00	5.15		mg/Kg		103	80 - 120	2	30
Lithium			5.00	4.97		mg/Kg		99	80 - 120	0	30
Manganese			5.00	5.18		mg/Kg		104	80 - 120	1	30
Molybdenum			25.0	26.1		mg/Kg		104	80 - 125	2	30
Selenium			7.50	7.51		mg/Kg		100	80 - 120	2	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 7
Prep Batch: 54607

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	25000			24700		mg/Kg	☼			0.4	30
Calcium	3100			3220		mg/Kg	☼			2	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 7
Prep Batch: 54607

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Arsenic	0.70			0.687		mg/Kg	☼			2	30
Beryllium	0.37			0.366		mg/Kg	☼			2	30
Chromium	9.3			8.59		mg/Kg	☼			8	30
Cobalt	0.15	J		0.112	J	mg/Kg	☼			26	30
Iron	2800			2670		mg/Kg	☼			5	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 7
Prep Batch: 54607

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Lead	4.3			4.29		mg/Kg	☼			0.5	30
Lithium	6.9			5.78		mg/Kg	☼			17	30
Manganese	53			54.1		mg/Kg	☼			3	30
Molybdenum	ND			ND		mg/Kg	☼			NC	30
Selenium	ND			ND		mg/Kg	☼			NC	30

Metals

Prep Batch: 54251

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Total/NA	Solid	Total	
140-24350-2	N-SB-05 (60.0-67.1)	Total/NA	Solid	Total	
140-24350-3	N-SB-18 (77.5-80.0)	Total/NA	Solid	Total	
140-24350-4	N-SB-02 (12.5-20.0)	Total/NA	Solid	Total	
140-24350-5	N-SB-02 (65.0-71.5)	Total/NA	Solid	Total	
140-24350-6	N-SB-14 (44.2-52.0)	Total/NA	Solid	Total	
140-24350-7	N-SB-04 (12.0-18.0)	Total/NA	Solid	Total	
140-24350-8	N-SB-04 (38.7-45.4)	Total/NA	Solid	Total	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Total/NA	Solid	Total	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Total/NA	Solid	Total	
MB 140-54251/17-A	Method Blank	Total/NA	Solid	Total	
LCS 140-54251/18-A	Lab Control Sample	Total/NA	Solid	Total	
LCSD 140-54251/19-A	Lab Control Sample Dup	Total/NA	Solid	Total	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Total/NA	Solid	Total	

SEP Batch: 54252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 1	Solid	Exchangeable	
140-24350-2	N-SB-05 (60.0-67.1)	Step 1	Solid	Exchangeable	
140-24350-3	N-SB-18 (77.5-80.0)	Step 1	Solid	Exchangeable	
140-24350-4	N-SB-02 (12.5-20.0)	Step 1	Solid	Exchangeable	
140-24350-5	N-SB-02 (65.0-71.5)	Step 1	Solid	Exchangeable	
140-24350-6	N-SB-14 (44.2-52.0)	Step 1	Solid	Exchangeable	
140-24350-7	N-SB-04 (12.0-18.0)	Step 1	Solid	Exchangeable	
140-24350-8	N-SB-04 (38.7-45.4)	Step 1	Solid	Exchangeable	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 1	Solid	Exchangeable	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 1	Solid	Exchangeable	
MB 140-54252/17-B ^4	Method Blank	Step 1	Solid	Exchangeable	
LCS 140-54252/18-B ^5	Lab Control Sample	Step 1	Solid	Exchangeable	
LCSD 140-54252/19-B ^5	Lab Control Sample Dup	Step 1	Solid	Exchangeable	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 1	Solid	Exchangeable	

Prep Batch: 54333

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 1	Solid	3010A	54252
140-24350-2	N-SB-05 (60.0-67.1)	Step 1	Solid	3010A	54252
140-24350-3	N-SB-18 (77.5-80.0)	Step 1	Solid	3010A	54252
140-24350-4	N-SB-02 (12.5-20.0)	Step 1	Solid	3010A	54252
140-24350-5	N-SB-02 (65.0-71.5)	Step 1	Solid	3010A	54252
140-24350-6	N-SB-14 (44.2-52.0)	Step 1	Solid	3010A	54252
140-24350-7	N-SB-04 (12.0-18.0)	Step 1	Solid	3010A	54252
140-24350-8	N-SB-04 (38.7-45.4)	Step 1	Solid	3010A	54252
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 1	Solid	3010A	54252
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 1	Solid	3010A	54252
MB 140-54252/17-B ^4	Method Blank	Step 1	Solid	3010A	54252
LCS 140-54252/18-B ^5	Lab Control Sample	Step 1	Solid	3010A	54252
LCSD 140-54252/19-B ^5	Lab Control Sample Dup	Step 1	Solid	3010A	54252
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 1	Solid	3010A	54252

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Metals

SEP Batch: 54334

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 2	Solid	Carbonate	
140-24350-2	N-SB-05 (60.0-67.1)	Step 2	Solid	Carbonate	
140-24350-3	N-SB-18 (77.5-80.0)	Step 2	Solid	Carbonate	
140-24350-4	N-SB-02 (12.5-20.0)	Step 2	Solid	Carbonate	
140-24350-5	N-SB-02 (65.0-71.5)	Step 2	Solid	Carbonate	
140-24350-6	N-SB-14 (44.2-52.0)	Step 2	Solid	Carbonate	
140-24350-7	N-SB-04 (12.0-18.0)	Step 2	Solid	Carbonate	
140-24350-8	N-SB-04 (38.7-45.4)	Step 2	Solid	Carbonate	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 2	Solid	Carbonate	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 2	Solid	Carbonate	
MB 140-54334/17-B ^3	Method Blank	Step 2	Solid	Carbonate	
LCS 140-54334/18-B ^5	Lab Control Sample	Step 2	Solid	Carbonate	
LCSD 140-54334/19-B ^5	Lab Control Sample Dup	Step 2	Solid	Carbonate	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 2	Solid	Carbonate	

Prep Batch: 54370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 2	Solid	3010A	54334
140-24350-2	N-SB-05 (60.0-67.1)	Step 2	Solid	3010A	54334
140-24350-3	N-SB-18 (77.5-80.0)	Step 2	Solid	3010A	54334
140-24350-4	N-SB-02 (12.5-20.0)	Step 2	Solid	3010A	54334
140-24350-5	N-SB-02 (65.0-71.5)	Step 2	Solid	3010A	54334
140-24350-6	N-SB-14 (44.2-52.0)	Step 2	Solid	3010A	54334
140-24350-7	N-SB-04 (12.0-18.0)	Step 2	Solid	3010A	54334
140-24350-8	N-SB-04 (38.7-45.4)	Step 2	Solid	3010A	54334
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 2	Solid	3010A	54334
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 2	Solid	3010A	54334
MB 140-54334/17-B ^3	Method Blank	Step 2	Solid	3010A	54334
LCS 140-54334/18-B ^5	Lab Control Sample	Step 2	Solid	3010A	54334
LCSD 140-54334/19-B ^5	Lab Control Sample Dup	Step 2	Solid	3010A	54334
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 2	Solid	3010A	54334

SEP Batch: 54371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 3	Solid	Non-Crystalline	
140-24350-2	N-SB-05 (60.0-67.1)	Step 3	Solid	Non-Crystalline	
140-24350-3	N-SB-18 (77.5-80.0)	Step 3	Solid	Non-Crystalline	
140-24350-4	N-SB-02 (12.5-20.0)	Step 3	Solid	Non-Crystalline	
140-24350-5	N-SB-02 (65.0-71.5)	Step 3	Solid	Non-Crystalline	
140-24350-6	N-SB-14 (44.2-52.0)	Step 3	Solid	Non-Crystalline	
140-24350-7	N-SB-04 (12.0-18.0)	Step 3	Solid	Non-Crystalline	
140-24350-8	N-SB-04 (38.7-45.4)	Step 3	Solid	Non-Crystalline	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 3	Solid	Non-Crystalline	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 3	Solid	Non-Crystalline	
MB 140-54371/17-B	Method Blank	Step 3	Solid	Non-Crystalline	
LCS 140-54371/18-B	Lab Control Sample	Step 3	Solid	Non-Crystalline	
LCSD 140-54371/19-B	Lab Control Sample Dup	Step 3	Solid	Non-Crystalline	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 3	Solid	Non-Crystalline	

Metals

Prep Batch: 54400

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 3	Solid	3010A	54371
140-24350-2	N-SB-05 (60.0-67.1)	Step 3	Solid	3010A	54371
140-24350-3	N-SB-18 (77.5-80.0)	Step 3	Solid	3010A	54371
140-24350-4	N-SB-02 (12.5-20.0)	Step 3	Solid	3010A	54371
140-24350-5	N-SB-02 (65.0-71.5)	Step 3	Solid	3010A	54371
140-24350-6	N-SB-14 (44.2-52.0)	Step 3	Solid	3010A	54371
140-24350-7	N-SB-04 (12.0-18.0)	Step 3	Solid	3010A	54371
140-24350-8	N-SB-04 (38.7-45.4)	Step 3	Solid	3010A	54371
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 3	Solid	3010A	54371
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 3	Solid	3010A	54371
MB 140-54371/17-B	Method Blank	Step 3	Solid	3010A	54371
LCS 140-54371/18-B	Lab Control Sample	Step 3	Solid	3010A	54371
LCSD 140-54371/19-B	Lab Control Sample Dup	Step 3	Solid	3010A	54371
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 3	Solid	3010A	54371

SEP Batch: 54401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 4	Solid	Metal Hydroxide	
140-24350-2	N-SB-05 (60.0-67.1)	Step 4	Solid	Metal Hydroxide	
140-24350-3	N-SB-18 (77.5-80.0)	Step 4	Solid	Metal Hydroxide	
140-24350-4	N-SB-02 (12.5-20.0)	Step 4	Solid	Metal Hydroxide	
140-24350-5	N-SB-02 (65.0-71.5)	Step 4	Solid	Metal Hydroxide	
140-24350-6	N-SB-14 (44.2-52.0)	Step 4	Solid	Metal Hydroxide	
140-24350-7	N-SB-04 (12.0-18.0)	Step 4	Solid	Metal Hydroxide	
140-24350-8	N-SB-04 (38.7-45.4)	Step 4	Solid	Metal Hydroxide	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 4	Solid	Metal Hydroxide	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 4	Solid	Metal Hydroxide	
MB 140-54401/17-B	Method Blank	Step 4	Solid	Metal Hydroxide	
LCS 140-54401/18-B	Lab Control Sample	Step 4	Solid	Metal Hydroxide	
LCSD 140-54401/19-B	Lab Control Sample Dup	Step 4	Solid	Metal Hydroxide	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 4	Solid	Metal Hydroxide	

Prep Batch: 54485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 4	Solid	3010A	54401
140-24350-2	N-SB-05 (60.0-67.1)	Step 4	Solid	3010A	54401
140-24350-3	N-SB-18 (77.5-80.0)	Step 4	Solid	3010A	54401
140-24350-4	N-SB-02 (12.5-20.0)	Step 4	Solid	3010A	54401
140-24350-5	N-SB-02 (65.0-71.5)	Step 4	Solid	3010A	54401
140-24350-6	N-SB-14 (44.2-52.0)	Step 4	Solid	3010A	54401
140-24350-7	N-SB-04 (12.0-18.0)	Step 4	Solid	3010A	54401
140-24350-8	N-SB-04 (38.7-45.4)	Step 4	Solid	3010A	54401
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 4	Solid	3010A	54401
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 4	Solid	3010A	54401
MB 140-54401/17-B	Method Blank	Step 4	Solid	3010A	54401
LCS 140-54401/18-B	Lab Control Sample	Step 4	Solid	3010A	54401
LCSD 140-54401/19-B	Lab Control Sample Dup	Step 4	Solid	3010A	54401
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 4	Solid	3010A	54401

Metals

SEP Batch: 54486

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 5	Solid	Organic-Bound	
140-24350-2	N-SB-05 (60.0-67.1)	Step 5	Solid	Organic-Bound	
140-24350-3	N-SB-18 (77.5-80.0)	Step 5	Solid	Organic-Bound	
140-24350-4	N-SB-02 (12.5-20.0)	Step 5	Solid	Organic-Bound	
140-24350-5	N-SB-02 (65.0-71.5)	Step 5	Solid	Organic-Bound	
140-24350-6	N-SB-14 (44.2-52.0)	Step 5	Solid	Organic-Bound	
140-24350-7	N-SB-04 (12.0-18.0)	Step 5	Solid	Organic-Bound	
140-24350-8	N-SB-04 (38.7-45.4)	Step 5	Solid	Organic-Bound	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 5	Solid	Organic-Bound	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 5	Solid	Organic-Bound	
MB 140-54486/17-B ^5	Method Blank	Step 5	Solid	Organic-Bound	
LCS 140-54486/18-B ^5	Lab Control Sample	Step 5	Solid	Organic-Bound	
LCSD 140-54486/19-B ^5	Lab Control Sample Dup	Step 5	Solid	Organic-Bound	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 5	Solid	Organic-Bound	

Prep Batch: 54566

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 5	Solid	3010A	54486
140-24350-2	N-SB-05 (60.0-67.1)	Step 5	Solid	3010A	54486
140-24350-3	N-SB-18 (77.5-80.0)	Step 5	Solid	3010A	54486
140-24350-4	N-SB-02 (12.5-20.0)	Step 5	Solid	3010A	54486
140-24350-5	N-SB-02 (65.0-71.5)	Step 5	Solid	3010A	54486
140-24350-6	N-SB-14 (44.2-52.0)	Step 5	Solid	3010A	54486
140-24350-7	N-SB-04 (12.0-18.0)	Step 5	Solid	3010A	54486
140-24350-8	N-SB-04 (38.7-45.4)	Step 5	Solid	3010A	54486
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 5	Solid	3010A	54486
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 5	Solid	3010A	54486
MB 140-54486/17-B ^5	Method Blank	Step 5	Solid	3010A	54486
LCS 140-54486/18-B ^5	Lab Control Sample	Step 5	Solid	3010A	54486
LCSD 140-54486/19-B ^5	Lab Control Sample Dup	Step 5	Solid	3010A	54486
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 5	Solid	3010A	54486

SEP Batch: 54567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 6	Solid	Acid/Sulfide	
140-24350-2	N-SB-05 (60.0-67.1)	Step 6	Solid	Acid/Sulfide	
140-24350-3	N-SB-18 (77.5-80.0)	Step 6	Solid	Acid/Sulfide	
140-24350-4	N-SB-02 (12.5-20.0)	Step 6	Solid	Acid/Sulfide	
140-24350-5	N-SB-02 (65.0-71.5)	Step 6	Solid	Acid/Sulfide	
140-24350-6	N-SB-14 (44.2-52.0)	Step 6	Solid	Acid/Sulfide	
140-24350-7	N-SB-04 (12.0-18.0)	Step 6	Solid	Acid/Sulfide	
140-24350-8	N-SB-04 (38.7-45.4)	Step 6	Solid	Acid/Sulfide	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 6	Solid	Acid/Sulfide	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 6	Solid	Acid/Sulfide	
MB 140-54567/17-A	Method Blank	Step 6	Solid	Acid/Sulfide	
LCS 140-54567/18-A	Lab Control Sample	Step 6	Solid	Acid/Sulfide	
LCSD 140-54567/19-A	Lab Control Sample Dup	Step 6	Solid	Acid/Sulfide	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 6	Solid	Acid/Sulfide	

Metals

Prep Batch: 54607

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 7	Solid	Residual	
140-24350-2	N-SB-05 (60.0-67.1)	Step 7	Solid	Residual	
140-24350-3	N-SB-18 (77.5-80.0)	Step 7	Solid	Residual	
140-24350-4	N-SB-02 (12.5-20.0)	Step 7	Solid	Residual	
140-24350-5	N-SB-02 (65.0-71.5)	Step 7	Solid	Residual	
140-24350-6	N-SB-14 (44.2-52.0)	Step 7	Solid	Residual	
140-24350-7	N-SB-04 (12.0-18.0)	Step 7	Solid	Residual	
140-24350-8	N-SB-04 (38.7-45.4)	Step 7	Solid	Residual	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 7	Solid	Residual	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 7	Solid	Residual	
MB 140-54607/17-A	Method Blank	Step 7	Solid	Residual	
LCS 140-54607/18-A	Lab Control Sample	Step 7	Solid	Residual	
LCSD 140-54607/19-A	Lab Control Sample Dup	Step 7	Solid	Residual	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 7	Solid	Residual	

Analysis Batch: 55087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 1	Solid	6010B SEP	54333
140-24350-1	N-SB-05 (18.0-20.0)	Step 2	Solid	6010B SEP	54370
140-24350-1	N-SB-05 (18.0-20.0)	Step 3	Solid	6010B SEP	54400
140-24350-2	N-SB-05 (60.0-67.1)	Step 1	Solid	6010B SEP	54333
140-24350-2	N-SB-05 (60.0-67.1)	Step 2	Solid	6010B SEP	54370
140-24350-2	N-SB-05 (60.0-67.1)	Step 3	Solid	6010B SEP	54400
140-24350-3	N-SB-18 (77.5-80.0)	Step 1	Solid	6010B SEP	54333
140-24350-3	N-SB-18 (77.5-80.0)	Step 2	Solid	6010B SEP	54370
140-24350-3	N-SB-18 (77.5-80.0)	Step 3	Solid	6010B SEP	54400
140-24350-4	N-SB-02 (12.5-20.0)	Step 1	Solid	6010B SEP	54333
140-24350-4	N-SB-02 (12.5-20.0)	Step 2	Solid	6010B SEP	54370
140-24350-4	N-SB-02 (12.5-20.0)	Step 3	Solid	6010B SEP	54400
140-24350-5	N-SB-02 (65.0-71.5)	Step 1	Solid	6010B SEP	54333
140-24350-5	N-SB-02 (65.0-71.5)	Step 2	Solid	6010B SEP	54370
140-24350-5	N-SB-02 (65.0-71.5)	Step 3	Solid	6010B SEP	54400
140-24350-6	N-SB-14 (44.2-52.0)	Step 1	Solid	6010B SEP	54333
140-24350-6	N-SB-14 (44.2-52.0)	Step 2	Solid	6010B SEP	54370
140-24350-6	N-SB-14 (44.2-52.0)	Step 3	Solid	6010B SEP	54400
140-24350-7	N-SB-04 (12.0-18.0)	Step 1	Solid	6010B SEP	54333
140-24350-7	N-SB-04 (12.0-18.0)	Step 2	Solid	6010B SEP	54370
140-24350-7	N-SB-04 (12.0-18.0)	Step 3	Solid	6010B SEP	54400
140-24350-8	N-SB-04 (38.7-45.4)	Step 1	Solid	6010B SEP	54333
140-24350-8	N-SB-04 (38.7-45.4)	Step 2	Solid	6010B SEP	54370
140-24350-8	N-SB-04 (38.7-45.4)	Step 3	Solid	6010B SEP	54400
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 1	Solid	6010B SEP	54333
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 2	Solid	6010B SEP	54370
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 3	Solid	6010B SEP	54400
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 1	Solid	6010B SEP	54333
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 2	Solid	6010B SEP	54370
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 3	Solid	6010B SEP	54400
MB 140-54252/17-B ^4	Method Blank	Step 1	Solid	6010B SEP	54333
MB 140-54334/17-B ^3	Method Blank	Step 2	Solid	6010B SEP	54370
MB 140-54371/17-B	Method Blank	Step 3	Solid	6010B SEP	54400
LCS 140-54252/18-B ^5	Lab Control Sample	Step 1	Solid	6010B SEP	54333

Metals (Continued)

Analysis Batch: 55087 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 140-54334/18-B ^5	Lab Control Sample	Step 2	Solid	6010B SEP	54370
LCS 140-54371/18-B	Lab Control Sample	Step 3	Solid	6010B SEP	54400
LCSD 140-54252/19-B ^5	Lab Control Sample Dup	Step 1	Solid	6010B SEP	54333
LCSD 140-54334/19-B ^5	Lab Control Sample Dup	Step 2	Solid	6010B SEP	54370
LCSD 140-54371/19-B	Lab Control Sample Dup	Step 3	Solid	6010B SEP	54400
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 1	Solid	6010B SEP	54333
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 2	Solid	6010B SEP	54370
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 3	Solid	6010B SEP	54400

Analysis Batch: 55146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 4	Solid	6010B SEP	54485
140-24350-1	N-SB-05 (18.0-20.0)	Step 5	Solid	6010B SEP	54566
140-24350-1	N-SB-05 (18.0-20.0)	Step 6	Solid	6010B SEP	54567
140-24350-2	N-SB-05 (60.0-67.1)	Step 4	Solid	6010B SEP	54485
140-24350-2	N-SB-05 (60.0-67.1)	Step 4	Solid	6010B SEP	54485
140-24350-2	N-SB-05 (60.0-67.1)	Step 5	Solid	6010B SEP	54566
140-24350-2	N-SB-05 (60.0-67.1)	Step 6	Solid	6010B SEP	54567
140-24350-3	N-SB-18 (77.5-80.0)	Step 4	Solid	6010B SEP	54485
140-24350-3	N-SB-18 (77.5-80.0)	Step 5	Solid	6010B SEP	54566
140-24350-3	N-SB-18 (77.5-80.0)	Step 6	Solid	6010B SEP	54567
140-24350-4	N-SB-02 (12.5-20.0)	Step 4	Solid	6010B SEP	54485
140-24350-4	N-SB-02 (12.5-20.0)	Step 5	Solid	6010B SEP	54566
140-24350-4	N-SB-02 (12.5-20.0)	Step 6	Solid	6010B SEP	54567
140-24350-5	N-SB-02 (65.0-71.5)	Step 4	Solid	6010B SEP	54485
140-24350-5	N-SB-02 (65.0-71.5)	Step 5	Solid	6010B SEP	54566
140-24350-5	N-SB-02 (65.0-71.5)	Step 6	Solid	6010B SEP	54567
140-24350-6	N-SB-14 (44.2-52.0)	Step 4	Solid	6010B SEP	54485
140-24350-6	N-SB-14 (44.2-52.0)	Step 5	Solid	6010B SEP	54566
140-24350-6	N-SB-14 (44.2-52.0)	Step 6	Solid	6010B SEP	54567
140-24350-7	N-SB-04 (12.0-18.0)	Step 4	Solid	6010B SEP	54485
140-24350-7	N-SB-04 (12.0-18.0)	Step 5	Solid	6010B SEP	54566
140-24350-7	N-SB-04 (12.0-18.0)	Step 6	Solid	6010B SEP	54567
140-24350-8	N-SB-04 (38.7-45.4)	Step 4	Solid	6010B SEP	54485
140-24350-8	N-SB-04 (38.7-45.4)	Step 5	Solid	6010B SEP	54566
140-24350-8	N-SB-04 (38.7-45.4)	Step 6	Solid	6010B SEP	54567
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 4	Solid	6010B SEP	54485
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 5	Solid	6010B SEP	54566
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 6	Solid	6010B SEP	54567
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 6	Solid	6010B SEP	54567
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 3	Solid	6010B SEP	54400
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 4	Solid	6010B SEP	54485
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 5	Solid	6010B SEP	54566
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 6	Solid	6010B SEP	54567
MB 140-54401/17-B	Method Blank	Step 4	Solid	6010B SEP	54485
MB 140-54486/17-B ^5	Method Blank	Step 5	Solid	6010B SEP	54566
MB 140-54567/17-A	Method Blank	Step 6	Solid	6010B SEP	54567
LCS 140-54401/18-B	Lab Control Sample	Step 4	Solid	6010B SEP	54485
LCS 140-54486/18-B ^5	Lab Control Sample	Step 5	Solid	6010B SEP	54566
LCS 140-54567/18-A	Lab Control Sample	Step 6	Solid	6010B SEP	54567
LCSD 140-54401/19-B	Lab Control Sample Dup	Step 4	Solid	6010B SEP	54485

Metals (Continued)

Analysis Batch: 55146 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 140-54486/19-B ^5	Lab Control Sample Dup	Step 5	Solid	6010B SEP	54566
LCSD 140-54567/19-A	Lab Control Sample Dup	Step 6	Solid	6010B SEP	54567
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 4	Solid	6010B SEP	54485
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 5	Solid	6010B SEP	54566
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 6	Solid	6010B SEP	54567

Analysis Batch: 55197

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 7	Solid	6010B SEP	54607
140-24350-1	N-SB-05 (18.0-20.0)	Step 7	Solid	6010B SEP	54607
140-24350-2	N-SB-05 (60.0-67.1)	Step 7	Solid	6010B SEP	54607
140-24350-2	N-SB-05 (60.0-67.1)	Step 7	Solid	6010B SEP	54607
140-24350-3	N-SB-18 (77.5-80.0)	Step 7	Solid	6010B SEP	54607
140-24350-3	N-SB-18 (77.5-80.0)	Step 7	Solid	6010B SEP	54607
140-24350-3	N-SB-18 (77.5-80.0)	Step 7	Solid	6010B SEP	54607
140-24350-4	N-SB-02 (12.5-20.0)	Step 7	Solid	6010B SEP	54607
140-24350-4	N-SB-02 (12.5-20.0)	Step 7	Solid	6010B SEP	54607
140-24350-5	N-SB-02 (65.0-71.5)	Step 7	Solid	6010B SEP	54607
140-24350-5	N-SB-02 (65.0-71.5)	Step 7	Solid	6010B SEP	54607
140-24350-5	N-SB-02 (65.0-71.5)	Step 7	Solid	6010B SEP	54607
140-24350-6	N-SB-14 (44.2-52.0)	Step 7	Solid	6010B SEP	54607
140-24350-6	N-SB-14 (44.2-52.0)	Step 7	Solid	6010B SEP	54607
140-24350-7	N-SB-04 (12.0-18.0)	Step 7	Solid	6010B SEP	54607
140-24350-7	N-SB-04 (12.0-18.0)	Step 7	Solid	6010B SEP	54607
140-24350-7	N-SB-04 (12.0-18.0)	Step 7	Solid	6010B SEP	54607
140-24350-8	N-SB-04 (38.7-45.4)	Step 7	Solid	6010B SEP	54607
140-24350-8	N-SB-04 (38.7-45.4)	Step 7	Solid	6010B SEP	54607
140-24350-8	N-SB-04 (38.7-45.4)	Step 7	Solid	6010B SEP	54607
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 7	Solid	6010B SEP	54607
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 7	Solid	6010B SEP	54607
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 7	Solid	6010B SEP	54607
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 7	Solid	6010B SEP	54607
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 7	Solid	6010B SEP	54607
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 7	Solid	6010B SEP	54607
MB 140-54607/17-A	Method Blank	Step 7	Solid	6010B SEP	54607
LCS 140-54607/18-A	Lab Control Sample	Step 7	Solid	6010B SEP	54607
LCSD 140-54607/19-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	54607
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 7	Solid	6010B SEP	54607
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 7	Solid	6010B SEP	54607

Analysis Batch: 55243

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Total/NA	Solid	6010B	54251
140-24350-1	N-SB-05 (18.0-20.0)	Total/NA	Solid	6010B	54251
140-24350-2	N-SB-05 (60.0-67.1)	Total/NA	Solid	6010B	54251
140-24350-2	N-SB-05 (60.0-67.1)	Total/NA	Solid	6010B	54251
140-24350-3	N-SB-18 (77.5-80.0)	Total/NA	Solid	6010B	54251
140-24350-3	N-SB-18 (77.5-80.0)	Total/NA	Solid	6010B	54251
140-24350-4	N-SB-02 (12.5-20.0)	Total/NA	Solid	6010B	54251
140-24350-4	N-SB-02 (12.5-20.0)	Total/NA	Solid	6010B	54251
140-24350-4	N-SB-02 (12.5-20.0)	Total/NA	Solid	6010B	54251

Metals (Continued)

Analysis Batch: 55243 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-5	N-SB-02 (65.0-71.5)	Total/NA	Solid	6010B	54251
140-24350-5	N-SB-02 (65.0-71.5)	Total/NA	Solid	6010B	54251
140-24350-5	N-SB-02 (65.0-71.5)	Total/NA	Solid	6010B	54251
140-24350-6	N-SB-14 (44.2-52.0)	Total/NA	Solid	6010B	54251
140-24350-6	N-SB-14 (44.2-52.0)	Total/NA	Solid	6010B	54251
140-24350-7	N-SB-04 (12.0-18.0)	Total/NA	Solid	6010B	54251
140-24350-7	N-SB-04 (12.0-18.0)	Total/NA	Solid	6010B	54251
140-24350-7	N-SB-04 (12.0-18.0)	Total/NA	Solid	6010B	54251
140-24350-8	N-SB-04 (38.7-45.4)	Total/NA	Solid	6010B	54251
140-24350-8	N-SB-04 (38.7-45.4)	Total/NA	Solid	6010B	54251
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Total/NA	Solid	6010B	54251
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Total/NA	Solid	6010B	54251
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Total/NA	Solid	6010B	54251
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Total/NA	Solid	6010B	54251
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Total/NA	Solid	6010B	54251
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Total/NA	Solid	6010B	54251
MB 140-54251/17-A	Method Blank	Total/NA	Solid	6010B	54251
LCS 140-54251/18-A	Lab Control Sample	Total/NA	Solid	6010B	54251
LCSD 140-54251/19-A	Lab Control Sample Dup	Total/NA	Solid	6010B	54251
140-24350-1 DU	N-SB-05 (18.0-20.0)	Total/NA	Solid	6010B	54251
140-24350-1 DU	N-SB-05 (18.0-20.0)	Total/NA	Solid	6010B	54251

Analysis Batch: 55436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-2	N-SB-05 (60.0-67.1)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-3	N-SB-18 (77.5-80.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-4	N-SB-02 (12.5-20.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-5	N-SB-02 (65.0-71.5)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-6	N-SB-14 (44.2-52.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-7	N-SB-04 (12.0-18.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-8	N-SB-04 (38.7-45.4)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Sum of Steps 1-7	Solid	6010B SEP	

General Chemistry

Analysis Batch: 53225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Total/NA	Solid	Moisture	
140-24350-2	N-SB-05 (60.0-67.1)	Total/NA	Solid	Moisture	
140-24350-3	N-SB-18 (77.5-80.0)	Total/NA	Solid	Moisture	
140-24350-4	N-SB-02 (12.5-20.0)	Total/NA	Solid	Moisture	
140-24350-5	N-SB-02 (65.0-71.5)	Total/NA	Solid	Moisture	
140-24350-6	N-SB-14 (44.2-52.0)	Total/NA	Solid	Moisture	
140-24350-7	N-SB-04 (12.0-18.0)	Total/NA	Solid	Moisture	
140-24350-8	N-SB-04 (38.7-45.4)	Total/NA	Solid	Moisture	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Total/NA	Solid	Moisture	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Total/NA	Solid	Moisture	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: N-SB-05 (18.0-20.0)
Lab Sample ID: 140-24350-1
Date Collected: 08/17/21 12:40
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-05 (18.0-20.0)
Lab Sample ID: 140-24350-1
Date Collected: 08/17/21 12:40
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 11:28	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:14	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:32	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:39	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:37	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 11:54	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 13:52	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 15:51	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 11:43	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 12:50	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: N-SB-05 (60.0-67.1)
Lab Sample ID: 140-24350-2
Date Collected: 08/17/21 15:40
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-05 (60.0-67.1)
Lab Sample ID: 140-24350-2
Date Collected: 08/17/21 15:40
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 81.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 11:52	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:25	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:41	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:49	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:47	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:03	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		2			55146	10/25/21 17:56	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:02	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:01	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 11:52	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: N-SB-05 (60.0-67.1)
Lab Sample ID: 140-24350-2
Date Collected: 08/17/21 15:40
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 81.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:00	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-18 (77.5-80.0)
Lab Sample ID: 140-24350-3
Date Collected: 08/18/21 10:00
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-18 (77.5-80.0)
Lab Sample ID: 140-24350-3
Date Collected: 08/18/21 10:00
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 91.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 11:57	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:45	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:46	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:54	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:52	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:08	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:07	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-18 (77.5-80.0)

Lab Sample ID: 140-24350-3

Date Collected: 08/18/21 10:00
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 91.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:06	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 11:57	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:20	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 14:50	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-02 (12.5-20.0)

Lab Sample ID: 140-24350-4

Date Collected: 08/18/21 14:10
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-02 (12.5-20.0)

Lab Sample ID: 140-24350-4

Date Collected: 08/18/21 14:10
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 93.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:02	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:50	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			55243	10/27/21 16:12	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:51	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:59	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-02 (12.5-20.0)

Lab Sample ID: 140-24350-4
Date Collected: 08/18/21 14:10
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 93.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:57	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:13	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:12	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:11	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:02	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:25	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-02 (65.0-71.5)

Lab Sample ID: 140-24350-5
Date Collected: 08/19/21 12:00
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-02 (65.0-71.5)

Lab Sample ID: 140-24350-5
Date Collected: 08/19/21 12:00
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 89.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:07	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:55	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			55243	10/27/21 16:18	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-02 (65.0-71.5)
Lab Sample ID: 140-24350-5
Date Collected: 08/19/21 12:00
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 89.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:56	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:04	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:02	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:33	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:32	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:31	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:21	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:30	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 14:55	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-14 (44.2-52.0)
Lab Sample ID: 140-24350-6
Date Collected: 08/19/21 14:45
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-14 (44.2-52.0)

Lab Sample ID: 140-24350-6

Date Collected: 08/19/21 14:45

Matrix: Solid

Date Received: 08/24/21 09:40

Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:12	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 14:01	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 12:26	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:23	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:21	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:38	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:37	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:36	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:26	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:35	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-04 (12.0-18.0)

Lab Sample ID: 140-24350-7

Date Collected: 08/21/21 07:35

Matrix: Solid

Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: N-SB-04 (12.0-18.0)
Date Collected: 08/21/21 07:35
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-7
Matrix: Solid
Percent Solids: 89.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:17	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 14:06	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			55243	10/27/21 16:23	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 12:31	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:28	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:26	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:43	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:42	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:41	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:31	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:40	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 15:00	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-04 (38.7-45.4)
Lab Sample ID: 140-24350-8
Date Collected: 08/21/21 08:30
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-04 (38.7-45.4)
Lab Sample ID: 140-24350-8
Date Collected: 08/21/21 08:30
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 86.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:21	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 14:12	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 12:35	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:33	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:31	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:48	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:47	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:46	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:36	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:45	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-04 (38.7-45.4)

Lab Sample ID: 140-24350-8
Date Collected: 08/21/21 08:30
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 86.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 15:05	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-XPW 04 (10.0-15.0)

Lab Sample ID: 140-24350-9
Date Collected: 08/21/21 09:20
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-XPW 04 (10.0-15.0)

Lab Sample ID: 140-24350-9
Date Collected: 08/21/21 09:20
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 56.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:26	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 14:17	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			55243	10/27/21 16:28	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 12:40	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:38	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:36	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:53	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-XPW 04 (10.0-15.0)

Lab Sample ID: 140-24350-9
Date Collected: 08/21/21 09:20
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 56.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:52	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:51	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		5			55146	10/25/21 18:01	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:40	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:50	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 15:09	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-XPW 01 (10.0-12.7)

Lab Sample ID: 140-24350-10
Date Collected: 08/21/21 10:10
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 16:02	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-XPW 01 (10.0-12.7)

Lab Sample ID: 140-24350-10
Date Collected: 08/21/21 10:10
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 77.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:31	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 14:23	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			55243	10/27/21 16:33	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-XPW 01 (10.0-12.7)

Lab Sample ID: 140-24350-10

Date Collected: 08/21/21 10:10

Matrix: Solid

Date Received: 08/24/21 09:40

Percent Solids: 77.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 12:45	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:43	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:41	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55146	10/25/21 11:49	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:58	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:57	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:56	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:45	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:55	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 15:19	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-54251/17-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 10:49	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54252/17-B ^4
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:17	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54334/17-B ^3
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:24	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54371/17-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:23	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54401/17-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 11:34	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54486/17-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 13:37	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc. Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: Method Blank — Lab Sample ID: MB 140-54567/17-A
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 15:37	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-54607/17-A
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 11:23	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-54251/18-A
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 10:54	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-54252/18-B ^5
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			55087	10/22/21 11:22	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-54334/18-B ^5
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			55087	10/22/21 13:29	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54371/18-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:28	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54401/18-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 11:39	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54486/18-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 13:42	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54567/18-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 15:42	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54607/18-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 11:28	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54251/19-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 10:59	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54252/19-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			55087	10/22/21 11:27	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54334/19-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			55087	10/22/21 13:34	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54371/19-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:32	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54401/19-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 11:44	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54486/19-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 13:47	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54567/19-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 15:47	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54607/19-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 11:33	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-05 (18.0-20.0)
Lab Sample ID: 140-24350-1 DU
Date Collected: 08/17/21 12:40
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-05 (18.0-20.0)
Lab Sample ID: 140-24350-1 DU
Date Collected: 08/17/21 12:40
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 11:47	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:19	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:36	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: N-SB-05 (18.0-20.0)
Lab Sample ID: 140-24350-1 DU
Date Collected: 08/17/21 12:40
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:44	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:42	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 11:58	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 13:57	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 15:56	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 11:48	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 12:55	KNC	TAL KNX
	Instrument ID: DUO									

Laboratory References:
TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Laboratory: Eurofins TestAmerica, Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
Arkansas DEQ	State	88-0688	06-17-22
California	State	2423	06-30-22
Colorado	State	TN00009	02-28-22
Connecticut	State	PH-0223	02-28-22
Florida	NELAP	E87177	06-30-22
Georgia (DW)	State	906	12-11-22
Hawaii	State	NA	12-11-21
Kansas	NELAP	E-10349	10-31-21 *
Kentucky (DW)	State	90101	12-31-21
Louisiana	NELAP	83979	06-30-22
Louisiana (DW)	State	LA019	12-31-21
Maryland	State	277	03-31-22
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-22
New Hampshire	NELAP	299919	01-17-22
New Jersey	NELAP	TN001	06-30-22
New York	NELAP	10781	03-31-22
North Carolina (DW)	State	21705	07-31-22
North Carolina (WW/SW)	State	64	12-31-21
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-22
Oregon	NELAP	TNI0189	01-01-22
Pennsylvania	NELAP	68-00576	12-31-21
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-22
US Fish & Wildlife	US Federal Programs	058448	07-31-22
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-22
Virginia	NELAP	460176	09-14-22
Washington	State	C593	01-19-22
West Virginia (DW)	State	9955C	01-02-22
West Virginia DEP	State	345	04-30-22
Wisconsin	State	998044300	08-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Method	Method Description	Protocol	Laboratory
6010B	SEP Metals (ICP) - Total	SW846	TAL KNX
6010B SEP	SEP Metals (ICP)	SW846	TAL KNX
Moisture	Percent Moisture	EPA	TAL KNX
3010A	Preparation, Total Metals	SW846	TAL KNX
Acid/Sulfide	Sequential Extraction Procedure, Acid/Sulfide Fraction	TAL-KNOX	TAL KNX
Carbonate	Sequential Extraction Procedure, Carbonate Fraction	TAL-KNOX	TAL KNX
Exchangeable	Sequential Extraction Procedure, Exchangeable Fraction	TAL-KNOX	TAL KNX
Metal Hydroxide	Sequential Extraction Procedure, Metal Hydroxide Fraction	TAL-KNOX	TAL KNX
Non-Crystalline	Sequential Extraction Procedure, Non-crystalline Materials	TAL-KNOX	TAL KNX
Organic-Bound	Sequential Extraction Procedure, Organic Bound Fraction	TAL-KNOX	TAL KNX
Residual	Sequential Extraction Procedure, Residual Fraction	TAL-KNOX	TAL KNX
Total	Preparation, Total Material	TAL-KNOX	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-KNOX = TestAmerica Laboratories, Knoxville, Facility Standard Operating Procedure.

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: Brendan Talbert	Lab PM: Henry, Ryan	Carrier Tracking No(s):	COC No: 140-9736-2903.2
Client Contact: Jeffrey Ingram	Phone: (636) 485-8185	E-Mail: williamr.henry@eurofinset.com	State of Origin: IL	Page: Page 1 of 2
Company: Golder Associates Inc.	PWSID:			Job #:
Address: 13515 Barrett Parkway Drive Suite 260	Due Date Requested:			
City: Ballwin	TAT Requested (days):			
State, Zip: MO, 63021	Compliance Project: Δ Yes Δ No			
Phone: 314-984-8800(Tel) 636-724-9323(Fax)	PO #: Purchase Order not required			
Email: Jeffrey_Ingram@golder.com	WO #:			
Project Name: ~~Kincaid~~ Newton Power Station - Illinois	Project #: 14006434			
Site:	SSOW#:			

Analysis Requested

140-24350 Chain of Custody

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010B - Select Total Metals	6010B_SEP - SEP	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N		
N-SB-05(18.0-20.0)	8-17-21	1240	G	S	N	N	/	/		
N-SB-05(60.0-67.1)	8-17-21	1540	G	S			/	/		
N-SB-18 (77.5-80.0)	8-18-21	1000	G	S			/	/		
N-SB-02 (12.5-20.0)	8-18-21	1410	G	S			/	/		
N-SB-02(65.0-71.5)	8-19-21	1200	G	S			/	/		
N-SB-14 ~~(Foam Core)~~	8-19-21	1445	G	S			/	/		N-SB-14 (44.2-52.0)
N-SB-04 (12.0-18.0)	8-21-21	0735	G	S			/	/		
N-SB-04 ~~(Foam Core)~~	8-21-21	0830	G	S			/	/		N-SB-04 (38.7-45.4)
N-SB-xpw04 (10.0-15.0)	8-21-21	0920	G	S			/	/		
N-SB-xpw01 (10.0-12.7)	8-21-21	1010	G	S			/	Y		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Brendan Talbert	8-23-21 / 1830	Golder		8/24/21 0940	ETA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:** Loc: 140 **24350**

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	/			☐ Containers, Broken
2. Were ambient air containers received intact?			/	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?	/			☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC 71 Correction factor: +0.1	/			☐ Cooler Out of Temp, Client Contacted, Proceed/Cancel ☐ Cooler Out of Temp, Same Day Receipt
5. Were all of the sample containers received intact?	/			☐ Containers, Broken
6. Were samples received in appropriate containers?	/			☐ Containers, Improper; Client Contacted; Proceed/Cancel
7. Do sample container labels match COC? (IDs, Dates, Times)	/			☐ COC & Samples Do Not Match ☐ COC Incorrect/Incomplete ☐ COC Not Received
8. Were all of the samples listed on the COC received?	/			☐ Sample Received, Not on COC ☐ Sample on COC, Not Received
9. Is the date/time of sample collection noted?	/			☐ COC; No Date/Time; Client Contacted
10. Was the sampler identified on the COC?	/			☐ Sampler Not Listed on COC
11. Is the client and project name/# identified?	/			☐ COC Incorrect/Incomplete
12. Are tests/parameters listed for each sample?	/			☐ COC No tests on COC
13. Is the matrix of the samples noted?	/			☐ COC Incorrect/Incomplete
14. Was COC relinquished? (Signed/Dated/Timed)	/			☐ COC Incorrect/Incomplete
15. Were samples received within holding time?	/			☐ Holding Time - Receipt
16. Were samples received with correct chemical preservative (excluding Encore)?			/	☐ pH Adjusted, pH Included (See box 16A) ☐ Incorrect Preservative
17. Were VOA samples received without headspace?			/	☐ Headspace (VOA only)
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			/	☐ Residual Chlorine
19. For 1613B water samples is pH<9?			/	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			/	☐ Project missing info

Comments/Actions Taken

RT: 1.3°C CT: 1.4°C
1 cooler, FedEx Pg
Custody seal intact
Tr# 2828 8850 9224
KW 8/24/21

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: 1400647 PM Instructions:

Sample Receiving Associate: Kelsey Date: 8/24/21

QA026R32.doc, 062719

APPENDIX B
Technical Memorandum – Surface Water Sampling

GOLDER
MEMBER OF WSP

TECHNICAL MEMORANDUM

DATE December 16, 2021 **Project No.** 21454831

TO David Mitchell, Stu Cravens, Vic Modeer
Illinois Power Generating Company

FROM Patrick J. Behling, Jeffrey Ingram - Golder **EMAIL Jingram@golder.com**

SURFACE WATER SAMPLING SUMMARY, NEWTON POWER PLANT, JASPER COUNTY, ILLINOIS

1.0 INTRODUCTION AND BACKGROUND

Golder Associates USA Inc. (Golder) is pleased to submit this Technical Memorandum summarizing recent surface water sampling activities at the Newton Power Plant (NPP or Site) operated by Illinois Power Generating Company (IPGC) in Jasper County, Illinois. During the field investigation, 28 samples were collected and sent for laboratory analysis from Newton Lake, which is adjacent to the Site, in the vicinity of the Primary Ash Pond (PAP, CCR Unit ID 501). A sample location map is provided in **Figure 1**.

2.0 PROJECT SCOPE OF WORK

The scope of work for this project consisted of the following:

- Preparation of a Site-specific Health, Safety, and Environment Plan (HASEP).
- Review of baseline data to determine sample locations and constituents for analysis.
- Collection of 28 surface water samples from Newton Lake.
- Preparation of a Technical Memorandum to summarize the sampling and the results.

3.0 FIELD INVESTIGATION

3.1 Health, Safety, and Environment Plan

This work was performed under a Site-Specific HASEP that was approved by IPGC. The HASEP was prepared in accordance with IPGC sub-contractor requirements and includes identification of occupation and health and safety hazards (risks) related to the field team, site conditions, specific risk controls, training requirements, personal protective equipment (PPE) requirements, and information on potential emergencies.

3.2 Surface Water Sampling Locations

Surface water sampling on Newton Lake was completed on October 4th and October 5th, 2021. To access the sample locations, Golder subcontracted with Environmental Restoration, LLC. (ER) to provide and operate an open boat with a low horsepower outboard motor. Twenty-eight (28) surface water samples were collected from Newton Lake at locations agreed upon prior to sampling between Golder and IPGC. Sample locations were

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confirmed in the field using a Trimble Geo7X handheld GPS unit as displayed in **Figure 1**.

3.3 Surface Water Sample Collection and Results

At each sampling location, the field methods described in section 3.2.1.3 of the *Surface Water Sampling Work Plan – Newton Power Plan, Jasper County, Illinois* were completed as applicable. Field parameters including turbidity, pH, specific conductivity, dissolved oxygen, redox potential, and temperature were recorded prior to collecting each sample as shown on the field forms provided in **Appendix A**.

Surface water samples were placed in clean laboratory-supplied containers and properly labeled with well ID, project name, sampler initials, analyses to be performed, date, and time of collection. Sample information was logged on a chain of custody (COC) and the samples and COC were shipped to PDC Laboratories, LLC (PDC) for analysis. Sampling data validation was completed by Golder following receipt of the analytical data from PDC. A summary of the results is displayed in **Table 1** and the laboratory data packet from PDC as well as the data validation is provided in **Appendix B**.

No exceedances of the Site Groundwater Protection Standards (GWPS) used for Part 845 groundwater monitoring were noted based on our initial evaluation of the surface water sampling results. Further evaluation of the surface water data will be completed as part of the MNA evaluation for the site.

4.0 CLOSING

Golder appreciates the opportunity to continue to work on this project. Should you require any additional information about this technical memo, please feel free to contact the undersigned.

Sincerely,

Golder Associates Inc.

Jeffrey Ingram
Senior Project Geologist
JSI/PJB

Patrick J. Behling
Principal and Practice Leader

Attachments: Table 1 – Newton Lake Surface Water Sampling Results
Figure 1 – Newton Lake Surface Water Sample Locations
Appendix A – Surface Water Sampling Field Forms
Appendix B – Laboratory Analytical Data

Tables

Table 1
Newton Lake Surface Water Sampling Results
Newton Power Plant
Jasper County, Illinois

Analyte	Units	Site GWPS	N-A-1	N-A-2M	N-A-2D	N-B-1	N-B-2M	N-B-2D	N-C-1	N-C-2M
Field Parameters										
Dissolved Oxygen	mg/L	NA	7.65	6.21	5.11	4.82	0.38	0.38	5.05	1.81
Redox Potential	mV	NA	-15.8	-41.3	-26.4	-6.7	-20.6	-79.9	-23.2	8.0
Specific Conductance	µS/cm	NA	273.6	274.6	275.7	278.6	288.9	282.2	283.5	276.9
Temperature	°C	NA	27.8	27.3	25.6	27.6	25.3	24.8	27.5	25.1
Turbidity	NTU	NA	14.7	12.5	39.4	9.51	10.1	13.6	50.4	10.7
Sample Depth	FT BLE	NA	0.9	3.4	6.8	1.2	7.0	14.0	1.1	8.1
Part 845 Constituents										
Antimony, Total	mg/L	0.006	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003
Arsenic, Total	mg/L	0.059	0.0022	0.0023	0.0023	0.0023	0.0035	0.0032	0.0024	0.0022
Barium, Total	mg/L	2	0.070	0.069	0.082	0.070	0.150	0.094	0.072	0.090
Beryllium, Total	mg/L	0.004	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Boron, Total	mg/L	2	0.12	0.12	0.12	0.12	0.12	0.12	0.14	0.12
Cadmium, Total	mg/L	0.005	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Calcium, Total	mg/L	NA	21	21	22	21	21	21	21	21
Chloride, Total	mg/L	200	9.0	9.0	9.1	9.0	8.8	8.7	9.1	8.8
Chromium, Total	mg/L	0.1	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	0.0	ND < 0.004
Cobalt, Total	mg/L	0.006	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002
Fluoride, Total	mg/L	4	0.394	0.389	0.400	0.425	0.425	0.414	0.368	0.415
Lead, Total	mg/L	0.0075	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Lithium, Total	mg/L	0.04	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02
Mercury, Total	mg/L	0.002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002
Molybdenum, Total	mg/L	0.1	0.0050	0.0050	0.0051	0.0051	0.0050	0.0048	0.0062	0.0050
pH	SU	6.4 - 9.0	8.86	8.85	8.40	8.41	7.39	7.14	8.13	7.59
Radium (226 + 228)	pCi/L	6.9	0.534 J	0.420 J	ND	ND	ND	0.326 J	ND	0.722 J
Selenium, Total	mg/L	0.005	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Sulfate, Total	mg/L	400	39	37	39	38	38	36	40	36
Thallium, Total	mg/L	0.002	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Total Dissolved Solids	mg/L	1200	170	190	240	170	170	200	170	170
Dissolved Metals										
Antimony, Dissolved	mg/L	NA	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003
Arsenic, Dissolved	mg/L	NA	0.0019	0.0020	0.0015	0.0021	0.0037	0.003	0.0021	0.0018
Barium, Dissolved	mg/L	NA	0.066	0.066	0.067	0.067	0.082	0.081	0.070	0.071
Beryllium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Boron, Dissolved	mg/L	NA	0.14	0.14	0.14	0.14	0.14	0.14	0.15	0.14
Cadmium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Calcium, Dissolved	mg/L	NA	22	22	22	22	22	22	22	22
Chromium, Dissolved	mg/L	NA	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004
Cobalt, Dissolved	mg/L	NA	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002
Lead, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Lithium, Dissolved	mg/L	NA	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02
Mercury, Dissolved	mg/L	NA	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002
Molybdenum, Dissolved	mg/L	NA	0.0054	0.0054	0.0054	0.0055	0.0052	0.0052	0.0056	0.0054
Selenium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Thallium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Iron Speciation										
Ferric Iron	mg/L	NA	ND < 0.21	ND < 0.21	ND < 0.21	ND < 0.21	ND < 0.21	ND < 0.21	ND < 0.21	ND < 0.21
Ferrous Iron	mg/L	NA	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20
Additional Major Cations/Anions										
Alkalinity, Bicarbonate	mg/L	NA	50	50	62	75	75	75	50	75
Alkalinity, Carbonate	mg/L	NA	25	25	ND < 10	ND < 10	ND < 10	ND < 10	25	ND < 10
Sodium, Dissolved	mg/L	NA	21	22	21	22	21	21	22	22
Sodium, Total	mg/L	NA	22	22	22	22	22	21	22	22
Magnesium, Dissolved	mg/L	NA	5.6	5.7	5.7	5.6	5.7	5.7	5.7	5.7
Magnesium, Total	mg/L	NA	5.6	5.7	5.8	5.5	5.6	5.6	5.5	5.4
Potassium, Dissolved	mg/L	NA	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Potassium, Total	mg/L	NA	6.1	6.0	6.3	6.1	6.1	6.1	5.9	10.0
Manganese, Dissolved	mg/L	NA	0.0020	ND < 0.001	0.0290	ND < 0.001	0.7600	0.5200	0.0056	ND < 0.001
Manganese, Total	mg/L	NA	0.0800	0.0710	0.1600	0.0750	0.6900	0.5500	0.0610	0.1100
Iron, Dissolved	mg/L	NA	ND < 0.01	ND < 0.01	ND < 0.01	ND < 0.01	0.130	0.170	ND < 0.01	ND < 0.01
Iron, Total	mg/L	NA	0.390	0.270	1.200	0.210 J	0.450	0.550	0.210	0.100
Additoinal MNA Parameters										
Sulfide, Total	mg/L	NA	ND < 2	ND < 2	ND < 2	ND < 2	ND < 2	ND < 2	ND < 2	ND < 2
Total Organic Carbon	mg/L	NA	5.8	5.9	5.4	5.6	5.4	5.4	5.7	5.5
Nitrate, Total	mg/L	NA	ND < 0.03	ND < 0.03	ND < 0.03	ND < 0.03	ND < 0.03	0.09	ND < 0.03	0.08
Phosphorus, Total	mg/L	NA	0.075	0.068	0.100	0.065	0.089	0.095	0.065	0.550

Notes:
1. Unit Abbreviations: °C - degrees celcius, µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units, mV - millivolts, µS/cm - microsiemens per centimeter, NTU - nephelometric turbidity unit, pCi/L - picocuries per liter, FT BLE - feet below lake elevation.
2. ND - Non Detects. NDs reported as less than the Method Detection Limit (MDL) or adjusted Practical Quanitation Limit (PQL) basd on data validation.
3. Radium (226 + 228) is reported as the sum of the Radium 226 and the Radium 228 activity concentrations unless the sum of the Radium 226 and Radium 228 Minimum Detectable Concentrations (MDC) is higher in which case it is displayed as ND.
4. J - Flags are estimated values based on data validation.
5. Site Groundwater Protection Standards (GWPS) from Table 3-1, Background Groundwater Quality Standards from the Newton Groundwater Monitoring Plan.
6. For pH, the values represent the upper / lower limits. Values outside of these values represents a statistical exceedance.
7. No values are present above the Site GWPS, therefore, no highlighting is used in the table.

Table 1
Newton Lake Surface Water Sampling Results
Newton Power Plant
Jasper County, Illinois

Analyte	Units	Site GWPS	N-C-2D	N-D-1	N-D-2M	N-D-2D	N-E-1	N-E-2M	N-E-2D	N-F-1
Field Parameters										
Dissolved Oxygen	mg/L	NA	0.17	7.08	5.67	0.19	9.27	6.24	1.21	8.24
Redox Potential	mV	NA	-90.1	-9.9	11.6	-84.3	-28.5	-15.1	-45.6	-21.2
Specific Conductance	µS/cm	NA	280.8	277.5	273.9	276.0	271.7	273.4	276.3	270.9
Temperature	°C	NA	24.1	24.8	24.5	23.7	25.1	24.7	24.3	26.4
Turbidity	NTU	NA	20.1	11.6	8.17	10.9	14.1	7.83	17.2	12.4
Sample Depth	FT BLE	NA	16.2	2.7	11.6	23.2	2.5	11.2	22.4	1.4
Part 845 Constituents										
Antimony, Total	mg/L	0.006	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003
Arsenic, Total	mg/L	0.059	0.0034	0.002	0.0022	0.0042	0.0022	0.002	0.003	0.0021
Barium, Total	mg/L	2	0.100	0.070	0.068	0.110	0.071	0.069	0.060	0.073
Beryllium, Total	mg/L	0.004	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Boron, Total	mg/L	2	0.12	0.12	0.12	0.13	0.12	0.12	0.11	0.12
Cadmium, Total	mg/L	0.005	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Calcium, Total	mg/L	NA	22	21	21	22	21	21	21	21
Chloride, Total	mg/L	200	8.8	9.0	8.8	8.5	9.0	8.8	8.7	9.6
Chromium, Total	mg/L	0.1	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004
Cobalt, Total	mg/L	0.006	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002
Fluoride, Total	mg/L	4	0.417	0.393	0.398	0.378	0.413	0.404	0.414	0.512
Lead, Total	mg/L	0.0075	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Lithium, Total	mg/L	0.04	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02
Mercury, Total	mg/L	0.002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002
Molybdenum, Total	mg/L	0.1	0.0047	0.0050	0.0050	0.0053	0.0049	0.0049	0.0050	0.0051
pH	SU	6.4 - 9.0	7.11	8.49	8.03	7.17	8.98	8.33	7.31	8.91
Radium (226 + 228)	pCi/L	6.9	0.713 J	ND	ND	0.826	ND	ND	1.75	0.531 J
Selenium, Total	mg/L	0.005	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Sulfate, Total	mg/L	400	37	37	37	36	38	39	35	95
Thallium, Total	mg/L	0.002	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Total Dissolved Solids	mg/L	1200	170	170	170	190	170	190	170	170
Dissolved Metals										
Antimony, Dissolved	mg/L	NA	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003
Arsenic, Dissolved	mg/L	NA	0.0032	0.0017	0.0019	0.0035	0.0019	0.0017	0.0036	0.0019
Barium, Dissolved	mg/L	NA	0.082	0.065	0.066	0.067	0.065	0.066	0.32	0.065
Beryllium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Boron, Dissolved	mg/L	NA	0.14	0.14	0.14	0.13	0.14	0.14	0.13	0.13
Cadmium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Calcium, Dissolved	mg/L	NA	22	21	22	22	22	22	22	22
Chromium, Dissolved	mg/L	NA	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	0.0043	ND < 0.004	ND < 0.004
Cobalt, Dissolved	mg/L	NA	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002
Lead, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Lithium, Dissolved	mg/L	NA	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02
Mercury, Dissolved	mg/L	NA	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002
Molybdenum, Dissolved	mg/L	NA	0.0052	0.0052	0.0055	0.0053	0.0054	0.0054	0.0130	0.0054
Selenium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Thallium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Iron Speciation										
Ferric Iron	mg/L	NA	0.22	ND < 0.21	ND < 0.21	ND < 0.21	ND < 0.21	ND < 0.21	0.38	ND < 0.21
Ferrous Iron	mg/L	NA	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20
Additional Major Cations/Anions										
Alkalinity, Bicarbonate	mg/L	NA	75	75	75 J	75	50	75	75	50
Alkalinity, Carbonate	mg/L	NA	ND < 10	ND < 10	ND < 10	ND < 10	25	ND < 10	ND < 10	25
Sodium, Dissolved	mg/L	NA	21	21	21	20	21	21	20	21
Sodium, Total	mg/L	NA	21	21	21	19	21	21	20	21
Magnesium, Dissolved	mg/L	NA	5.8	5.6	5.8	5.6	5.6	5.7	5.7	5.5
Magnesium, Total	mg/L	NA	5.6	5.5	5.5	5.6	5.4	5.5	5.5	5.6
Potassium, Dissolved	mg/L	NA	6.0	5.9	6.0	5.9	5.9	6.0	5.9	5.9
Potassium, Total	mg/L	NA	6.1	6.0	6.0	5.8	6.0	6.0	6	6.0
Manganese, Dissolved	mg/L	NA	0.6000	ND < 0.001	ND < 0.001	0.6100	0.0015	ND < 0.001	0.5500	0.0032
Manganese, Total	mg/L	NA	0.6100	0.0700	0.0680	0.6500	0.0790	0.0600	0.4900	0.0570
Iron, Dissolved	mg/L	NA	0.220	ND < 0.01	0.027	0.210	0.013	0.020	0.380	ND < 0.01
Iron, Total	mg/L	NA	0.560	0.240	0.100	0.570	0.350	0.160	0.097	0.250
Additoinal MNA Parameters										
Sulfide, Total	mg/L	NA	ND < 2	ND < 2	ND < 2	ND < 2	ND < 2	ND < 2	ND < 2	ND < 2
Total Organic Carbon	mg/L	NA	5.4	5.5	5.5	5.3	5.9	5.6	5.8	5.8
Nitrate, Total	mg/L	NA	ND < 0.03	ND < 0.03	ND < 0.03	ND < 0.03	ND < 0.03	ND < 0.03	ND < 0.03	0.28
Phosphorus, Total	mg/L	NA	0.110	0.060	0.054	0.150	0.071	0.073	0.052	0.062

Notes:
1. Unit Abbreviations: °C - degrees celcius, µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units, mV - millivolts, µS/cm - microsiemens per centimeter, NTU - nephelometric turbidity unit, pCi/L - picocuries per liter, FT BLE - feet below lake elevation.
2. ND - Non Detects. NDs reported as less than the Method Detection Limit (MDL) or adjusted Practical Quanitation Limit (PQL) basd on data validation.
3. Radium (226 + 228) is reported as the sum of the Radium 226 and the Radium 228 activity concentrations unless the sum of the Radium 226 and Radium 228 Minimum Detectable Concentrations (MDC) is higher in which case it is displayed as ND.
4. J - Flags are estimated values based on data validation.
5. Site Groundwater Protection Standards (GWPS) from Table 3-1, Background Groundwater Quality Standards from the Newton Groundwater Monitoring Plan.
6. For pH, the values represent the upper / lower limits. Values outside of these values represents a statistical exceedance.
7. No values are present above the Site GWPS, therefore, no highlighting is used in the table.

Table 1
Newton Lake Surface Water Sampling Results
Newton Power Plant
Jasper County, Illinois

Analyte	Units	Site GWPS	N-F-2M	N-F-2D	N-G-1	N-G-2M	N-G-2D	N-I-1	N-I-2M	N-I-2D
Field Parameters										
Dissolved Oxygen	mg/L	NA	6.29	5.15	7.97	7.09	0.59	7.84	7.48	6.98
Redox Potential	mV	NA	-1.5	-16.1	-97.8	54.2	7.9	-6.8	-31.8	14
Specific Conductance	µS/cm	NA	272.6	277.7	276.7	277.3	280.4	275.7	276.6	277.3
Temperature	°C	NA	24.8	24.6	24.0	24.1	23.7	24.1	24.2	24.2
Turbidity	NTU	NA	10.2	27.3	8.85	6.71	25.0	9.43	11.0	13.9
Sample Depth	FT BLE	NA	9.6	19.1	2.7	8.6	17.1	2.0	6.8	13.6
Part 845 Constituents										
Antimony, Total	mg/L	0.006	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003
Arsenic, Total	mg/L	0.059	0.002	0.0023	0.0021	0.0022	0.0035	0.002	0.0022	0.0022
Barium, Total	mg/L	2	0.069	0.080	0.069	0.071	0.640	0.070	0.070	0.074
Beryllium, Total	mg/L	0.004	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Boron, Total	mg/L	2	0.12	0.14	0.13	0.14	0.13	0.13	0.13	0.13
Cadmium, Total	mg/L	0.005	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Calcium, Total	mg/L	NA	21	22	21	22	22	21	21	22
Chloride, Total	mg/L	200	9.1	9.6	9.5 J	9.4	9.2	9.0	9.0	9.1
Chromium, Total	mg/L	0.1	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004
Cobalt, Total	mg/L	0.006	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002
Fluoride, Total	mg/L	4	0.350	0.504	0.488	0.483	0.503	0.405	0.404	0.397
Lead, Total	mg/L	0.0075	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Lithium, Total	mg/L	0.04	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02
Mercury, Total	mg/L	0.002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002
Molybdenum, Total	mg/L	0.1	0.0051	0.0052	0.0053	0.0054	0.0052	0.0054	0.0053	0.0053
pH	SU	6.4 - 9.0	8.75	8.12	7.92	9.12	7.97	9.16	9.02	8.82
Radium (226 + 228)	pCi/L	6.9	1.63	0.534 J	ND	0.404 J	2.05 J	ND	1.52	0.926 J
Selenium, Total	mg/L	0.005	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Sulfate, Total	mg/L	400	38	40	39 J	37	35	37	39	35
Thallium, Total	mg/L	0.002	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Total Dissolved Solids	mg/L	1200	190	200	170	210	200	200	170 J	200 J
Dissolved Metals										
Antimony, Dissolved	mg/L	NA	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003
Arsenic, Dissolved	mg/L	NA	0.0019	0.0017	0.0018	0.0018	0.0025	0.0018	0.0018	0.0015
Barium, Dissolved	mg/L	NA	0.064	0.066	0.065	0.064	0.070	0.065	0.064	0.065
Beryllium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Boron, Dissolved	mg/L	NA	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Cadmium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Calcium, Dissolved	mg/L	NA	22	22	22	22	22	22	22	22
Chromium, Dissolved	mg/L	NA	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004
Cobalt, Dissolved	mg/L	NA	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002
Lead, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Lithium, Dissolved	mg/L	NA	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02
Mercury, Dissolved	mg/L	NA	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002
Molybdenum, Dissolved	mg/L	NA	0.0053	0.0055	0.0053	0.0052	0.0054	0.0054	0.0054	0.0053
Selenium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Thallium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Iron Speciation										
Ferric Iron	mg/L	NA	ND < 0.21	ND < 0.21	ND < 0.21	ND < 0.21	ND < 0.21	ND < 0.21	ND < 0.21	ND < 0.21
Ferrous Iron	mg/L	NA	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20
Additional Major Cations/Anions										
Alkalinity, Bicarbonate	mg/L	NA	50	75	50	75	75	50	50	50
Alkalinity, Carbonate	mg/L	NA	25	ND < 10	25	ND < 10	ND < 10	25	25	25
Sodium, Dissolved	mg/L	NA	21	21	21	21	20	21	21	22
Sodium, Total	mg/L	NA	21	20	20	21	20	20	20	20
Magnesium, Dissolved	mg/L	NA	5.7	5.6	5.6	5.6	5.6	5.7	5.7	5.8
Magnesium, Total	mg/L	NA	5.6	5.6	5.4	5.5	5.6	5.4	5.5	5.5
Potassium, Dissolved	mg/L	NA	6.0	6.0	5.9	6.0	5.9	6.0	5.9	6.1
Potassium, Total	mg/L	NA	6.1	5.9	5.8	6.0	5.9	5.9	5.9	6.0
Manganese, Dissolved	mg/L	NA	ND < 0.001	0.016	ND < 0.001	ND < 0.001	0.4000	ND < 0.001	ND < 0.001	0.0020
Manganese, Total	mg/L	NA	0.0480	0.1100	0.0440	0.0620	0.5700	0.0480	0.0500	0.0670
Iron, Dissolved	mg/L	NA	ND < 0.01	0.014	ND < 0.01	0.022	0.015	ND < 0.01	ND < 0.01	ND < 0.01
Iron, Total	mg/L	NA	0.140	0.440	0.120	0.110	0.560	0.160	0.14	0.260
Additoinal MNA Parameters										
Sulfide, Total	mg/L	NA	ND < 2	ND < 2	ND < 2	ND < 2	ND < 2	ND < 2	ND < 2	ND < 2
Total Organic Carbon	mg/L	NA	5.7	5.5	5.6	5.6	6.1	5.8	5.7	5.6
Nitrate, Total	mg/L	NA	ND < 0.03	ND < 0.03	ND < 0.03	ND < 0.03	ND < 0.03	ND < 0.03	ND < 0.03	ND < 0.03
Phosphorus, Total	mg/L	NA	0.058	0.082	0.058	0.073	0.300	0.068	0.072	0.070

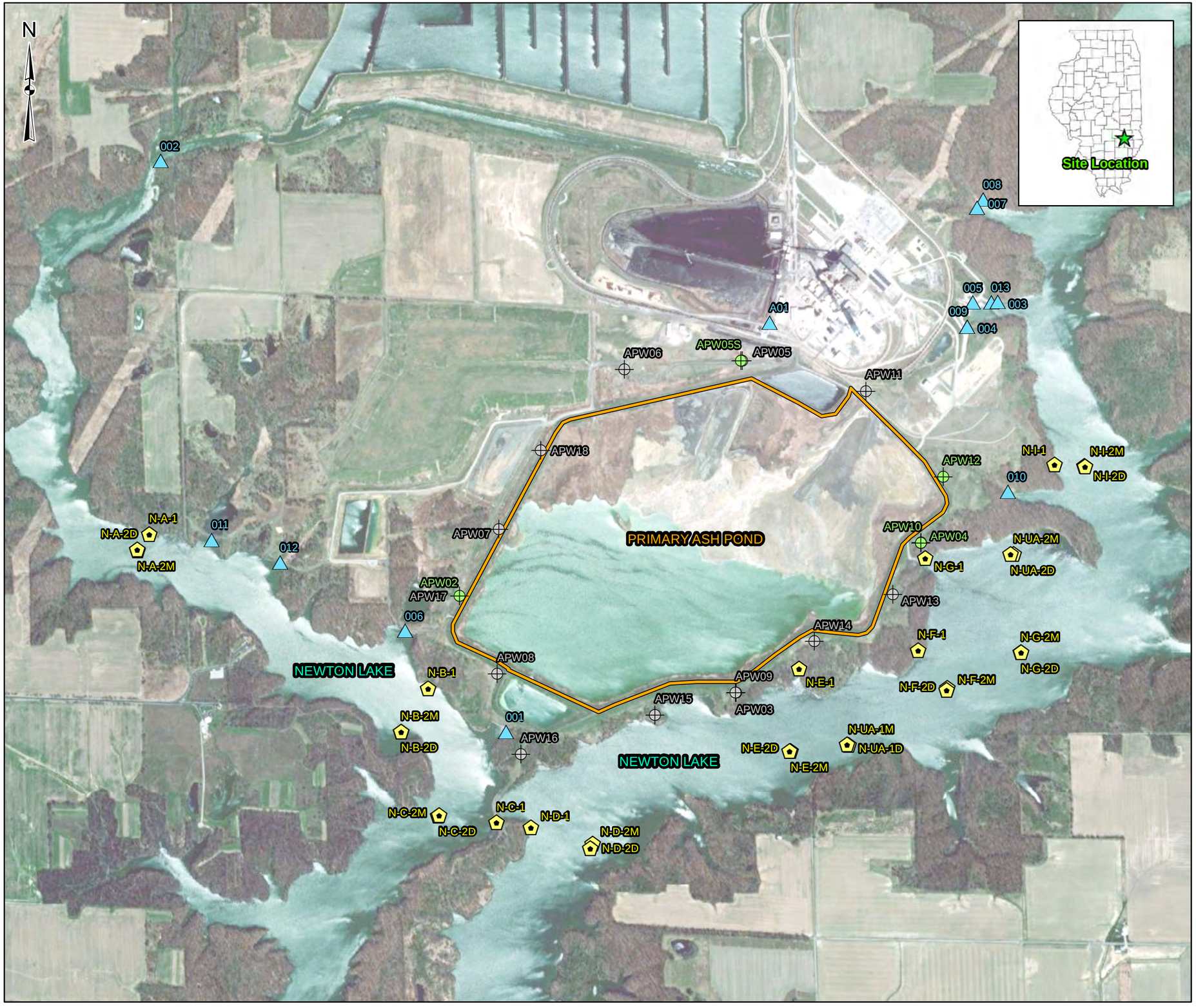
Notes:
1. Unit Abbreviations: °C - degrees celcius, µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units, mV - millivolts, µS/cm - microsiemens per centimeter, NTU - nephelometric turbidity unit, pCi/L - picocuries per liter, FT BLE - feet below lake elevation.
2. ND - Non Detects. NDs reported as less than the Method Detection Limit (MDL) or adjusted Practical Quanitation Limit (PQL) basd on data validation.
3. Radium (226 + 228) is reported as the sum of the Radium 226 and the Radium 228 activity concentrations unless the sum of the Radium 226 and Radium 228 Minimum Detectable Concentrations (MDC) is higher in which case it is displayed as ND.
4. J - Flags are estimated values based on data validation.
5. Site Groundwater Protection Standards (GWPS) from Table 3-1, Background Groundwater Quality Standards from the Newton Groundwater Monitoring Plan.
6. For pH, the values represent the upper / lower limits. Values outside of these values represents a statistical exceedance.
7. No values are present above the Site GWPS, therefore, no highlighting is used in the table.

Table 1
Newton Lake Surface Water Sampling Results
Newton Power Plant
Jasper County, Illinois

Analyte	Units	Site GWPS	N-UA-1M	N-UA-1D	N-UA-2M	N-UA-2D
Field Parameters						
Dissolved Oxygen	mg/L	NA	6.38	2.00	7.22	0.25
Redox Potential	mV	NA	-27.0	-50.6	-14.8	-32.0
Specific Conductance	µS/cm	NA	273	275.70	276.9	280.8
Temperature	°C	NA	24.9	24.6	24.2	24.0
Turbidity	NTU	NA	8.71	28.5	12.2	26.8
Sample Depth	FT BLE	NA	11.2	22.4	8.9	17.8
Part 845 Constituents						
Antimony, Total	mg/L	0.006	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003
Arsenic, Total	mg/L	0.059	0.0018	0.0023	0.0022	0.0034
Barium, Total	mg/L	2	0.064	0.052	0.073	0.210
Beryllium, Total	mg/L	0.004	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Boron, Total	mg/L	2	0.11	0.12	0.13	0.13
Cadmium, Total	mg/L	0.005	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Calcium, Total	mg/L	NA	19	21	21	22
Chloride, Total	mg/L	200	8.8	8.8	9.4	9.0
Chromium, Total	mg/L	0.1	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004
Cobalt, Total	mg/L	0.006	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002
Fluoride, Total	mg/L	4	0.421	0.406	0.490	0.347
Lead, Total	mg/L	0.0075	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Lithium, Total	mg/L	0.04	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02
Mercury, Total	mg/L	0.002	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002
Molybdenum, Total	mg/L	0.1	0.0046	0.0051	0.0054	0.0054
pH	SU	6.4 - 9.0	8.15	7.39	9.86	7.56
Radium (226 + 228)	pCi/L	6.9	0.464 J	ND	1.17 J	0.502 J
Selenium, Total	mg/L	0.005	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Sulfate, Total	mg/L	400	36	35	39	39
Thallium, Total	mg/L	0.002	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Total Dissolved Solids	mg/L	1200	170	170	170	190
Dissolved Metals						
Antimony, Dissolved	mg/L	NA	ND < 0.003	ND < 0.003	ND < 0.003	ND < 0.003
Arsenic, Dissolved	mg/L	NA	0.0017	0.0030	0.0018	0.0022
Barium, Dissolved	mg/L	NA	0.065	0.150	0.063	0.062
Beryllium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Boron, Dissolved	mg/L	NA	0.14	0.14	0.14	0.14
Cadmium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Calcium, Dissolved	mg/L	NA	22	22	22	22
Chromium, Dissolved	mg/L	NA	ND < 0.004	ND < 0.004	ND < 0.004	ND < 0.004
Cobalt, Dissolved	mg/L	NA	ND < 0.002	ND < 0.002	ND < 0.002	ND < 0.002
Lead, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Lithium, Dissolved	mg/L	NA	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.02
Mercury, Dissolved	mg/L	NA	ND < 0.0002	ND < 0.0002	ND < 0.0002	ND < 0.0002
Molybdenum, Dissolved	mg/L	NA	0.0057	0.005	0.0054	0.0053
Selenium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Thallium, Dissolved	mg/L	NA	ND < 0.001	ND < 0.001	ND < 0.001	ND < 0.001
Iron Speciation						
Ferric Iron	mg/L	NA	ND < 0.21	0.45	ND < 0.21	ND < 0.21
Ferrous Iron	mg/L	NA	ND < 0.20	ND < 0.20	ND < 0.20	ND < 0.20
Additional Major Cations/Anions						
Alkalinity, Bicarbonate	mg/L	NA	75	75	50	75
Alkalinity, Carbonate	mg/L	NA	ND < 10	ND < 10	25	ND < 10
Sodium, Dissolved	mg/L	NA	21	20	21	21
Sodium, Total	mg/L	NA	20	21	20	20
Magnesium, Dissolved	mg/L	NA	5.6	5.7	5.7	5.7
Magnesium, Total	mg/L	NA	5.0	5.6	5.4	5.6
Potassium, Dissolved	mg/L	NA	6.0	5.9	5.9	6.0
Potassium, Total	mg/L	NA	5.6	6.1	5.9	5.9
Manganese, Dissolved	mg/L	NA	ND < 0.001	0.390	ND < 0.001	0.120
Manganese, Total	mg/L	NA	0.058	0.280	0.052	0.330
Iron, Dissolved	mg/L	NA	0.014	0.45	ND < 0.01	0.019
Iron, Total	mg/L	NA	0.130	0.027	0.140	0.700
Additoinal MNA Parameters						
Sulfide, Total	mg/L	NA	ND < 2	ND < 2	ND < 2	ND < 2
Total Organic Carbon	mg/L	NA	5.9	5.6	5.9	5.3
Nitrate, Total	mg/L	NA	ND < 0.03	ND < 0.03	ND < 0.03	ND < 0.03
Phosphorus, Total	mg/L	NA	ND < 0.05	ND < 0.05	0.068	0.120

Notes:
1. Unit Abbreviations: °C - degrees celcius, µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units, mV - millivolts, µS/cm - microsiemens per centimeter, NTU - nephelometric turbidity unit, pCi/L - picocuries per liter, FT BLE - feet below lake elevation.
2. ND - Non Detects. NDs reported as less than the Method Detection Limit (MDL) or adjusted Practical Quanitation Limit (PQL) basd on data validation.
3. Radium (226 + 228) is reported as the sum of the Radium 226 and the Radium 228 activity concentrations unless the sum of the Radium 226 and Radium 228 Minimum Detectable Concentrations (MDC) is higher in which case it is displayed as ND.
4. J - Flags are estimated values based on data validation.
5. Site Groundwater Protection Standards (GWPS) from Table 3-1, Background Groundwater Quality Standards from the Newton Groundwater Monitoring Plan.
6. For pH, the values represent the upper / lower limits. Values outside of these values represents a statistical exceedance.
7. No values are present above the Site GWPS, therefore, no highlighting is used in the table.

Figures



LEGEND

- Surface Water Sampling Location
- Part 845 Wells With No Potential Exceedances
- Part 845 Wells With Potential Exceedances
- NPDES Outfall Locations
- Primary Ash Pond

0 500 1,000 2,000 3,000

Feet

NOTE(S)

1. LOCATIONS FOR SURFACE WATER SAMPLES WERE OBTAINED DURING SAMPLING USING A TRIMBLE GEO7X UNIT.
2. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
3. NPDES - NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM.

REFERENCE(S)

1. RAMBOLL 2021. GROUNDWATER MONITORING PLAN, PRIMARY ASH POND, NEWTON POWER PLANT, NEWTON ILLINOIS.
2. RAMBOLL 2021. TABLE 2 SUMMARY OF POTENTIAL EXCEEDANCES.
3. NPDES PERMIT NO. IL0049191.

CLIENT
ILLINOIS POWER GENERATING COMPANY
NEWTON POWER PLANT

PROJECT
MONITORED NATURAL ATTENUATION EVALUATION

TITLE
NEWTON LAKE SURFACE WATER SAMPLING LOCATIONS

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	11/23/2021
DESIGNED	JSI
PREPARED	ETF
REVIEWED	BTT
APPROVED	PJB

PROJECT NO.
21454831

FIGURE
1

PATH: C:\Users\EVFlorrey\Golder Associates\21454831, Vistra IL MNA Part 845 Support - 5 Technical Work\Phase4 - Newton\4.11-Figures\SW-Work\plan\SW Tech Memo\20210802_F1-MPP-SWLocations.mxd PRINTED ON: 2021-11-23 AT 5:10:10 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

APPENDIX A

Surface Water Sampling Field Forms

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.0004

WEATHER CONDITIONS

Temperature 75°F Weather Clear

SAMPLE INFORMATION

Sample Location N-A-1 Sample No. N-A-1
Sample Date 10/4/21 Time 1115 Sample By EMS
Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear, Some light colored suspended solids
Depth to Bottom of Lake: 0.9 ft
Other Water Sample notes: None

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1113	
~~Volume Discharged~~	gals		(ES)
pH	Standard	8.86	
Spec. Cond.	µS/CM	273.6	
Turbidity	NTU	14.7	
Temperature	°C	27.8	
Dissolved Oxygen	mg/l	7.65	
Redox Potential	+/- mV	-15.8	

Northing: 823551.51
Easting: 991516.56
Elevation: 397.83

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1 x 250mL Plastic	NO	HNO_3
2	Dissolved Metals	1x250mL Plastic	Yes	HNO_3
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	500mL Plastic	No	2N Acetate/NaOH
5	Nitrate	1x500mL Plastic	No	None
6	Total Organic Carbon	3 x 40mL Glass	No	H_2SO_4
7	Phosphorus	1 x 250mL Plastic	No	HNO_3
8	Radium 226 & 228 1x2.5L Plastic	~~2x 1L Plastic~~ (84)	No	HNO_3
9	Ferrous/Ferric Iron	1L Plastic	~~NO~~ Yes (85)	None

REMARKS: None

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831

WEATHER CONDITIONS

Temperature 80's Weather clear

SAMPLE INFORMATION

Sample Location N-A-7M Sample No. N-A-7M
Sample Date 10/14/21 Time 1130 Sample By EMS
Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Some ~~Slight~~ Light Suspended Solids
Depth to Bottom of Lake: TD= 6.8ft Sample Collected from 3.0ft.
Other Water Sample notes: None

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1129	
~~Volume Discharged~~	~~gals~~		(E8)
pH	Standard	8.85	
Spec. Cond.	µS/CM	274.6	
Turbidity	NTU	12.3	
Temperature	°C	27.3	
Dissolved Oxygen	mg/l	6.21	
Redox Potential	+/- mV	-41.3	

Northing: 823349.12
Easting: 991361.00
Elevation: 398.13

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	1x250mL Plastic	Yes	HNO_3
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	1x500mL Plastic	No	Zn Acetate/NaOH
5	Nitrate	1x500mL Plastic	No	None
6	Total Organic Carbon	3x40mL Glass	No	H_2SO_4
7	Phosphorus	1x250mL Plastic	No	HNO_3
8	Radium 226 & 228	1x2.5L Plastic	No	HNO_3
9	Ferrous/Ferric Iron	1x1L Plastic	~~No~~ Yes (E8)	None

REMARKS: M.S Sample Collected @ 3.0ft

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.0004

WEATHER CONDITIONS

Temperature 75°F Weather Clear

SAMPLE INFORMATION

Sample Location N-A-2D Sample No. N-A-2D
Sample Date 10/4/21 Time 1150 Sample By EMS
Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Some light Suspended Solids
Depth to Bottom of Lake: ~~Dry~~ 6.8 FT
Other Water Sample notes: None

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1148	
Volume ~~Discharged~~	gals		
pH	Standard	8.40	
Spec. Cond.	µ S/CM	275.7	
Turbidity	NTU	39.4	
Temperature	°C	25.6	
Dissolved Oxygen	mg/l	5.11	
Redox Potential	+/- mV	-26.4	

Northing: 823360.55N
Easting: 661358.02
Elevation: 397.44

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	1x250mL Plastic	Yes	HNO_3
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	1x500mL Plastic	No	Zn Acetate / NaOH
5	Nitrate	1x 500mL Plastic	(Yes) No	None
6	Total Organic Carbon	3x40mL Plastic	Glass No	H_2SO_4
7	Phosphorus	1x250mL Plastic	No	HNO_3
8	Radium 226 & 228	1x2.5L Plastic	No	HNO_3
9	Ferrous/Ferric Iron	1x1L Plastic	No Yes (FE)	None

REMARKS: None

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.000 BH

WEATHER CONDITIONS

Temperature 75°F Weather Clear

SAMPLE INFORMATION

Sample Location N-B-1 Sample No. N-B-1
Sample Date 10/14/21 Time ~~08:30~~ 0935 Sample By EMS
Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Some light Suspended Solids
Depth to Bottom of Lake: 1.23ft.
Other Water Sample notes: None

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	0936	
~~Volume Discharged~~	gals		
pH	Standard	8.41	
Spec. Cond.	µS/CM	278.6	
Turbidity	NTU	9.51	
Temperature	°C	27.6	
Dissolved Oxygen	mg/l	4.82	
Redox Potential	+/- mV	-6.7	

Northing: 821513.08
Easting: 995048.22
Elevation: 408.15

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	1x250mL Plastic	Yes	HNO_3
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	1	1	Zn Acetate / NaOH
5	Nitrate	1	1	None
6	Total Organic Carbon	3x40mL Glass Vials	1	H_2SO_4
7	Phosphorus	1x250mL Plastic	1	HNO_3
8	Radium 226 & 228	1x2.5L Plastic	1	HNO_3
9	Ferrous/Ferric Iron	1x 1L Plastic	1 Yes	None

REMARKS: N-DUP-1 Collected @ 1000
Mapped location Full of Algae unable to Sample in exact spot. Sample location ~ 6ft offshore

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation **Project No. : 21454831.0004**

WEATHER CONDITIONS

Temperature 70's Weather Clear

SAMPLE INFORMATION

Sample Location N-B-2M Sample No. N-B-2M

Sample Date 10/4/21 Time 1035 Sample By EMS

Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear-Colorless 700

Depth to Bottom of Lake: ~~17.7ft~~ 14.0ft ~~0.3~~ = M.d depth

Other Water Sample notes: ~~Collected at NA~~

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1032	
~~Volume Discharged~~	~~gals~~		
pH	Standard	7.39	
Spec. Cond.	µS/CM	288.9	
Turbidity	NTU	10.1	
Temperature	°C	25.3	
Dissolved Oxygen	mg/l	0.38	
Redox Potential	+/- mV	-20.6	

Northing: 820964.99
Easting: 994684.04
Elevation: 400.56

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	1	Yes	HNO_3
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	1		Zn Acetate/NaOH
5	Nitrate	1		None
6	Total Organic Carbon	3x40mL Glass		H_2SO_4
7	Phosphorus	1x250mL Plastic		HNO_3
8	Radium 226 & 228	1x2.5L Plastic		HNO_3
9	Ferrous/Ferric Iron	1x1L Plastic	Yes	None

REMARKS: ~~#~~ 2 Mid + Deep Samples Collected at Same location (Different depths

NA = Not applicable

SAMPLING METHODS:

Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.0004

WEATHER CONDITIONS

Temperature 70's Weather Clear

SAMPLE INFORMATION

Sample Location N-B-2D Sample No. N-B-2D
Sample Date 10/4/21 Time 1045 Sample By RMS
Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear Colorless
Depth to Bottom of Lake: 14.0 Ft
Other Water Sample notes: N/A

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1043	
~~Volume Discharged~~	~~gals~~		
pH	Standard	7.14	
Spec. Cond.	M S/CM	287.2	
Turbidity	NTU	13.6	
Temperature	°C	24.8	
Dissolved Oxygen	mg/l	0.38	
Redox Potential	+/- mV	-79.9	

Northing: 820964.99
Easting: 994684.04
Elevation: 400.56

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	1	Yes	HNO_3
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	1		Zn Acetate / NaOH
5	Nitrate	1		None
6	Total Organic Carbon	3x40mL Glass		H_2SO_4
7	Phosphorus	1x250mL Plastic		HNO_3
8	Radium 226 & 228	1x2.5L Plastic		HNO_3
9	Ferrous/Ferric Iron	1x1L Plastic	* Yes	None

REMARKS: None

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation **Project No. : 21454831.0054**

WEATHER CONDITIONS

Temperature 70°F Weather clear

SAMPLE INFORMATION

Sample Location N-C-1 Sample No. N-C-1

Sample Date 10/4/2021 Time 0815 Sample By EMS/SSI

Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear - little turbidity

Depth to Bottom of Lake: 1.1 Ft

Other Water Sample notes: N/A

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	0810	
~~Volume Discharged~~	~~gals~~		
pH	Standard	8.13	
Spec. Cond.	µS/CM	2835	
Turbidity	NTU	50.4	
Temperature	°C	27.5	
Dissolved Oxygen	~~mg/l~~	~~6.5~~ 5.05	
Redox Potential	+/- mV	-23.2	

Northing: 819~~78~~96

Easting: 995882.98

Elevation: 402.98

Depth: 1.1 ft

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	〃	Yes	〃
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	〃	〃	Zn Acetate/NaOH
5	Nitrate	〃	〃	None
6	Total Organic Carbon	3x40mL Glass	〃	H_2SO_4
7	Phosphorus	1x250mL Plastic	〃	HNO_3
8	Radium 226 & 228	1x2.5L Plastic	〃	〃
9	Ferrous/Ferric Iron	1x 1L Plastic	~~No~~ Yes	None

REMARKS: None

NA = Not applicable

SAMPLING METHODS:

Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.6008 4/7

WEATHER CONDITIONS

Temperature 70°F Weather clear

SAMPLE INFORMATION

Sample Location N-C-2M (mid) Sample No. N-C-2M
Sample Date 10/4/21 Time 0850 Sample By EMS
Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear - Colorless (16.2 TD, 8.1 = M.d depth)
Depth to Bottom of Lake: ~~15.5~~, 1/2 depth = 7.75
Other Water Sample notes: None

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	0847	
~~Volume Discharged~~	~~gals~~		
pH	Standard	7.59	
Spec. Cond.	µS/CM	276.9	
Turbidity	NTU	10.7	
Temperature	°C	25.1	
Dissolved Oxygen	mg/l	1.81	
Redox Potential	+/- mV	8.0	

Northing: 819879.30
Easting: ~~795~~139.02
Elevation: 904.69

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO3
2	Dissolved Metals	"	Yes	HNO3
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	"	"	Zn Acetate / NaOH
5	Nitrate	"	"	None
6	Total Organic Carbon	1x250mL Plastic	"	H_2SO_4
7	Phosphorus (8)	3x40mL Glass	"	HNO3
8	Radium 226 & 228	1x2.5L Plastic	"	"
9	Ferrous/Ferric Iron	1x1L Plastic	~~Yes~~	None

REMARKS: M.d depth Sample Collected first

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation **Project No. : 21454831.0004**

WEATHER CONDITIONS

Temperature 70's Weather Clear

SAMPLE INFORMATION

Sample Location N-C-2D Sample No. N-C-2D

Sample Date 10/14/21 Time 0915 Sample By EMC

Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear- Colorless

Depth to Bottom of Lake: 16.2 Ft

Other Water Sample notes: N/A - Collected AT 16.2 Ft BTOW

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	0911	
~~Volume Discharged~~	~~gals~~		
pH	Standard	7.11	
Spec. Cond.	µS/CM	280.8	
Turbidity	NTU	20.1	
Temperature	°C	24.1	
Dissolved Oxygen	mg/l	0.17	
Redox Potential	+/- mV	-90.1	

Northing: 819886.9
Easting: 995146.04
Elevation: 404.14

819872.07
995134.92

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	1	Yes	HNO_3
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	1		Zn Acetate/NaOH
5	Nitrate	1		None
6	Total Organic Carbon	3x40mL Glass		H_2SO_4
7	Phosphorus	1x250mL Plastic		HNO_3
8	Radium 226 & 228	1x 2.5L Plastic		2
9	Ferrous/Ferric Iron	1x1L Plastic	~~No~~ Yes	None

REMARKS: Collected at Lake Bottom.

NA = Not applicable

SAMPLING METHODS:

Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831 .0004

WEATHER CONDITIONS

Temperature ~~N-D+~~ 70's (ES) Weather ~~N-D-1~~ (ES) Clear - pt Cloudy

SAMPLE INFORMATION

Sample Location N-D1 Sample No. N-D-1

Sample Date 10/4/2021 Time 1335 Sample By BMS

Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear-Colorless / Some light Suspended Solids

Depth to Bottom of Lake: 2.70

Other Water Sample notes: None

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1532	
Volume Discharged	gals		
pH	Standard	7.49	8.49
Spec. Cond.	µ S/CM	2.2	277.5
Turbidity	NTU		11.6
Temperature	°_C__	27.2	24.8
Dissolved Oxygen	mg/l	4.70	7.08
Redox Potential	+/- mV	12.3	-9.9

(ES)

(ES) Northing: ~~814707.644~~

Easting: ~~916327.98~~ 916327.98

Elevation: ~~426.20~~ (ES) 397.30

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL plastic	No	HNO_3
2	Dissolved Metals	1	Yes	1
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL plastic	No	None
4	Sulfide	1	1	Zn Acetate/NaOH
5	Nitrate	1	1	None (ES)
6	Total Organic Carbon	3x40mL Glass	1	~~HNO_3~~ H_2SO_4
7	Phosphorus	1x250mL Plastic	1	HNO_3
8	Radium 226 & 228	1x2.5L Plastic	1	1
9	Ferrous/Ferric Iron	1x1L Plastic	*Yes	None

REMARKS: None

NA = Not applicable

SAMPLING METHODS:

Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831. 0004

WEATHER CONDITIONS

Temperature 80's Weather Clear

SAMPLE INFORMATION

Sample Location N-D-2M Sample No. N-D-2M
Sample Date 10/4/21 Time 1305 Sample By EMS
Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear - Colorless Some light Suspended Solids
Depth to Bottom of Lake: 23.20 Midpoint = 11.60 FT
Other Water Sample notes: None

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1300	
~~Volume Discharged~~	gals		
pH	Standard	8.03	
Spec. Cond.	µS/CM	273.9	
Turbidity	NTU	8.17	
Temperature	°C	24.3	
Dissolved Oxygen	mg/l	5.67	
Redox Potential	+/- mV	11.6	

Northing: 919480.36
Easting: 997107.36
Elevation: 385.159

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL plastic	No	HNO_3
2	Dissolved Metals	⊥	Yes	⊥
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	⊥	⊥	2N Acetate/NaOH
5	Nitrate	⊥	⊥	None
6	Total Organic Carbon	3x 40mL Glass	⊥	H_2SO_4
7	Phosphorus	1x250mL Plastic	⊥	HNO_3
8	Radium 226 & 228	1x2.5L Plastic	⊥	⊥
9	Ferrous/Ferric Iron	2x 1L Plastic	~~No~~ Yes	None

REMARKS: None

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.0004

WEATHER CONDITIONS

Temperature 70's Weather Overcast

SAMPLE INFORMATION

Sample Location N-D-2D Sample No. N-D-2D

Sample Date 10/4/21 Time 1318 Sample By EMS/JSF

Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear-Colorless

Depth to Bottom of Lake: 23.20

Other Water Sample notes: NA

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1316	
~~Volume Discharged~~	~~gals~~	~~[illegible]~~	
pH	Standard	~~7.87~~ → 7.17	
Spec. Cond.	µS/CM	276.0	
Turbidity	NTU	10.9	
Temperature	°C	23.7	
Dissolved Oxygen	mg/l	0.19	
Redox Potential	+/- mV	-84.3	

Northing: 819423.94
Easting: 997075.24
Elevation: 400.61

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO3
2	Dissolved Metals	1	Yes	1
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	1	1	ZN Acetate/NaOH
5	Nitrate	1	1	None
6	Total Organic Carbon	3x 40mL Glass		H2SO4
7	Phosphorus	1x250mL Plastic		HNO3
8	Radium 226 & 228	2x2.5L Plastic		1
9	Ferrous/Ferric Iron	1x1L Plastic	~~No~~ Yes	None

REMARKS: None

NA = Not applicable

SAMPLING METHODS:

Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831, 0003/4

WEATHER CONDITIONS

Temperature 80's Weather Clear

SAMPLE INFORMATION

Sample Location N-E-1 Sample No. N-E-1
Sample Date 10/4/21 Time 1400 Sample By EMS/JSI
Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear-Colorless Some Suspended Solids
Depth to Bottom of Lake: 2.5 Ft
Other Water Sample notes: N/A

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1358	
~~Volume Discharged~~	gals		
pH	Standard	8.98	
Spec. Cond.	µS/CM	271.7	
Turbidity	NTU	14.1	
Temperature	°C	25.1	
Dissolved Oxygen	mg/l	9.27	
Redox Potential	+/- mV	-28.5	

Northing: 821667.87
Easting: 899789.26
Elevation: 385.63

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	NO	HNO3
2	Dissolved Metals	1	Yes	1
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	1		Zn Acetate/NaOH
5	Nitrate	1		None
6	Total Organic Carbon	3x40mL Glass		H_2SO_4
7	Phosphorus	1x250mL Plastic		HNO_3
8	Radium 226 & 228	1x2.5L Plastic		1
9	Ferrous/Ferric Iron	1x1L Plastic	Yes	None

REMARKS: Algae Present in area of Sample Collection
N-FB-1 taken @ 1410

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.6004

WEATHER CONDITIONS

Temperature 70's Weather Clear

SAMPLE INFORMATION

Sample Location N-E-2M Sample No. N-E-2M

Sample Date 10/4/21 Time 1435 Sample By EMS

Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: ~~Light~~ Clear-Colorless

Depth to Bottom of Lake: 22.4 11.2 is midpoint

Other Water Sample notes: NNA

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1434	
~~Volume Discharged~~	~~gals~~		
pH	Standard	8.33	
Spec. Cond.	µS/CM	273.37	
Turbidity	NTU	7.83	
Temperature	°C	24.7	
Dissolved Oxygen	mg/l	6.24	
Redox Potential	+/- mV	-15.1	

Northing: 820614.18
Easting: 994661.17
Elevation: 396.60

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	1	Yes	1
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	1		Zn Acetate/NaOH
5	Nitrate	1		None
6	Total Organic Carbon	3x 40mL Glass		H_2SO_4
7	Phosphorus	1x250mL Plastic		HNO_3
8	Radium 226 & 228	1x2.5L Plastic		1
9	Ferrous/Ferric Iron	1x 1L Plastic	Yes	None

REMARKS: None

NA = Not applicable

SAMPLING METHODS:

Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.0004

WEATHER CONDITIONS

Temperature 70's Weather Pt Cloudy

SAMPLE INFORMATION

Sample Location N-E-2D Sample No. N-E-2D
Sample Date 10/4/21 Time 1455 Sample By EMS
Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear Colorless
Depth to Bottom of Lake: 22.4
Other Water Sample notes: N/A

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1453	
Volume Discharged	gals		
pH	Standard	7.31	
Spec. Cond.	µS/CM	276.3	
Turbidity	NTU	17.2	
Temperature	°C	24.3	
Dissolved Oxygen	mg/l	1.21	
Redox Potential	+/- mV	-45.6	

Northing: 820616.37
Easting: 999648.73
Elevation: 399.80

820618.25
999653.81
401.23

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	1	Yes	1
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	1		Zn Acetate/NaOH
5	Nitrate	1		None
6	Total Organic Carbon	3x40mL Glass		H_2SO_4
7	Phosphorus	1x250mL Plastic		HNO_3
8	Radium 226 & 228	1x2.5L Plastic		1
9	Ferrous/Ferric Iron	1x1L Plastic	Yes	None

REMARKS: None

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.0004

WEATHER CONDITIONS

Temperature 75 Weather Clear - pty

SAMPLE INFORMATION

Sample Location N-F-1 Sample No. N-F-1
Sample Date 10/4/21 Time 1610 Sample By EMS
Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear - slightly turbid
Depth to Bottom of Lake: 1.42
Other Water Sample notes: None

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1608	
~~Volume Discharged~~	~~gals~~		
pH	Standard	8.91	
Spec. Cond.	µS/CM	270.9	
Turbidity	NTU	12.4	
Temperature	°_C__	26.4	
Dissolved Oxygen	mg/l	8.24	
Redox Potential	+/- mV	-71.2	

Northing: 821872.37
Easting: 1001317.18
Elevation: 407.05

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	1x250mL Plastic	Yes	2
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	1	1	ZnAcetate/NaOH
5	Nitrate			None
6	Total Organic Carbon	3x40mL Glass		H_2SO_4
7	Phosphorus	1x250mL Plastic	(Yes)	None HNO_3
8	Radium 226 & 228	1x2.5L Plastic		2
9	Ferrous/Ferric Iron	1x1L Plastic	~~No~~ Yes	None

REMARKS: None

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

SURFACE WATER SAMPLE COLLECTION FORM

GOLDER
MEMBER OF WSP

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.0004

WEATHER CONDITIONS

Temperature 75°F Weather Pt Cloudy

SAMPLE INFORMATION

Sample Location N-F-2M Sample No. N-F-2M
Sample Date 10/4/21 Time 1630 Sample By EMS
Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear Some Suspended Solids
Depth to Bottom of Lake: 19.1 Sample Collected @ 9.6
Other Water Sample notes: None

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1629	
~~Volume Discharged~~	~~gals~~		
pH	Standard	~~8.20~~ (ES) 8.75	
Spec. Cond.	µ S/CM	~~271.6~~ (ES) 272.6	
Turbidity	NTU	10.2	
Temperature	°C	~~24.1~~ (ES) 24.8	
Dissolved Oxygen	mg/l	6.29	
Redox Potential	+/- mV	-1.5	

Northing: 821378.62
Easting: 1101684.37
Elevation: 379.13

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	1	Yes	1
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	1		Zn Acetate/NaOH
5	Nitrate			None
6	Total Organic Carbon	3x40mL Glass		H_2SO_4
7	Phosphorus	1x250mL Plastic		HNO_3
8	Radium 226 & 228	1x2.5L Plastic		1
9	Ferrous/Ferric Iron	1x1L Plastic	No Yes	None

REMARKS: None

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831 , 0004

WEATHER CONDITIONS

Temperature 75°F Weather Clear

SAMPLE INFORMATION

Sample Location N-F-2D Sample No. N-F-2D

Sample Date 10/4/21 Time 1655 Sample By EMS

Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Slightly turbid Some fine Suspended Solids

Depth to Bottom of Lake: 19.1 FT

Other Water Sample notes: None, Turbidity final = 16.1

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1650	
Volume Discharged	gals		
pH	Standard	8.12	
Spec. Cond.	µ S/CM	277.7	
Turbidity	NTU	27.3	
Temperature	°C	24.6	
Dissolved Oxygen	mg/l	5.15	
Redox Potential	+/- mV	-16.1	

Northing: 821357.41
Easting: 1001675.19
Elevation: 398.14

Turbidity after ~ 5 minutes at 16.1 NTU

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	〃	Yes	〃
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	〃		Zinc Acetate/NaOH
5	Nitrate	〃		None
6	Total Organic Carbon	3x40mL Glass		H_2SO_4
7	Phosphorus	1x250mL Plastic		HNO_3
8	Radium 226 & 228	1x2.5L Plastic		〃
9	Ferrous/Ferric Iron	1x1L Plastic	~~Yes~~	None

REMARKS: None

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.0004

WEATHER CONDITIONS

Temperature 65 °F Weather Sunny

SAMPLE INFORMATION

Sample Location NG-1 Sample No. ~~N-NG-1~~ ~~N-6~~ N-G-1 (EB)

Sample Date 10/5/2021 Time 0805 Sample By EMS

Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: clear colorless

Depth to Bottom of Lake: 2.7 ft

Other Water Sample notes: None

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	0805	
Volume Discharged	gals	—	
pH	Standard	7.92	
Spec. Cond.	µ S/CM	276.7	
Turbidity	NTU	8.85	
Temperature	°C	24.0	
Dissolved Oxygen	mg/l	7.97	
Redox Potential	+/- mV	-97.8	

Northing: 823046.67
Easting: 1001433.50
Elevation: 398.49

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	NO	HNO_3
2	Dissolved Metals	1	Yes	1
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	NO	None
4	Sulfide	1		ZN Acetate/NaOH
5	Nitrate			None
6	Total Organic Carbon	3x40mL Glass		H_2SO_4
7	Phosphorus	1x250mL Plastic		HNO_3
8	Radium 226 & 228	1x2.5L Plastic		1
9	Ferrous/Ferric Iron	1x1L Plastic	Yes	None

REMARKS: Collect MS/MSD

NA = Not applicable

SAMPLING METHODS:

Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.0004

WEATHER CONDITIONS

Temperature 65°F Weather Foggy / Overcast

SAMPLE INFORMATION

Sample Location N-GW-2M Sample No. N-GW-2M
Sample Date 10-5-21 Time 0845 Sample By EMS
Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear & Colorless
Depth to Bottom of Lake: 17.1 ft TD, mid point Sample = 8.6 FT
Other Water Sample notes: NA

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	24.1	
Volume Discharged	gals	—	
pH	Standard	9.12	
Spec. Cond.	µ S/CM	277.3	
Turbidity	NTU	6.71	
Temperature	°C	24.1	
Dissolved Oxygen	mg/l	7.09	
Redox Potential	+/- mV	54.2	

Northing: 821818.75
Easting: 1002624
Elevation: 398.79

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO3
2	Dissolved Metals	〃	Yes	〃
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	〃	〃	2x Acetate/NaOH
5	Nitrate	〃	〃	None
6	Total Organic Carbon	3x40mL Glass	〃	H2SO4
7	Phosphorus	1x250mL Plastic	〃	HNO3
8	Radium 226 & 228	1x2.5L Plastic	〃	2
9	Ferrous/Ferric Iron	1x1L Plastic	Yes	None

REMARKS: NA

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.0004

WEATHER CONDITIONS

Temperature 65°F Weather Cloudy

SAMPLE INFORMATION

Sample Location N-G-2 Sample No. N-G-2D
Sample Date 10/5/2021 Time 0900 Sample By EMS
Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear & Colorless
Depth to Bottom of Lake: 17.1 ft
Other Water Sample notes: NA

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	~~23.7~~ 0900	
Volume Discharged	gals	—	
pH	Standard	~~8.38~~ 7.97	
Spec. Cond.	µS/CM	280.4	
Turbidity	NTU	25.0	
Temperature	°C	23.7	
Dissolved Oxygen	mg/l	0.59	
Redox Potential	+/- mV	7.9	

Northing: 821815.77
Easting: 1002633.83
Elevation: 397.94

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	1x250mL Plastic	Yes	↓
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	↓	↓	Zn Acetate / NaOH
5	Nitrate	↓	↓	None
6	Total Organic Carbon	3x40mL Glass	↓	H_2SO_4
7	Phosphorus	1x250mL Plastic	↓	HNO_3
8	Radium 226 & 228	1x 2.5L Plastic	↓	↓
9	Ferrous/Ferric Iron	1x1L Plastic	Yes	None

REMARKS: NA

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.0004

WEATHER CONDITIONS

Temperature 65°F Weather Cloudy

SAMPLE INFORMATION

Sample Location N-I-1 Sample No. N-I-1
Sample Date 10-5-2024 Time 1000 Sample By EMS
Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear & Colorless
Depth to Bottom of Lake: 2 ft
Other Water Sample notes: NA

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	100	
Volume Discharged	gals	~~24~~	
pH	Standard	6.16	
Spec. Cond.	µS/CM	275.7	
Turbidity	NTU	9.43	
Temperature	°C	24.1	
Dissolved Oxygen	mg/l	7.84	
Redox Potential	+/- mV	-6.8	

Northing: 824210.31
Easting: 1003108.04
Elevation: ~~404.5~~ 404.6 ft HTE

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	"	Yes	"
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	"		2N Acetic/NaOH
5	Nitrate	"		None
6	Total Organic Carbon	3x40mL Glass		H_2SO_4
7	Phosphorus	1x250mL Plastic		HNO_3
8	Radium 226 & 228	1x2.5L Plastic	"	"
9	Ferrous/Ferric Iron	1x1L Plastic	Yes	None

REMARKS: NA

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.0004

WEATHER CONDITIONS

Temperature 65°F Weather Cloudy

SAMPLE INFORMATION

Sample Location N-I-2 Sample No. N-I-2M

Sample Date 10/5/2021 Time 1030 Sample By EMS

Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear & Colorless

Depth to Bottom of Lake: 13.6 FT = TD Midpoint = Sample = 6.8 FT

Other Water Sample notes: NA

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1030	
Volume Discharged	gals	—	
pH	Standard	9.02	
Spec. Cond.	µS/CM	276.6	
Turbidity	NTU	11.0	
Temperature	°C	24.2	
Dissolved Oxygen	mg/l	7.48	
Redox Potential	+/- mV	-31.8	

Northing: 824183.71
Easting: 1003493.68
Elevation: 3962 ft HAE

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO3
2	Dissolved Metals	〃	Yes	〃
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	〃	〃	Zn Acetate / NaOH
5	Nitrate	〃	〃	None
6	Total Organic Carbon	3x40mL Glass	〃	H2SO4
7	Phosphorus	1x250mL Plastic	〃	HNO3
8	Radium 226 & 228	1x2.5L Plastic	〃	〃
9	Ferrous/Ferric Iron	1x1L Plastic	Yes	None

REMARKS: NA

NA = Not applicable

SAMPLING METHODS:

Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831.0004

WEATHER CONDITIONS

Temperature 65 70°F Weather Cloudy

SAMPLE INFORMATION

Sample Location N-I-2 Sample No. N-I-2D
Sample Date 10/5/2021 Time 1045 Sample By EMS
Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear & Colorless
Depth to Bottom of Lake: 13.6 ft
Other Water Sample notes: NA

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1045	
Volume Discharged	gals	—	
pH	Standard	8.82	
Spec. Cond.	µS/CM	277.3	
Turbidity	NTU	13.9	
Temperature	°C	24.2	
Dissolved Oxygen	mg/l	6.98	
Redox Potential	+/- mV	140	

Northing: 824176.70
Easting: 1003501.16
Elevation: 401.59 ft HAE

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	1	Yes	1
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	1		Zn Acetate/NaOH
5	Nitrate	1		None
6	Total Organic Carbon	3x40mL Glass		H_2SO_4
7	Phosphorus	1x250mL Plastic		HNO_3
8	Radium 226 & 228	1x2.5L Plastic	1	1
9	Ferrous/Ferric Iron	1x1L Plastic	Yes	None

REMARKS: NA

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation **Project No. : 21454831.0004**

WEATHER CONDITIONS

Temperature 70's Weather Clear - Overcast

SAMPLE INFORMATION

Sample Location N-UA-1M Sample No. N-UA-1M

Sample Date 10/5/21 Time 1520 Sample By EMS

Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear Colorless

Depth to Bottom of Lake: 22.4 Sampled 11.2

Other Water Sample notes: None

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	1526	
~~Volume Discharged~~	gals		
pH	Standard	8.15	
Spec. Cond.	µS/CM	2730	
Turbidity	NTU	8.71	
Temperature	°C	24.9	
Dissolved Oxygen	mg/l	6.38	
Redox Potential	+/- mV	-27.0	

Northing: 820676.28
Easting: 1000407.42
Elevation: 405.67

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	NO	HNO_3
2	Dissolved Metals	2	Yes	1
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	1		Zn Acetate / NaOH
5	Nitrate	1		None
6	Total Organic Carbon	3x40mL Glass		H_2SO_4
7	Phosphorus	1x250mL Plastic		HNO_3
8	Radium 226 & 228	1x2.5L Plastic		1
9	Ferrous/Ferric Iron	1x1L Plastic	↓	None

REMARKS: Searched for Deepest Point in Proposed Sample Area - 22.4 ft was deepest.

NA = Not applicable

SAMPLING METHODS:

Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831, 0004

WEATHER CONDITIONS

Temperature 75° Weather Clear/Pt Cloudy

SAMPLE INFORMATION

Sample Location N- UA-1D Sample No. N-UA-1D

Sample Date 10/4/21 Time 1550 Sample By EMS

Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear - lightly turbid

Depth to Bottom of Lake: 22.4

Other Water Sample notes: None

FIELD MEASUREMENTS

Turbid. Ended. 14.8

Parameter	Units	Measurement	Sample
Time	hhmm	1545	
Volume Discharged	gals		
pH	Standard	7.39	
Spec. Cond.	µS/CM	275.7	
Turbidity	NTU	28.5	
Temperature	°C	24.6	
Dissolved Oxygen	mg/l	2.00	
Redox Potential	+/- mV	-50.6	

Northing: 820684.47
Easting: 1005875
Elevation: 405.32

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	〃	Yes	〃
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	〃	〃	Zn Acetate/NaOH
5	Nitrate	〃	〃	None
6	Total Organic Carbon	3x40mL Glass	〃	H_2SO_4
7	Phosphorus	1x250mL Plastic	〃	HNO_3
8	Radium 226 & 228	1x2.5L Plastic	〃	〃
9	Ferrous/Ferric Iron	1x1L Plastic	〃	None

REMARKS: None

NA = Not applicable

SAMPLING METHODS:

Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation Project No. : 21454831 . 0004

WEATHER CONDITIONS

Temperature 65'F Weather Cloudy

SAMPLE INFORMATION

Sample Location N-UA-2 Sample No. N-UA-2M

Sample Date 10-5-2021 Time 0925 Sample By EMS

Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear-Colorless

Depth to Bottom of Lake: 17.8 ft Sample at 8.9 ft

Other Water Sample notes: None

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	0925	
Volume Discharged	gals	—	
pH	Standard	9.86	
Spec. Cond.	µ S/CM	276.9	
Turbidity	NTU	12.2	
Temperature	°C	24.2	
Dissolved Oxygen	mg/l	7.22	
Redox Potential	+/- mV	-14.8	

Northing: 823072.73
Easting: 1002564.04
Elevation: 400.80

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	~~No~~	HNO_3
2	Dissolved Metals	〃	Yes	〃
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	Ware
4	Sulfide	〃	〃	Zn Acetate/NaOH
5	Nitrate	〃	〃	None
6	Total Organic Carbon	#3x40mL Glass	〃	H_2SO_4
7	Phosphorus	1x250mL Plastic	〃	HNO_3
8	Radium 226 & 228	1x2.5L Plastic	〃	〃
9	Ferrous/Ferric Iron	1x1L Plastic	~~No~~ Yes	Ware

REMARKS: None

NA = Not applicable

SAMPLING METHODS:

Bailer: Other: Peristaltic Pump

GOLDER
MEMBER OF WSP

SURFACE WATER SAMPLE COLLECTION FORM

Project Ref: Surface Water Sampling - Kincaid & Newton - MNA Evaluation **Project No. : 21454831.0004**

WEATHER CONDITIONS

Temperature 65°F Weather Cloudy

SAMPLE INFORMATION

Sample Location N-UA-2 Sample No. N-UA-2D

Sample Date 10-5-2021 Time 0940 Sample By EMS

Sample Method Peristaltic Sample Type GRAB

Appearance of Sample: Clear & Colorless

Depth to Bottom of Lake: 17.8 ft

Other Water Sample notes: NA

FIELD MEASUREMENTS

Parameter	Units	Measurement	Sample
Time	hhmm	0940	
Volume Discharged	gals	—	
pH	Standard	7.56	
Spec. Cond.	µ S/CM	280.8	
Turbidity	NTU	26.8	
Temperature	°C	24.0	
Dissolved Oxygen	mg/l	0.25	
Redox Potential	+/- mV	-32.0	

Northing: 823072.66
Easting: 1002526.33
Elevation: 401.80

LABORATORY CONTAINERS

Sub-Sample	Analysis Requested	Type and Size of Sample Container	Filtered (Yes or No)	Type of Preservative
1	Total Metals	1x250mL Plastic	No	HNO_3
2	Dissolved Metals	↓	Yes	↓
3	Chloride Fluoride Sulfate TDS Alkalinity	1x500mL Plastic	No	None
4	Sulfide	↓	↓	ZN Acetate/NaOH
5	Nitrate	↓	↓	None
6	Total Organic Carbon	3x40mL Glass	↓	~~HCl~~ H_2SO_4
7	Phosphorus	1x250mL Plastic	↓	HNO_3
8	Radium 226 & 228	1x2.5L Plastic	↓	↓
9	Ferrous/Ferric Iron	1x1L Plastic	Yes	None

REMARKS: None

NA = Not applicable

SAMPLING METHODS:
Bailer: Other: Peristaltic Pump

APPENDIX B

Laboratory Analytical Data

November 01, 2021

Jeffrey Ingram
Golder Associates, Inc
13515 Barrett Parkway Dr, Suite 260
Ballwin, MO 63021

RE: GOLDER VISTRA NEWTON

Dear Jeffrey Ingram:

Please find enclosed the **revised** analytical results for the **30** sample(s) the laboratory received on **10/5/21 4:30 pm** and logged in under work order **EJ00598**. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lgrant@pdclab.com.

Sincerely,

Gail J Schindler

Project Manager
(309) 692-9688 x1716
gschindler@pdclab.com

SAMPLE RECEIPT CHECK LIST

Items not applicable will be marked as in compliance

Work Order EJ00598

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
NO	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
YES	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

ANALYTICAL RESULTS

Sample: EJ00598-01
Name: N-D-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 13:05
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.0773 U	pCi/L			1	0.994	10/22/21 16:19		904.0 903.0

Sample: EJ00598-02
Name: N-A-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 11:50
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.0119 U	pCi/L			1	0.936	10/22/21 16:19		904.0 903.0

Sample: EJ00598-03
Name: N-A-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 11:30
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.420 J	pCi/L			1	0.956	10/22/21 16:19		904.0 903.0

Sample: EJ00598-04
Name: N-A-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 11:15
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.534 J	pCi/L			1	0.946	10/22/21 16:19		904.0 903.0

ANALYTICAL RESULTS

Sample: EJ00598-05
Name: N-B-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 10:45
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.326 J	pCi/L			1	0.768	10/22/21 16:19		904.0 903.0

Sample: EJ00598-06
Name: N-B-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 10:35
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.0308 U	pCi/L			1	0.803	10/22/21 16:19		904.0 903.0

Sample: EJ00598-07
Name: N-B-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 09:35
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.0636 U	pCi/L			1	1.04	10/22/21 16:19		904.0 903.0

Sample: EJ00598-08
Name: N-C-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 09:15
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.713 J	pCi/L			1	0.856	10/22/21 16:19		904.0 903.0

ANALYTICAL RESULTS

Sample: EJ00598-09
Name: N-C-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 08:50
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.722 J	pCi/L			1	1.09	10/22/21 16:19		904.0 903.0

Sample: EJ00598-10
Name: N-F-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 16:30
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	1.63	pCi/L			1	0.859	10/22/21 16:19		904.0 903.0

Sample: EJ00598-11
Name: N-F-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 16:10
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.531 J	pCi/L			1	0.844	10/22/21 16:19		904.0 903.0

Sample: EJ00598-12
Name: N-UA-1D
Matrix: Surface Water - Grab

Sampled: 10/04/21 15:50
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.370 U	pCi/L			1	0.918	10/22/21 16:19		904.0 903.0

ANALYTICAL RESULTS

Sample: EJ00598-13
Name: N-UA-1M
Matrix: Surface Water - Grab

Sampled: 10/04/21 15:20
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.464 J	pCi/L			1	0.719	10/22/21 16:19		904.0 903.0

Sample: EJ00598-14
Name: N-E-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 14:55
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	1.75	pCi/L			1	0.756	10/22/21 16:19		904.0 903.0

Sample: EJ00598-15
Name: N-E-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 14:35
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.0381 U	pCi/L			1	0.834	10/22/21 16:19		904.0 903.0

Sample: EJ00598-16
Name: N-E-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 14:00
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.252 U	pCi/L			1	0.869	10/22/21 16:19		904.0 903.0

ANALYTICAL RESULTS

Sample: EJ00598-17
Name: N-D-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 13:35
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.0987 U	pCi/L			1	0.914	10/22/21 16:19		904.0 903.0

Sample: EJ00598-18
Name: N-D-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 13:18
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.826	pCi/L			1	0.817	10/22/21 16:19		904.0 903.0

Sample: EJ00598-19
Name: N-C-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 08:15
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.231 U	pCi/L			1	0.871	10/22/21 16:19		904.0 903.0

Sample: EJ00598-20
Name: N-DUP-1
Matrix: Surface Water - Field Duplicate

Sampled: 10/04/21 10:00
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	1.49	pCi/L			1	1.26	10/22/21 13:00		904.0 903.0

ANALYTICAL RESULTS

Sample: EJ00598-21
Name: N-FB-1
Matrix: Surface Water - Field Blank

Sampled: 10/04/21 14:10
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.378 U	pCi/L			1	1.17	10/22/21 13:00		904.0 903.0

Sample: EJ00598-22
Name: N-I-2D
Matrix: Surface Water - Grab

Sampled: 10/05/21 10:45
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.926 J	pCi/L			1	0.935	10/22/21 13:00		904.0 903.0

Sample: EJ00598-23
Name: N-I-2M
Matrix: Surface Water - Grab

Sampled: 10/05/21 10:30
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	1.52	pCi/L			1	0.815	10/22/21 13:00		904.0 903.0

Sample: EJ00598-24
Name: N-I-1
Matrix: Surface Water - Grab

Sampled: 10/05/21 10:00
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.109 U	pCi/L			1	0.875	10/22/21 13:00		904.0 903.0

ANALYTICAL RESULTS

Sample: EJ00598-25
Name: N-UA-2D
Matrix: Surface Water - Grab

Sampled: 10/05/21 09:40
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.502 J	pCi/L			1	0.83	10/22/21 13:00		904.0 903.0

Sample: EJ00598-26
Name: N-UA-2M
Matrix: Surface Water - Grab

Sampled: 10/05/21 09:25
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	1.17	pCi/L			1	0.768	10/22/21 13:00		904.0 903.0

Sample: EJ00598-27
Name: N-G-2D
Matrix: Surface Water - Grab

Sampled: 10/05/21 09:00
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	2.05	pCi/L			1	0.887	10/22/21 13:00		904.0 903.0

Sample: EJ00598-28
Name: N-G-2M
Matrix: Surface Water - Grab

Sampled: 10/05/21 08:45
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.404 J	pCi/L			1	0.873	10/22/21 13:00		904.0 903.0

ANALYTICAL RESULTS

Sample: EJ00598-29
Name: N-G-1
Matrix: Surface Water - Grab

Sampled: 10/05/21 08:05
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.382 U	pCi/L			1	0.884	10/22/21 16:19		904.0 903.0

Sample: EJ00598-30
Name: N-F-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 16:55
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.534 J	pCi/L			1	0.866	10/22/21 13:00		904.0 903.0

ANALYTICAL RESULTS

ANALYTICAL RESULTS

Sample: EJ00598-01
Name: N-D-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 13:05
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	8.8	mg/L		10/05/21 21:26	1	1.0	10/05/21 21:26	CRD	EPA 300.0 REV 2.1
Fluoride	0.398	mg/L		10/05/21 21:26	1	0.250	10/05/21 21:26	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/05/21 21:26	1	0.03	10/05/21 21:26	CRD	EPA 300.0 REV 2.1
Sulfate	37	mg/L		10/05/21 21:44	25	25	10/05/21 21:44	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L	M	10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.5	mg/L		10/06/21 17:32	1	0.50	10/06/21 17:32	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 14:39	1	0.20	10/12/21 14:39	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 14:39	5	0.21	10/13/21 08:58	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 08:58	JMW	EPA 6020A
Arsenic, Dissolved	1.9	ug/L		10/12/21 06:52	5	1.0	10/13/21 08:58	JMW	EPA 6020A
Barium, Dissolved	66	ug/L		10/12/21 06:52	5	1.0	10/13/21 08:58	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 08:58	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 13:32	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 08:58	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 08:58	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 08:58	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 08:58	JMW	EPA 6020A
Iron, Dissolved	27	ug/L		10/12/21 06:52	5	10	10/13/21 08:58	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 08:58	JMW	EPA 6020A
Magnesium, Dissolved	5800	ug/L		10/12/21 06:52	5	100	10/13/21 08:58	JMW	EPA 6020A
Manganese, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 08:58	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 08:58	JMW	EPA 6020A
Molybdenum, Dissolved	5.5	ug/L		10/12/21 06:52	5	1.0	10/13/21 08:58	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 08:58	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 08:58	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 08:58	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-01
Name: N-D-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 13:05
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 08:58	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 13:27	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 13:45	JMW	EPA 6020A
Arsenic	2.2	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:45	JMW	EPA 6020A
Barium	68	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:45	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:45	JMW	EPA 6020A
Boron	120	ug/L		10/07/21 13:28	5	10	10/12/21 13:45	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:45	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 13:28	5	0.20	10/12/21 13:45	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 13:45	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 13:45	JMW	EPA 6020A
Iron	100	ug/L		10/07/21 13:28	5	10	10/12/21 13:45	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:45	JMW	EPA 6020A
Magnesium	5.5	mg/L		10/07/21 13:28	5	0.10	10/12/21 13:45	JMW	EPA 6020A
Manganese	68	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:45	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 15:12	JMW	EPA 6020A
Molybdenum	5.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:45	JMW	EPA 6020A
Phosphorus	54	ug/L		10/07/21 13:28	5	50	10/12/21 13:45	JMW	EPA 6020A*
Potassium	6.0	mg/L		10/07/21 13:28	5	0.10	10/12/21 13:45	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:45	JMW	EPA 6020A
Sodium	21	mg/L		10/07/21 13:28	5	0.10	10/12/21 13:45	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:45	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 11:13	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-02
Name: N-A-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 11:50
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.1	mg/L		10/05/21 22:02	1	1.0	10/05/21 22:02	CRD	EPA 300.0 REV 2.1
Fluoride	0.400	mg/L		10/05/21 22:02	1	0.250	10/05/21 22:02	CRD	EPA 300.0 REV 2.1
Nitrate-N	0.03	mg/L		10/05/21 22:02	1	0.03	10/05/21 22:02	CRD	EPA 300.0 REV 2.1
Sulfate	39	mg/L		10/05/21 22:20	25	25	10/05/21 22:20	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	62	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	240	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.4	mg/L		10/06/21 18:59	1	0.50	10/06/21 18:59	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 14:43	1	0.20	10/12/21 14:43	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 14:43	5	0.21	10/13/21 09:01	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 09:01	JMW	EPA 6020A
Arsenic, Dissolved	1.5	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:01	JMW	EPA 6020A
Barium, Dissolved	67	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:01	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:01	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 13:35	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:01	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:01	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 09:01	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 09:01	JMW	EPA 6020A
Iron, Dissolved	10	ug/L		10/12/21 06:52	5	10	10/13/21 09:01	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:01	JMW	EPA 6020A
Magnesium, Dissolved	5700	ug/L		10/12/21 06:52	5	100	10/13/21 09:01	JMW	EPA 6020A
Manganese, Dissolved	29	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:01	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 09:01	JMW	EPA 6020A
Molybdenum, Dissolved	5.4	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:01	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:01	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:01	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:01	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-02
Name: N-A-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 11:50
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:01	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 13:48	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 13:49	JMW	EPA 6020A
Arsenic	2.3	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:49	JMW	EPA 6020A
Barium	82	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:49	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:49	JMW	EPA 6020A
Boron	120	ug/L		10/07/21 13:28	5	10	10/12/21 13:49	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:49	JMW	EPA 6020A
Calcium	22	mg/L		10/07/21 13:28	5	0.20	10/12/21 13:49	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 13:49	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 13:49	JMW	EPA 6020A
Iron	1200	ug/L		10/07/21 13:28	5	10	10/12/21 13:49	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:49	JMW	EPA 6020A
Magnesium	5.8	mg/L		10/07/21 13:28	5	0.10	10/12/21 13:49	JMW	EPA 6020A
Manganese	160	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:49	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 13:49	JMW	EPA 6020A
Molybdenum	5.1	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:49	JMW	EPA 6020A
Phosphorus	100	ug/L		10/07/21 13:28	5	50	10/12/21 13:49	JMW	EPA 6020A*
Potassium	6.3	mg/L		10/07/21 13:28	5	0.10	10/12/21 13:49	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:49	JMW	EPA 6020A
Sodium	22	mg/L		10/07/21 13:28	5	0.10	10/12/21 13:49	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:49	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 11:16	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-03
Name: N-A-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 11:30
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.0	mg/L		10/05/21 22:38	1	1.0	10/05/21 22:38	CRD	EPA 300.0 REV 2.1
Fluoride	0.389	mg/L		10/05/21 22:38	1	0.250	10/05/21 22:38	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/05/21 22:38	1	0.03	10/05/21 22:38	CRD	EPA 300.0 REV 2.1
Sulfate	37	mg/L		10/05/21 22:57	25	25	10/05/21 22:57	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	50	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	25	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	190	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.9	mg/L		10/06/21 19:17	1	0.50	10/06/21 19:17	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 14:43	1	0.20	10/12/21 14:43	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 14:43	5	0.21	10/13/21 09:05	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 09:05	JMW	EPA 6020A
Arsenic, Dissolved	2.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:05	JMW	EPA 6020A
Barium, Dissolved	66	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:05	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:05	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 13:39	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:05	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:05	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 09:05	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 09:05	JMW	EPA 6020A
Iron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 09:05	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:05	JMW	EPA 6020A
Magnesium, Dissolved	5700	ug/L		10/12/21 06:52	5	100	10/13/21 09:05	JMW	EPA 6020A
Manganese, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:05	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 09:05	JMW	EPA 6020A
Molybdenum, Dissolved	5.4	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:05	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:05	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:05	JMW	EPA 6020A
Sodium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:05	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-03
Name: N-A-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 11:30
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:05	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 13:51	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 13:53	JMW	EPA 6020A
Arsenic	2.3	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:53	JMW	EPA 6020A
Barium	69	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:53	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:53	JMW	EPA 6020A
Boron	120	ug/L		10/07/21 13:28	5	10	10/12/21 13:53	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:53	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 13:28	5	0.20	10/12/21 13:53	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 13:53	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 13:53	JMW	EPA 6020A
Iron	270	ug/L		10/07/21 13:28	5	10	10/12/21 13:53	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:53	JMW	EPA 6020A
Magnesium	5.7	mg/L		10/07/21 13:28	5	0.10	10/12/21 13:53	JMW	EPA 6020A
Manganese	71	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:53	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 13:53	JMW	EPA 6020A
Molybdenum	5.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:53	JMW	EPA 6020A
Phosphorus	68	ug/L		10/07/21 13:28	5	50	10/12/21 13:53	JMW	EPA 6020A*
Potassium	6.0	mg/L		10/07/21 13:28	5	0.10	10/12/21 13:53	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:53	JMW	EPA 6020A
Sodium	22	mg/L		10/07/21 13:28	5	0.10	10/12/21 13:53	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 13:53	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 11:28	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-04
Name: N-A-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 11:15
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.0	mg/L		10/05/21 23:15	1	1.0	10/05/21 23:15	CRD	EPA 300.0 REV 2.1
Fluoride	0.394	mg/L		10/05/21 23:15	1	0.250	10/05/21 23:15	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/05/21 23:15	1	0.03	10/05/21 23:15	CRD	EPA 300.0 REV 2.1
Sulfate	39	mg/L		10/06/21 00:09	25	25	10/06/21 00:09	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	50	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	25	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.8	mg/L		10/06/21 19:35	1	0.50	10/06/21 19:35	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 14:44	1	0.20	10/12/21 14:44	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 14:44	5	0.21	10/13/21 09:08	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 09:08	JMW	EPA 6020A
Arsenic, Dissolved	1.9	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:08	JMW	EPA 6020A
Barium, Dissolved	66	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:08	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:08	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 13:43	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:08	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:08	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 09:08	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 09:08	JMW	EPA 6020A
Iron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 09:08	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:08	JMW	EPA 6020A
Magnesium, Dissolved	5600	ug/L		10/12/21 06:52	5	100	10/13/21 09:08	JMW	EPA 6020A
Manganese, Dissolved	2.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:08	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 09:08	JMW	EPA 6020A
Molybdenum, Dissolved	5.4	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:08	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:08	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:08	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:08	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-04
Name: N-A-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 11:15
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:08	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 13:53	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 14:08	JMW	EPA 6020A
Arsenic	2.2	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:08	JMW	EPA 6020A
Barium	70	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:08	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:08	JMW	EPA 6020A
Boron	120	ug/L		10/07/21 13:28	5	10	10/12/21 14:08	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:08	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 13:28	5	0.15	10/12/21 14:08	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 14:08	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 14:08	JMW	EPA 6020A
Iron	390	ug/L		10/07/21 13:28	5	10	10/12/21 14:08	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:08	JMW	EPA 6020A
Magnesium	5.6	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:08	JMW	EPA 6020A
Manganese	80	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:08	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 14:08	JMW	EPA 6020A
Molybdenum	5.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:08	JMW	EPA 6020A
Phosphorus	75	ug/L		10/07/21 13:28	5	50	10/12/21 14:08	JMW	EPA 6020A*
Potassium	6.1	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:08	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:08	JMW	EPA 6020A
Sodium	22	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:08	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:08	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 11:30	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-05
Name: N-B-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 10:45
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	8.7	mg/L		10/06/21 00:28	1	1.0	10/06/21 00:28	CRD	EPA 300.0 REV 2.1
Fluoride	0.414	mg/L		10/06/21 00:28	1	0.250	10/06/21 00:28	CRD	EPA 300.0 REV 2.1
Nitrate-N	0.09	mg/L		10/06/21 00:28	1	0.03	10/06/21 00:28	CRD	EPA 300.0 REV 2.1
Sulfate	36	mg/L		10/06/21 00:46	25	25	10/06/21 00:46	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	200	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.4	mg/L		10/06/21 19:52	1	0.50	10/06/21 19:52	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 14:45	1	0.20	10/12/21 14:45	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 14:45	5	0.21	10/13/21 09:12	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 09:12	JMW	EPA 6020A
Arsenic, Dissolved	3.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:12	JMW	EPA 6020A
Barium, Dissolved	81	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:12	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:12	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 13:46	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:12	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:12	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 09:12	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 09:12	JMW	EPA 6020A
Iron, Dissolved	170	ug/L		10/12/21 06:52	5	10	10/13/21 09:12	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:12	JMW	EPA 6020A
Magnesium, Dissolved	5700	ug/L		10/12/21 06:52	5	100	10/13/21 09:12	JMW	EPA 6020A
Manganese, Dissolved	520	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:12	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 09:12	JMW	EPA 6020A
Molybdenum, Dissolved	5.2	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:12	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:12	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:12	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:12	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-05
Name: N-B-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 10:45
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:12	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 13:55	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 14:12	JMW	EPA 6020A
Arsenic	3.2	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:12	JMW	EPA 6020A
Barium	94	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:12	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:12	JMW	EPA 6020A
Boron	120	ug/L		10/07/21 13:28	5	10	10/12/21 14:12	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:12	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 13:28	5	0.15	10/12/21 14:12	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 14:12	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 14:12	JMW	EPA 6020A
Iron	550	ug/L		10/07/21 13:28	5	10	10/12/21 14:12	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:12	JMW	EPA 6020A
Magnesium	5.6	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:12	JMW	EPA 6020A
Manganese	550	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:12	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 14:12	JMW	EPA 6020A
Molybdenum	4.8	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:12	JMW	EPA 6020A
Phosphorus	95	ug/L		10/07/21 13:28	5	50	10/12/21 14:12	JMW	EPA 6020A*
Potassium	6.1	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:12	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:12	JMW	EPA 6020A
Sodium	21	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:12	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:12	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 11:33	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-06
Name: N-B-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 10:35
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	8.8	mg/L		10/06/21 01:05	1	1.0	10/06/21 01:05	CRD	EPA 300.0 REV 2.1
Fluoride	0.425	mg/L		10/06/21 01:05	1	0.250	10/06/21 01:05	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 01:05	1	0.03	10/06/21 01:05	CRD	EPA 300.0 REV 2.1
Sulfate	38	mg/L		10/06/21 01:24	25	25	10/06/21 01:24	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.4	mg/L		10/06/21 20:09	1	0.50	10/06/21 20:09	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 14:45	1	0.20	10/12/21 14:45	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 14:45	5	0.21	10/13/21 09:16	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 09:16	JMW	EPA 6020A
Arsenic, Dissolved	3.7	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:16	JMW	EPA 6020A
Barium, Dissolved	82	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:16	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:16	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 13:50	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:16	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:16	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 09:16	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 09:16	JMW	EPA 6020A
Iron, Dissolved	130	ug/L		10/12/21 06:52	5	10	10/13/21 09:16	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:16	JMW	EPA 6020A
Magnesium, Dissolved	5700	ug/L		10/12/21 06:52	5	100	10/13/21 09:16	JMW	EPA 6020A
Manganese, Dissolved	760	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:16	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 09:16	JMW	EPA 6020A
Molybdenum, Dissolved	5.2	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:16	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:16	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:16	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:16	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-06
Name: N-B-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 10:35
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:16	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 13:58	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 14:15	JMW	EPA 6020A
Arsenic	3.5	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:15	JMW	EPA 6020A
Barium	150	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:15	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:15	JMW	EPA 6020A
Boron	120	ug/L		10/07/21 13:28	5	10	10/12/21 14:15	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:15	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 13:28	5	0.15	10/12/21 14:15	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 14:15	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 14:15	JMW	EPA 6020A
Iron	450	ug/L		10/07/21 13:28	5	10	10/12/21 14:15	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:15	JMW	EPA 6020A
Magnesium	5.6	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:15	JMW	EPA 6020A
Manganese	690	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:15	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 14:15	JMW	EPA 6020A
Molybdenum	5.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:15	JMW	EPA 6020A
Phosphorus	89	ug/L		10/07/21 13:28	5	50	10/12/21 14:15	JMW	EPA 6020A*
Potassium	6.1	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:15	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:15	JMW	EPA 6020A
Sodium	22	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:15	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:15	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 11:35	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-07
Name: N-B-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 09:35
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.0	mg/L		10/06/21 01:43	1	1.0	10/06/21 01:43	CRD	EPA 300.0 REV 2.1
Fluoride	0.425	mg/L		10/06/21 01:43	1	0.250	10/06/21 01:43	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 01:43	1	0.03	10/06/21 01:43	CRD	EPA 300.0 REV 2.1
Sulfate	38	mg/L		10/06/21 02:02	25	25	10/06/21 02:02	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.6	mg/L		10/06/21 21:01	1	0.50	10/06/21 21:01	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 14:46	1	0.20	10/12/21 14:46	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 14:46	5	0.21	10/13/21 09:19	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 09:19	JMW	EPA 6020A
Arsenic, Dissolved	2.1	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:19	JMW	EPA 6020A
Barium, Dissolved	67	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:19	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:19	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 13:54	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:19	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:19	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 09:19	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 09:19	JMW	EPA 6020A
Iron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 09:19	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:19	JMW	EPA 6020A
Magnesium, Dissolved	5600	ug/L		10/12/21 06:52	5	100	10/13/21 09:19	JMW	EPA 6020A
Manganese, Dissolved	1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:19	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 09:19	JMW	EPA 6020A
Molybdenum, Dissolved	5.5	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:19	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:19	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:19	JMW	EPA 6020A
Sodium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:19	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-07
Name: N-B-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 09:35
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:19	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:00	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 14:19	JMW	EPA 6020A
Arsenic	2.3	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:19	JMW	EPA 6020A
Barium	70	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:19	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:19	JMW	EPA 6020A
Boron	120	ug/L		10/07/21 13:28	5	10	10/12/21 14:19	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:19	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 13:28	5	0.15	10/12/21 14:19	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 14:19	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 14:19	JMW	EPA 6020A
Iron	210	ug/L		10/07/21 13:28	5	10	10/12/21 14:19	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:19	JMW	EPA 6020A
Magnesium	5.5	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:19	JMW	EPA 6020A
Manganese	75	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:19	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 14:19	JMW	EPA 6020A
Molybdenum	5.1	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:19	JMW	EPA 6020A
Phosphorus	65	ug/L		10/07/21 13:28	5	50	10/12/21 14:19	JMW	EPA 6020A*
Potassium	6.1	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:19	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:19	JMW	EPA 6020A
Sodium	22	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:19	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:19	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 11:38	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-08
Name: N-C-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 09:15
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	8.8	mg/L		10/06/21 02:21	1	1.0	10/06/21 02:21	CRD	EPA 300.0 REV 2.1
Fluoride	0.417	mg/L		10/06/21 02:21	1	0.250	10/06/21 02:21	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 02:21	1	0.03	10/06/21 02:21	CRD	EPA 300.0 REV 2.1
Sulfate	37	mg/L		10/06/21 02:40	25	25	10/06/21 02:40	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.4	mg/L		10/06/21 21:18	1	0.50	10/06/21 21:18	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 14:47	1	0.20	10/12/21 14:47	CRD	SM 3500-Fe D MOD*
Ferric iron	0.22	mg/L		10/12/21 14:47	5	0.21	10/13/21 09:23	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 09:23	JMW	EPA 6020A
Arsenic, Dissolved	3.2	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:23	JMW	EPA 6020A
Barium, Dissolved	82	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:23	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:23	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 13:57	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:23	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:23	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 09:23	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 09:23	JMW	EPA 6020A
Iron, Dissolved	220	ug/L		10/12/21 06:52	5	10	10/13/21 09:23	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:23	JMW	EPA 6020A
Magnesium, Dissolved	5800	ug/L		10/12/21 06:52	5	100	10/13/21 09:23	JMW	EPA 6020A
Manganese, Dissolved	600	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:23	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 09:23	JMW	EPA 6020A
Molybdenum, Dissolved	5.2	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:23	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:23	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:23	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:23	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-08
Name: N-C-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 09:15
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:23	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:03	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 14:23	JMW	EPA 6020A
Arsenic	3.4	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:23	JMW	EPA 6020A
Barium	100	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:23	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:23	JMW	EPA 6020A
Boron	120	ug/L		10/07/21 13:28	5	10	10/12/21 14:23	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:23	JMW	EPA 6020A
Calcium	22	mg/L		10/07/21 13:28	5	0.15	10/12/21 14:23	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 14:23	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 14:23	JMW	EPA 6020A
Iron	560	ug/L		10/07/21 13:28	5	10	10/12/21 14:23	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:23	JMW	EPA 6020A
Magnesium	5.6	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:23	JMW	EPA 6020A
Manganese	610	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:23	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 14:23	JMW	EPA 6020A
Molybdenum	4.7	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:23	JMW	EPA 6020A
Phosphorus	110	ug/L		10/07/21 13:28	5	50	10/12/21 14:23	JMW	EPA 6020A*
Potassium	6.1	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:23	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:23	JMW	EPA 6020A
Sodium	21	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:23	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:23	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 11:40	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-09
Name: N-C-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 08:50
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	8.8	mg/L		10/06/21 02:58	1	1.0	10/06/21 02:58	CRD	EPA 300.0 REV 2.1
Fluoride	0.415	mg/L		10/06/21 02:58	1	0.250	10/06/21 02:58	CRD	EPA 300.0 REV 2.1
Nitrate-N	0.08	mg/L		10/06/21 02:58	1	0.03	10/06/21 02:58	CRD	EPA 300.0 REV 2.1
Sulfate	36	mg/L		10/06/21 03:55	25	25	10/06/21 03:55	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.5	mg/L		10/06/21 21:36	1	0.50	10/06/21 21:36	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 14:48	1	0.20	10/12/21 14:48	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 14:48	5	0.21	10/13/21 09:27	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 09:27	JMW	EPA 6020A
Arsenic, Dissolved	1.8	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:27	JMW	EPA 6020A
Barium, Dissolved	71	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:27	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:27	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	11	10/13/21 14:25	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:27	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:27	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 09:27	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 09:27	JMW	EPA 6020A
Iron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 09:27	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:27	JMW	EPA 6020A
Magnesium, Dissolved	5700	ug/L		10/12/21 06:52	5	100	10/13/21 09:27	JMW	EPA 6020A
Manganese, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:27	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 09:27	JMW	EPA 6020A
Molybdenum, Dissolved	5.4	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:27	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:27	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:27	JMW	EPA 6020A
Sodium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:27	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-09
Name: N-C-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 08:50
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:27	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:05	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 14:26	JMW	EPA 6020A
Arsenic	2.2	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:26	JMW	EPA 6020A
Barium	90	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:26	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:26	JMW	EPA 6020A
Boron	120	ug/L		10/07/21 13:28	5	10	10/12/21 14:26	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:26	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 13:28	5	0.15	10/12/21 14:26	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 14:26	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 14:26	JMW	EPA 6020A
Iron	100	ug/L		10/07/21 13:28	5	10	10/12/21 14:26	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:26	JMW	EPA 6020A
Magnesium	5.4	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:26	JMW	EPA 6020A
Manganese	110	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:26	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 14:26	JMW	EPA 6020A
Molybdenum	5.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:26	JMW	EPA 6020A
Phosphorus	550	ug/L		10/07/21 13:28	5	50	10/12/21 14:26	JMW	EPA 6020A*
Potassium	10	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:26	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:26	JMW	EPA 6020A
Sodium	22	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:26	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:26	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 11:42	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-10
Name: N-F-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 16:30
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.1	mg/L		10/06/21 09:53	1	1.0	10/06/21 09:53	CRD	EPA 300.0 REV 2.1
Fluoride	0.350	mg/L		10/07/21 16:17	1	0.250	10/07/21 16:17	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 09:53	1	0.03	10/06/21 09:53	CRD	EPA 300.0 REV 2.1
Sulfate	38	mg/L		10/06/21 10:11	25	25	10/06/21 10:11	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	50	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	25	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	190	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.7	mg/L		10/06/21 21:54	1	0.50	10/06/21 21:54	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 14:50	1	0.20	10/12/21 14:50	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 14:50	5	0.21	10/13/21 09:30	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 09:30	JMW	EPA 6020A
Arsenic, Dissolved	1.9	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:30	JMW	EPA 6020A
Barium, Dissolved	64	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:30	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:30	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	11	10/13/21 14:28	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:30	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:30	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 09:30	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 09:30	JMW	EPA 6020A
Iron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 09:30	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:30	JMW	EPA 6020A
Magnesium, Dissolved	5700	ug/L		10/12/21 06:52	5	100	10/13/21 09:30	JMW	EPA 6020A
Manganese, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:30	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 09:30	JMW	EPA 6020A
Molybdenum, Dissolved	5.3	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:30	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:30	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:30	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 09:30	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-10
Name: N-F-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 16:30
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 09:30	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:08	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 14:30	JMW	EPA 6020A
Arsenic	2.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:30	JMW	EPA 6020A
Barium	69	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:30	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:30	JMW	EPA 6020A
Boron	120	ug/L		10/07/21 13:28	5	10	10/12/21 14:30	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:30	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 13:28	5	0.15	10/12/21 14:30	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 14:30	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 14:30	JMW	EPA 6020A
Iron	140	ug/L		10/07/21 13:28	5	10	10/12/21 14:30	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:30	JMW	EPA 6020A
Magnesium	5.6	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:30	JMW	EPA 6020A
Manganese	48	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:30	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 14:30	JMW	EPA 6020A
Molybdenum	5.1	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:30	JMW	EPA 6020A
Phosphorus	58	ug/L		10/07/21 13:28	5	50	10/12/21 14:30	JMW	EPA 6020A*
Potassium	6.1	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:30	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:30	JMW	EPA 6020A
Sodium	21	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:30	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:30	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 11:45	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-11
Name: N-F-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 16:10
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.6	mg/L		10/06/21 10:15	1	1.0	10/06/21 10:15	CRD	EPA 300.0 REV 2.1
Fluoride	0.512	mg/L		10/06/21 10:15	1	0.250	10/06/21 10:15	CRD	EPA 300.0 REV 2.1
Nitrate-N	0.28	mg/L		10/06/21 10:15	1	0.03	10/06/21 10:15	CRD	EPA 300.0 REV 2.1
Sulfate	95	mg/L		10/06/21 10:33	25	25	10/06/21 10:33	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	50	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	25	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.8	mg/L		10/06/21 22:12	1	0.50	10/06/21 22:12	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L	Q3	10/12/21 15:10	1	0.20	10/12/21 15:10	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:10	5	0.21	10/13/21 10:09	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 10:09	JMW	EPA 6020A
Arsenic, Dissolved	1.9	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:09	JMW	EPA 6020A
Barium, Dissolved	65	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:09	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:09	JMW	EPA 6020A
Boron, Dissolved	130	ug/L		10/12/21 06:52	5	10	10/13/21 10:09	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:09	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:09	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 10:09	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 10:09	JMW	EPA 6020A
Iron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 10:09	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:09	JMW	EPA 6020A
Magnesium, Dissolved	5500	ug/L		10/12/21 06:52	5	100	10/13/21 10:09	JMW	EPA 6020A
Manganese, Dissolved	3.2	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:09	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 10:09	JMW	EPA 6020A
Molybdenum, Dissolved	5.4	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:09	JMW	EPA 6020A
Potassium, Dissolved	5.9	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:09	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:09	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:09	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-11
Name: N-F-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 16:10
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:09	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:10	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 14:34	JMW	EPA 6020A
Arsenic	2.1	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:34	JMW	EPA 6020A
Barium	73	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:34	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:34	JMW	EPA 6020A
Boron	120	ug/L		10/07/21 13:28	5	10	10/12/21 14:34	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:34	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 13:28	5	0.15	10/12/21 14:34	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 14:34	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 14:34	JMW	EPA 6020A
Iron	250	ug/L		10/07/21 13:28	5	10	10/12/21 14:34	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:34	JMW	EPA 6020A
Magnesium	5.6	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:34	JMW	EPA 6020A
Manganese	57	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:34	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 14:34	JMW	EPA 6020A
Molybdenum	5.1	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:34	JMW	EPA 6020A
Phosphorus	62	ug/L		10/07/21 13:28	5	50	10/12/21 14:34	JMW	EPA 6020A*
Potassium	6.0	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:34	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:34	JMW	EPA 6020A
Sodium	21	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:34	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:34	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 11:47	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-12
Name: N-UA-1D
Matrix: Surface Water - Grab

Sampled: 10/04/21 15:50
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	8.8	mg/L		10/06/21 04:14	1	1.0	10/06/21 04:14	CRD	EPA 300.0 REV 2.1
Fluoride	0.406	mg/L		10/06/21 04:14	1	0.250	10/06/21 04:14	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 04:14	1	0.03	10/06/21 04:14	CRD	EPA 300.0 REV 2.1
Sulfate	35	mg/L		10/06/21 04:33	25	25	10/06/21 04:33	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.6	mg/L		10/06/21 22:30	1	0.50	10/06/21 22:30	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:12	1	0.20	10/12/21 15:12	CRD	SM 3500-Fe D MOD*
Ferric iron	0.45	mg/L		10/12/21 15:12	5	0.21	10/13/21 10:13	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 10:13	JMW	EPA 6020A
Arsenic, Dissolved	3.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:13	JMW	EPA 6020A
Barium, Dissolved	150	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:13	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:13	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 10:13	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:13	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:13	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 10:13	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 10:13	JMW	EPA 6020A
Iron, Dissolved	450	ug/L		10/12/21 06:52	5	10	10/13/21 10:13	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:13	JMW	EPA 6020A
Magnesium, Dissolved	5700	ug/L		10/12/21 06:52	5	100	10/13/21 10:13	JMW	EPA 6020A
Manganese, Dissolved	390	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:13	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 10:13	JMW	EPA 6020A
Molybdenum, Dissolved	5.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:13	JMW	EPA 6020A
Potassium, Dissolved	5.9	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:13	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:13	JMW	EPA 6020A
Sodium, Dissolved	20	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:13	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-12
Name: N-UA-1D
Matrix: Surface Water - Grab

Sampled: 10/04/21 15:50
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:13	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:16	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 14:37	JMW	EPA 6020A
Arsenic	2.3	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:37	JMW	EPA 6020A
Barium	52	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:37	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:37	JMW	EPA 6020A
Boron	120	ug/L		10/07/21 13:28	5	10	10/12/21 14:37	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:37	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 13:28	5	0.15	10/12/21 14:37	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 14:37	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 14:37	JMW	EPA 6020A
Iron	27	ug/L		10/07/21 13:28	5	10	10/12/21 14:37	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:37	JMW	EPA 6020A
Magnesium	5.6	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:37	JMW	EPA 6020A
Manganese	280	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:37	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 14:37	JMW	EPA 6020A
Molybdenum	5.1	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:37	JMW	EPA 6020A
Phosphorus	< 50	ug/L		10/07/21 13:28	5	50	10/12/21 14:37	JMW	EPA 6020A*
Potassium	6.1	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:37	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:37	JMW	EPA 6020A
Sodium	21	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:37	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:37	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 11:50	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-13
Name: N-UA-1M
Matrix: Surface Water - Grab

Sampled: 10/04/21 15:20
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	8.8	mg/L		10/06/21 04:52	1	1.0	10/06/21 04:52	CRD	EPA 300.0 REV 2.1
Fluoride	0.421	mg/L		10/06/21 04:52	1	0.250	10/06/21 04:52	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 04:52	1	0.03	10/06/21 04:52	CRD	EPA 300.0 REV 2.1
Sulfate	36	mg/L		10/06/21 05:10	25	25	10/06/21 05:10	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.9	mg/L		10/06/21 22:48	1	0.50	10/06/21 22:48	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:13	1	0.20	10/12/21 15:13	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:13	5	0.21	10/13/21 10:17	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 10:17	JMW	EPA 6020A
Arsenic, Dissolved	1.7	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:17	JMW	EPA 6020A
Barium, Dissolved	65	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:17	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:17	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 10:17	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:17	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:17	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 10:17	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 10:17	JMW	EPA 6020A
Iron, Dissolved	14	ug/L		10/12/21 06:52	5	10	10/13/21 10:17	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:17	JMW	EPA 6020A
Magnesium, Dissolved	5600	ug/L		10/12/21 06:52	5	100	10/13/21 10:17	JMW	EPA 6020A
Manganese, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:17	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 10:17	JMW	EPA 6020A
Molybdenum, Dissolved	5.7	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:17	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:17	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:17	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:17	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-13
Name: N-UA-1M
Matrix: Surface Water - Grab

Sampled: 10/04/21 15:20
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:17	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:18	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 14:41	JMW	EPA 6020A
Arsenic	1.8	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:41	JMW	EPA 6020A
Barium	64	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:41	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:41	JMW	EPA 6020A
Boron	110	ug/L		10/07/21 13:28	5	10	10/12/21 14:41	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:41	JMW	EPA 6020A
Calcium	19	mg/L		10/07/21 13:28	5	0.15	10/12/21 14:41	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 14:41	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 14:41	JMW	EPA 6020A
Iron	130	ug/L		10/07/21 13:28	5	10	10/12/21 14:41	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:41	JMW	EPA 6020A
Magnesium	5.0	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:41	JMW	EPA 6020A
Manganese	58	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:41	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 14:41	JMW	EPA 6020A
Molybdenum	4.6	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:41	JMW	EPA 6020A
Phosphorus	< 50	ug/L		10/07/21 13:28	5	50	10/12/21 14:41	JMW	EPA 6020A*
Potassium	5.6	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:41	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:41	JMW	EPA 6020A
Sodium	20	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:41	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:41	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 11:56	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-14
Name: N-E-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 14:55
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	8.7	mg/L		10/06/21 05:29	1	1.0	10/06/21 05:29	CRD	EPA 300.0 REV 2.1
Fluoride	0.414	mg/L		10/06/21 05:29	1	0.250	10/06/21 05:29	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 05:29	1	0.03	10/06/21 05:29	CRD	EPA 300.0 REV 2.1
Sulfate	35	mg/L		10/06/21 05:48	25	25	10/06/21 05:48	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/08/21 09:09	1	2.0	10/08/21 09:09	nwt	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.8	mg/L		10/06/21 23:05	1	0.50	10/06/21 23:05	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:13	1	0.20	10/12/21 15:13	CRD	SM 3500-Fe D MOD*
Ferric iron	0.38	mg/L		10/12/21 15:13	5	0.21	10/13/21 10:20	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 10:20	JMW	EPA 6020A
Arsenic, Dissolved	3.6	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:20	JMW	EPA 6020A
Barium, Dissolved	320	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:20	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:20	JMW	EPA 6020A
Boron, Dissolved	130	ug/L		10/12/21 06:52	5	10	10/13/21 10:20	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:20	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:20	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 10:20	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 10:20	JMW	EPA 6020A
Iron, Dissolved	380	ug/L		10/12/21 06:52	5	10	10/13/21 10:20	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:20	JMW	EPA 6020A
Magnesium, Dissolved	5700	ug/L		10/12/21 06:52	5	100	10/13/21 10:20	JMW	EPA 6020A
Manganese, Dissolved	550	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:20	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 10:20	JMW	EPA 6020A
Molybdenum, Dissolved	13	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:20	JMW	EPA 6020A
Potassium, Dissolved	5.9	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:20	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:20	JMW	EPA 6020A
Sodium, Dissolved	20	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:20	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-14
Name: N-E-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 14:55
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:20	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:21	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 14:57	JMW	EPA 6020A
Arsenic	3.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:57	JMW	EPA 6020A
Barium	60	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:57	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:57	JMW	EPA 6020A
Boron	110	ug/L		10/07/21 13:28	5	10	10/12/21 14:57	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:57	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 13:28	5	0.15	10/12/21 14:57	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 14:57	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 14:57	JMW	EPA 6020A
Iron	97	ug/L		10/07/21 13:28	5	10	10/12/21 14:57	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:57	JMW	EPA 6020A
Magnesium	5.5	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:57	JMW	EPA 6020A
Manganese	490	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:57	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 14:57	JMW	EPA 6020A
Molybdenum	5.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:57	JMW	EPA 6020A
Phosphorus	52	ug/L		10/07/21 13:28	5	50	10/12/21 14:57	JMW	EPA 6020A*
Potassium	6.0	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:57	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:57	JMW	EPA 6020A
Sodium	20	mg/L		10/07/21 13:28	5	0.10	10/12/21 14:57	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 14:57	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 11:58	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-15
Name: N-E-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 14:35
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	8.8	mg/L		10/06/21 06:07	1	1.0	10/06/21 06:07	CRD	EPA 300.0 REV 2.1
Fluoride	0.404	mg/L		10/06/21 06:07	1	0.250	10/06/21 06:07	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 06:07	1	0.03	10/06/21 06:07	CRD	EPA 300.0 REV 2.1
Sulfate	39	mg/L		10/06/21 06:26	25	25	10/06/21 06:26	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	190	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.6	mg/L		10/06/21 23:23	1	0.50	10/06/21 23:23	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:14	1	0.20	10/12/21 15:14	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:14	5	0.21	10/13/21 10:24	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 10:24	JMW	EPA 6020A
Arsenic, Dissolved	1.7	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:24	JMW	EPA 6020A
Barium, Dissolved	66	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:24	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:24	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 10:24	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:24	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:24	JMW	EPA 6020A
Chromium, Dissolved	4.3	ug/L		10/12/21 06:52	5	4.0	10/13/21 10:24	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 10:24	JMW	EPA 6020A
Iron, Dissolved	20	ug/L		10/12/21 06:52	5	10	10/13/21 10:24	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:24	JMW	EPA 6020A
Magnesium, Dissolved	5700	ug/L		10/12/21 06:52	5	100	10/13/21 10:24	JMW	EPA 6020A
Manganese, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:24	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 10:24	JMW	EPA 6020A
Molybdenum, Dissolved	5.4	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:24	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:24	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:24	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:24	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-15
Name: N-E-2M
Matrix: Surface Water - Grab

Sampled: 10/04/21 14:35
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:24	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:23	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 15:01	JMW	EPA 6020A
Arsenic	2.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:01	JMW	EPA 6020A
Barium	69	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:01	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:01	JMW	EPA 6020A
Boron	120	ug/L		10/07/21 13:28	5	10	10/12/21 15:01	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:01	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 13:28	5	0.15	10/12/21 15:01	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 15:01	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 15:01	JMW	EPA 6020A
Iron	160	ug/L		10/07/21 13:28	5	10	10/12/21 15:01	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:01	JMW	EPA 6020A
Magnesium	5.5	mg/L		10/07/21 13:28	5	0.10	10/12/21 15:01	JMW	EPA 6020A
Manganese	60	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:01	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 15:01	JMW	EPA 6020A
Molybdenum	4.9	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:01	JMW	EPA 6020A
Phosphorus	73	ug/L		10/07/21 13:28	5	50	10/12/21 15:01	JMW	EPA 6020A*
Potassium	6.0	mg/L		10/07/21 13:28	5	0.10	10/12/21 15:01	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:01	JMW	EPA 6020A
Sodium	21	mg/L		10/07/21 13:28	5	0.10	10/12/21 15:01	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:01	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 12:01	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-16
Name: N-E-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 14:00
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.0	mg/L		10/05/21 21:26	1	1.0	10/05/21 21:26	CRD	EPA 300.0 REV 2.1
Fluoride	0.413	mg/L		10/07/21 16:35	1	0.250	10/07/21 16:35	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/05/21 21:26	1	0.03	10/05/21 21:26	CRD	EPA 300.0 REV 2.1
Sulfate	38	mg/L		10/05/21 21:44	25	25	10/05/21 21:44	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	50	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	25	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.9	mg/L		10/06/21 23:41	1	0.50	10/06/21 23:41	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:14	1	0.20	10/12/21 15:14	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:14	5	0.21	10/13/21 10:28	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 10:28	JMW	EPA 6020A
Arsenic, Dissolved	1.9	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:28	JMW	EPA 6020A
Barium, Dissolved	65	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:28	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:28	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 10:28	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:28	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:28	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 10:28	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 10:28	JMW	EPA 6020A
Iron, Dissolved	13	ug/L		10/12/21 06:52	5	10	10/13/21 10:28	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:28	JMW	EPA 6020A
Magnesium, Dissolved	5600	ug/L		10/12/21 06:52	5	100	10/13/21 10:28	JMW	EPA 6020A
Manganese, Dissolved	1.5	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:28	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 10:28	JMW	EPA 6020A
Molybdenum, Dissolved	5.4	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:28	JMW	EPA 6020A
Potassium, Dissolved	5.9	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:28	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:28	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:28	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-16
Name: N-E-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 14:00
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:28	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:26	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 15:04	JMW	EPA 6020A
Arsenic	2.2	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:04	JMW	EPA 6020A
Barium	71	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:04	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:04	JMW	EPA 6020A
Boron	120	ug/L		10/07/21 13:28	5	10	10/12/21 15:04	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:04	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 13:28	5	0.15	10/12/21 15:04	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 15:04	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 15:04	JMW	EPA 6020A
Iron	350	ug/L		10/07/21 13:28	5	10	10/12/21 15:04	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:04	JMW	EPA 6020A
Magnesium	5.4	mg/L		10/07/21 13:28	5	0.10	10/12/21 15:04	JMW	EPA 6020A
Manganese	79	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:04	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 15:04	JMW	EPA 6020A
Molybdenum	4.9	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:04	JMW	EPA 6020A
Phosphorus	71	ug/L		10/07/21 13:28	5	50	10/12/21 15:04	JMW	EPA 6020A*
Potassium	6.0	mg/L		10/07/21 13:28	5	0.10	10/12/21 15:04	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:04	JMW	EPA 6020A
Sodium	21	mg/L		10/07/21 13:28	5	0.10	10/12/21 15:04	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:04	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 12:03	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-17
Name: N-D-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 13:35
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.0	mg/L		10/05/21 22:02	1	1.0	10/05/21 22:02	CRD	EPA 300.0 REV 2.1
Fluoride	0.393	mg/L		10/07/21 16:53	1	0.250	10/07/21 16:53	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/05/21 22:02	1	0.03	10/05/21 22:02	CRD	EPA 300.0 REV 2.1
Sulfate	37	mg/L		10/05/21 22:56	25	25	10/05/21 22:56	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.5	mg/L		10/08/21 17:10	1	0.50	10/08/21 17:10	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:15	1	0.20	10/12/21 15:15	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:15	5	0.21	10/13/21 10:31	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 10:31	JMW	EPA 6020A
Arsenic, Dissolved	1.7	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:31	JMW	EPA 6020A
Barium, Dissolved	65	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:31	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:31	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 10:31	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:31	JMW	EPA 6020A
Calcium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:31	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 10:31	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 10:31	JMW	EPA 6020A
Iron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 10:31	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:31	JMW	EPA 6020A
Magnesium, Dissolved	5600	ug/L		10/12/21 06:52	5	100	10/13/21 10:31	JMW	EPA 6020A
Manganese, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:31	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 10:31	JMW	EPA 6020A
Molybdenum, Dissolved	5.2	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:31	JMW	EPA 6020A
Potassium, Dissolved	5.9	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:31	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:31	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:31	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-17
Name: N-D-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 13:35
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:31	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:28	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 13:28	5	3.0	10/12/21 15:08	JMW	EPA 6020A
Arsenic	2.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:08	JMW	EPA 6020A
Barium	70	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:08	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:08	JMW	EPA 6020A
Boron	120	ug/L		10/07/21 13:28	5	10	10/12/21 15:08	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:08	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 13:28	5	0.15	10/12/21 15:08	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 13:28	5	4.0	10/12/21 15:08	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 13:28	5	2.0	10/12/21 15:08	JMW	EPA 6020A
Iron	240	ug/L		10/07/21 13:28	5	10	10/12/21 15:08	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:08	JMW	EPA 6020A
Magnesium	5.5	mg/L		10/07/21 13:28	5	0.10	10/12/21 15:08	JMW	EPA 6020A
Manganese	70	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:08	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 13:28	5	0.20	10/12/21 15:08	JMW	EPA 6020A
Molybdenum	5.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:08	JMW	EPA 6020A
Phosphorus	60	ug/L		10/07/21 13:28	5	50	10/12/21 15:08	JMW	EPA 6020A*
Potassium	6.0	mg/L		10/07/21 13:28	5	0.10	10/12/21 15:08	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:08	JMW	EPA 6020A
Sodium	21	mg/L		10/07/21 13:28	5	0.10	10/12/21 15:08	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 13:28	5	1.0	10/12/21 15:08	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 13:28	1	20	10/12/21 12:05	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-18
Name: N-D-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 13:18
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	8.5	mg/L		10/05/21 23:14	1	1.0	10/05/21 23:14	CRD	EPA 300.0 REV 2.1
Fluoride	0.378	mg/L		10/07/21 17:11	1	0.250	10/07/21 17:11	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/05/21 23:14	1	0.03	10/05/21 23:14	CRD	EPA 300.0 REV 2.1
Sulfate	36	mg/L		10/05/21 23:32	25	25	10/05/21 23:32	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	190	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.3	mg/L		10/08/21 18:03	1	0.50	10/08/21 18:03	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:16	1	0.20	10/12/21 15:16	CRD	SM 3500-Fe D MOD*
Ferric iron	0.21	mg/L		10/12/21 15:16	5	0.21	10/13/21 10:35	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 10:35	JMW	EPA 6020A
Arsenic, Dissolved	3.5	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:35	JMW	EPA 6020A
Barium, Dissolved	67	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:35	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:35	JMW	EPA 6020A
Boron, Dissolved	130	ug/L		10/12/21 06:52	5	10	10/13/21 10:35	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:35	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:35	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 10:35	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 10:35	JMW	EPA 6020A
Iron, Dissolved	210	ug/L		10/12/21 06:52	5	10	10/13/21 10:35	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:35	JMW	EPA 6020A
Magnesium, Dissolved	5600	ug/L		10/12/21 06:52	5	100	10/13/21 10:35	JMW	EPA 6020A
Manganese, Dissolved	610	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:35	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 10:35	JMW	EPA 6020A
Molybdenum, Dissolved	5.3	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:35	JMW	EPA 6020A
Potassium, Dissolved	5.9	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:35	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:35	JMW	EPA 6020A
Sodium, Dissolved	20	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:35	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-18
Name: N-D-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 13:18
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:35	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:31	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 16:15	5	3.0	10/13/21 12:43	JMW	EPA 6020A
Arsenic	4.2	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:43	JMW	EPA 6020A
Barium	110	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:43	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:43	JMW	EPA 6020A
Boron	130	ug/L		10/07/21 16:15	5	10	10/13/21 12:43	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:43	JMW	EPA 6020A
Calcium	22	mg/L		10/07/21 16:15	5	0.15	10/13/21 12:43	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 16:15	5	4.0	10/13/21 12:43	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 16:15	5	2.0	10/13/21 12:43	JMW	EPA 6020A
Iron	570	ug/L		10/07/21 16:15	5	10	10/13/21 12:43	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:43	JMW	EPA 6020A
Magnesium	5.6	mg/L		10/07/21 16:15	5	0.10	10/13/21 12:43	JMW	EPA 6020A
Manganese	650	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:43	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 16:15	5	0.20	10/13/21 12:43	JMW	EPA 6020A
Molybdenum	5.3	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:43	JMW	EPA 6020A
Phosphorus	150	ug/L		10/07/21 16:15	5	50	10/13/21 12:43	JMW	EPA 6020A*
Potassium	5.8	mg/L		10/07/21 16:15	5	0.10	10/13/21 12:43	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:43	JMW	EPA 6020A
Sodium	19	mg/L		10/07/21 16:15	5	0.10	10/13/21 12:43	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:43	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 16:15	1	20	10/12/21 12:13	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-19
Name: N-C-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 08:15
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.1	mg/L		10/05/21 23:51	1	1.0	10/05/21 23:51	CRD	EPA 300.0 REV 2.1
Fluoride	0.368	mg/L		10/07/21 18:06	1	0.250	10/07/21 18:06	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/05/21 23:51	1	0.03	10/05/21 23:51	CRD	EPA 300.0 REV 2.1
Sulfate	40	mg/L		10/06/21 00:09	25	25	10/06/21 00:09	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	50	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	25	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.7	mg/L		10/08/21 18:20	1	0.50	10/08/21 18:20	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:17	1	0.20	10/12/21 15:17	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:17	5	0.21	10/13/21 10:39	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 10:39	JMW	EPA 6020A
Arsenic, Dissolved	2.1	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:39	JMW	EPA 6020A
Barium, Dissolved	70	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:39	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:39	JMW	EPA 6020A
Boron, Dissolved	150	ug/L		10/12/21 06:52	5	10	10/13/21 10:39	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:39	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:39	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 10:39	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 10:39	JMW	EPA 6020A
Iron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 10:39	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:39	JMW	EPA 6020A
Magnesium, Dissolved	5700	ug/L		10/12/21 06:52	5	100	10/13/21 10:39	JMW	EPA 6020A
Manganese, Dissolved	5.6	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:39	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 10:39	JMW	EPA 6020A
Molybdenum, Dissolved	5.6	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:39	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:39	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:39	JMW	EPA 6020A
Sodium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:39	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-19
Name: N-C-1
Matrix: Surface Water - Grab

Sampled: 10/04/21 08:15
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:39	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:33	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 16:15	5	3.0	10/13/21 12:47	JMW	EPA 6020A
Arsenic	2.4	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:47	JMW	EPA 6020A
Barium	72	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:47	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:47	JMW	EPA 6020A
Boron	140	ug/L		10/07/21 16:15	5	10	10/13/21 12:47	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:47	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 16:15	5	0.15	10/13/21 12:47	JMW	EPA 6020A
Chromium	6.7	ug/L		10/07/21 16:15	5	4.0	10/13/21 12:47	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 16:15	5	2.0	10/13/21 12:47	JMW	EPA 6020A
Iron	210	ug/L		10/07/21 16:15	5	10	10/13/21 12:47	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:47	JMW	EPA 6020A
Magnesium	5.5	mg/L		10/07/21 16:15	5	0.10	10/13/21 12:47	JMW	EPA 6020A
Manganese	61	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:47	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 16:15	5	0.20	10/13/21 12:47	JMW	EPA 6020A
Molybdenum	6.2	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:47	JMW	EPA 6020A
Phosphorus	65	ug/L		10/07/21 16:15	5	50	10/13/21 12:47	JMW	EPA 6020A*
Potassium	5.9	mg/L		10/07/21 16:15	5	0.10	10/13/21 12:47	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:47	JMW	EPA 6020A
Sodium	22	mg/L		10/07/21 16:15	5	0.10	10/13/21 12:47	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:47	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 16:15	1	20	10/12/21 12:15	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-20
Name: N-DUP-1
Matrix: Surface Water - Field Duplicate

Sampled: 10/04/21 10:00
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.2	mg/L		10/06/21 00:27	1	1.0	10/06/21 00:27	CRD	EPA 300.0 REV 2.1
Fluoride	0.371	mg/L		10/07/21 18:24	1	0.250	10/07/21 18:24	CRD	EPA 300.0 REV 2.1
Nitrate-N	0.04	mg/L		10/06/21 00:27	1	0.03	10/06/21 00:27	CRD	EPA 300.0 REV 2.1
Sulfate	39	mg/L		10/06/21 00:45	25	25	10/06/21 00:45	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:04	1	34	10/06/21 14:13	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.4	mg/L		10/08/21 18:38	1	0.50	10/08/21 18:38	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:17	1	0.20	10/12/21 15:17	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:17	5	0.21	10/13/21 10:42	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 10:42	JMW	EPA 6020A
Arsenic, Dissolved	2.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:42	JMW	EPA 6020A
Barium, Dissolved	66	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:42	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:42	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 10:42	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:42	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:42	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 10:42	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 10:42	JMW	EPA 6020A
Iron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 10:42	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:42	JMW	EPA 6020A
Magnesium, Dissolved	5700	ug/L		10/12/21 06:52	5	100	10/13/21 10:42	JMW	EPA 6020A
Manganese, Dissolved	1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:42	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 10:42	JMW	EPA 6020A
Molybdenum, Dissolved	5.4	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:42	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:42	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:42	JMW	EPA 6020A
Sodium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:42	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-20
Name: N-DUP-1
Matrix: Surface Water - Field Duplicate

Sampled: 10/04/21 10:00
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:42	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:35	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 16:15	5	3.0	10/13/21 12:51	JMW	EPA 6020A
Arsenic	2.5	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:51	JMW	EPA 6020A
Barium	71	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:51	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:51	JMW	EPA 6020A
Boron	140	ug/L		10/07/21 16:15	5	10	10/13/21 12:51	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:51	JMW	EPA 6020A
Calcium	22	mg/L		10/07/21 16:15	5	0.15	10/13/21 12:51	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 16:15	5	4.0	10/13/21 12:51	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 16:15	5	2.0	10/13/21 12:51	JMW	EPA 6020A
Iron	160	ug/L		10/07/21 16:15	5	10	10/13/21 12:51	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:51	JMW	EPA 6020A
Magnesium	5.5	mg/L		10/07/21 16:15	5	0.10	10/13/21 12:51	JMW	EPA 6020A
Manganese	71	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:51	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 16:15	5	0.20	10/13/21 12:51	JMW	EPA 6020A
Molybdenum	5.3	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:51	JMW	EPA 6020A
Phosphorus	66	ug/L		10/07/21 16:15	5	50	10/13/21 12:51	JMW	EPA 6020A*
Potassium	6.0	mg/L		10/07/21 16:15	5	0.10	10/13/21 12:51	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:51	JMW	EPA 6020A
Sodium	21	mg/L		10/07/21 16:15	5	0.10	10/13/21 12:51	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:51	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 16:15	1	20	10/12/21 12:17	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-21
Name: N-FB-1
Matrix: Surface Water - Field Blank

Sampled: 10/04/21 14:10
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 1.0	mg/L		10/06/21 01:03	1	1.0	10/06/21 01:03	CRD	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		10/07/21 18:42	1	0.250	10/07/21 18:42	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 01:03	1	0.03	10/06/21 01:03	CRD	EPA 300.0 REV 2.1
Sulfate	< 1.0	mg/L		10/06/21 01:03	1	1.0	10/06/21 01:03	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	< 2.0	mg/L		10/12/21 11:35	1	2.0	10/12/21 11:35	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/12/21 11:35	1	2.0	10/12/21 11:35	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	< 17	mg/L		10/11/21 11:18	1	17	10/11/21 12:24	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	< 0.50	mg/L		10/08/21 18:55	1	0.50	10/08/21 18:55	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:33	1	0.20	10/12/21 15:33	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:33	5	0.21	10/13/21 10:59	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 10:59	JMW	EPA 6020A
Arsenic, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:59	JMW	EPA 6020A
Barium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:59	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:59	JMW	EPA 6020A
Boron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 10:59	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:59	JMW	EPA 6020A
Calcium, Dissolved	< 0.10	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:59	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 10:59	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 10:59	JMW	EPA 6020A
Iron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 10:59	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:59	JMW	EPA 6020A
Magnesium, Dissolved	< 100	ug/L		10/12/21 06:52	5	100	10/13/21 10:59	JMW	EPA 6020A
Manganese, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:59	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 10:59	JMW	EPA 6020A
Molybdenum, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:59	JMW	EPA 6020A
Potassium, Dissolved	< 0.10	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:59	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:59	JMW	EPA 6020A
Sodium, Dissolved	0.12	mg/L		10/12/21 06:52	5	0.10	10/13/21 10:59	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-21
Name: N-FB-1
Matrix: Surface Water - Field Blank

Sampled: 10/04/21 14:10
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 10:59	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:38	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 16:15	5	3.0	10/13/21 12:54	JMW	EPA 6020A
Arsenic	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:54	JMW	EPA 6020A
Barium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:54	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:54	JMW	EPA 6020A
Boron	< 10	ug/L		10/07/21 16:15	5	10	10/13/21 12:54	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:54	JMW	EPA 6020A
Calcium	< 0.15	mg/L		10/07/21 16:15	5	0.15	10/13/21 12:54	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 16:15	5	4.0	10/13/21 12:54	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 16:15	5	2.0	10/13/21 12:54	JMW	EPA 6020A
Iron	< 10	ug/L		10/07/21 16:15	5	10	10/13/21 12:54	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:54	JMW	EPA 6020A
Magnesium	< 0.10	mg/L		10/07/21 16:15	5	0.10	10/13/21 12:54	JMW	EPA 6020A
Manganese	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:54	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 16:15	5	0.20	10/13/21 12:54	JMW	EPA 6020A
Molybdenum	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:54	JMW	EPA 6020A
Phosphorus	< 50	ug/L		10/07/21 16:15	5	50	10/13/21 12:54	JMW	EPA 6020A*
Potassium	< 0.10	mg/L		10/07/21 16:15	5	0.10	10/13/21 12:54	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:54	JMW	EPA 6020A
Sodium	< 0.10	mg/L		10/07/21 16:15	5	0.10	10/13/21 12:54	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:54	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 16:15	1	20	10/12/21 12:23	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-22
Name: N-I-2D
Matrix: Surface Water - Grab

Sampled: 10/05/21 10:45
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.1	mg/L		10/06/21 01:39	1	1.0	10/06/21 01:39	CRD	EPA 300.0 REV 2.1
Fluoride	0.397	mg/L		10/07/21 19:00	1	0.250	10/07/21 19:00	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 01:39	1	0.03	10/06/21 01:39	CRD	EPA 300.0 REV 2.1
Sulfate	35	mg/L		10/06/21 02:33	25	25	10/06/21 02:33	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	50	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	25	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	200	mg/L	M	10/06/21 11:06	1	34	10/07/21 08:59	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.6	mg/L		10/08/21 19:12	1	0.50	10/08/21 19:12	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:33	1	0.20	10/12/21 15:33	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:33	5	0.21	10/13/21 11:03	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 11:03	JMW	EPA 6020A
Arsenic, Dissolved	1.5	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:03	JMW	EPA 6020A
Barium, Dissolved	65	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:03	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:03	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 11:03	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:03	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:03	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 11:03	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 11:03	JMW	EPA 6020A
Iron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 11:03	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:03	JMW	EPA 6020A
Magnesium, Dissolved	5800	ug/L		10/12/21 06:52	5	100	10/13/21 11:03	JMW	EPA 6020A
Manganese, Dissolved	2.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:03	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 11:03	JMW	EPA 6020A
Molybdenum, Dissolved	5.3	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:03	JMW	EPA 6020A
Potassium, Dissolved	6.1	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:03	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:03	JMW	EPA 6020A
Sodium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:03	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-22
Name: N-I-2D
Matrix: Surface Water - Grab

Sampled: 10/05/21 10:45
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:03	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:44	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 16:15	5	3.0	10/13/21 12:58	JMW	EPA 6020A
Arsenic	2.2	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:58	JMW	EPA 6020A
Barium	74	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:58	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:58	JMW	EPA 6020A
Boron	130	ug/L		10/07/21 16:15	5	10	10/13/21 12:58	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:58	JMW	EPA 6020A
Calcium	22	mg/L		10/07/21 16:15	5	0.15	10/13/21 12:58	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 16:15	5	4.0	10/13/21 12:58	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 16:15	5	2.0	10/13/21 12:58	JMW	EPA 6020A
Iron	260	ug/L		10/07/21 16:15	5	10	10/13/21 12:58	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:58	JMW	EPA 6020A
Magnesium	5.5	mg/L		10/07/21 16:15	5	0.10	10/13/21 12:58	JMW	EPA 6020A
Manganese	67	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:58	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 16:15	5	0.20	10/13/21 12:58	JMW	EPA 6020A
Molybdenum	5.3	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:58	JMW	EPA 6020A
Phosphorus	70	ug/L		10/07/21 16:15	5	50	10/13/21 12:58	JMW	EPA 6020A*
Potassium	6.0	mg/L		10/07/21 16:15	5	0.10	10/13/21 12:58	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:58	JMW	EPA 6020A
Sodium	20	mg/L		10/07/21 16:15	5	0.10	10/13/21 12:58	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 12:58	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 16:15	1	20	10/12/21 12:26	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-23
Name: N-I-2M
Matrix: Surface Water - Grab

Sampled: 10/05/21 10:30
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.0	mg/L		10/06/21 02:51	1	1.0	10/06/21 02:51	CRD	EPA 300.0 REV 2.1
Fluoride	0.404	mg/L		10/07/21 19:18	1	0.250	10/07/21 19:18	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 02:51	1	0.03	10/06/21 02:51	CRD	EPA 300.0 REV 2.1
Sulfate	39	mg/L		10/06/21 03:10	25	25	10/06/21 03:10	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	50	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	25	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L	M	10/06/21 11:06	1	34	10/07/21 08:59	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.7	mg/L		10/08/21 19:30	1	0.50	10/08/21 19:30	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:34	1	0.20	10/12/21 15:34	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:34	5	0.21	10/13/21 11:06	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 11:06	JMW	EPA 6020A
Arsenic, Dissolved	1.8	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:06	JMW	EPA 6020A
Barium, Dissolved	64	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:06	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:06	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 11:06	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:06	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:06	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 11:06	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 11:06	JMW	EPA 6020A
Iron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 11:06	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:06	JMW	EPA 6020A
Magnesium, Dissolved	5700	ug/L		10/12/21 06:52	5	100	10/13/21 11:06	JMW	EPA 6020A
Manganese, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:06	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 11:06	JMW	EPA 6020A
Molybdenum, Dissolved	5.4	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:06	JMW	EPA 6020A
Potassium, Dissolved	5.9	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:06	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:06	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:06	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-23
Name: N-I-2M
Matrix: Surface Water - Grab

Sampled: 10/05/21 10:30
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:06	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:46	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 16:15	5	3.0	10/13/21 13:02	JMW	EPA 6020A
Arsenic	2.2	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:02	JMW	EPA 6020A
Barium	70	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:02	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:02	JMW	EPA 6020A
Boron	130	ug/L		10/07/21 16:15	5	10	10/13/21 13:02	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:02	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 16:15	5	0.15	10/13/21 13:02	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 16:15	5	4.0	10/13/21 13:02	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 16:15	5	2.0	10/13/21 13:02	JMW	EPA 6020A
Iron	140	ug/L		10/07/21 16:15	5	10	10/13/21 13:02	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:02	JMW	EPA 6020A
Magnesium	5.5	mg/L		10/07/21 16:15	5	0.10	10/13/21 13:02	JMW	EPA 6020A
Manganese	50	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:02	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 16:15	5	0.20	10/13/21 13:02	JMW	EPA 6020A
Molybdenum	5.3	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:02	JMW	EPA 6020A
Phosphorus	72	ug/L		10/07/21 16:15	5	50	10/13/21 13:02	JMW	EPA 6020A*
Potassium	5.9	mg/L		10/07/21 16:15	5	0.10	10/13/21 13:02	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:02	JMW	EPA 6020A
Sodium	20	mg/L		10/07/21 16:15	5	0.10	10/13/21 13:02	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:02	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 16:15	1	20	10/12/21 12:28	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-24
Name: N-I-1
Matrix: Surface Water - Grab

Sampled: 10/05/21 10:00
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.0	mg/L		10/06/21 03:28	1	1.0	10/06/21 03:28	CRD	EPA 300.0 REV 2.1
Fluoride	0.405	mg/L		10/07/21 19:36	1	0.250	10/07/21 19:36	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 03:28	1	0.03	10/06/21 03:28	CRD	EPA 300.0 REV 2.1
Sulfate	37	mg/L		10/06/21 03:46	25	25	10/06/21 03:46	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	50	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	25	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	200	mg/L		10/06/21 11:06	1	34	10/07/21 08:59	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.8	mg/L		10/08/21 19:48	1	0.50	10/08/21 19:48	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:34	1	0.20	10/12/21 15:34	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:34	5	0.21	10/13/21 11:10	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 11:10	JMW	EPA 6020A
Arsenic, Dissolved	1.8	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:10	JMW	EPA 6020A
Barium, Dissolved	65	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:10	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:10	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 11:10	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:10	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:10	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 11:10	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 11:10	JMW	EPA 6020A
Iron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 11:10	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:10	JMW	EPA 6020A
Magnesium, Dissolved	5700	ug/L		10/12/21 06:52	5	100	10/13/21 11:10	JMW	EPA 6020A
Manganese, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:10	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 11:10	JMW	EPA 6020A
Molybdenum, Dissolved	5.4	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:10	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:10	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:10	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:10	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-24
Name: N-I-1
Matrix: Surface Water - Grab

Sampled: 10/05/21 10:00
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:10	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:49	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 16:15	5	3.0	10/13/21 13:05	JMW	EPA 6020A
Arsenic	2.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:05	JMW	EPA 6020A
Barium	70	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:05	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:05	JMW	EPA 6020A
Boron	130	ug/L		10/07/21 16:15	5	10	10/13/21 13:05	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:05	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 16:15	5	0.15	10/13/21 13:05	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 16:15	5	4.0	10/13/21 13:05	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 16:15	5	2.0	10/13/21 13:05	JMW	EPA 6020A
Iron	160	ug/L		10/07/21 16:15	5	10	10/13/21 13:05	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:05	JMW	EPA 6020A
Magnesium	5.4	mg/L		10/07/21 16:15	5	0.10	10/13/21 13:05	JMW	EPA 6020A
Manganese	48	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:05	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 16:15	5	0.20	10/13/21 13:05	JMW	EPA 6020A
Molybdenum	5.4	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:05	JMW	EPA 6020A
Phosphorus	68	ug/L		10/07/21 16:15	5	50	10/13/21 13:05	JMW	EPA 6020A*
Potassium	5.9	mg/L		10/07/21 16:15	5	0.10	10/13/21 13:05	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:05	JMW	EPA 6020A
Sodium	20	mg/L		10/07/21 16:15	5	0.10	10/13/21 13:05	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:05	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 16:15	1	20	10/12/21 12:31	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-25
Name: N-UA-2D
Matrix: Surface Water - Grab

Sampled: 10/05/21 09:40
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.0	mg/L		10/06/21 04:04	1	1.0	10/06/21 04:04	CRD	EPA 300.0 REV 2.1
Fluoride	0.347	mg/L		10/07/21 19:54	1	0.250	10/07/21 19:54	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 04:04	1	0.03	10/06/21 04:04	CRD	EPA 300.0 REV 2.1
Sulfate	39	mg/L		10/06/21 04:22	25	25	10/06/21 04:22	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	190	mg/L		10/06/21 11:06	1	34	10/07/21 08:59	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.3	mg/L		10/08/21 20:45	1	0.50	10/08/21 20:45	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:35	1	0.20	10/12/21 15:35	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:35	5	0.21	10/13/21 11:14	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 11:14	JMW	EPA 6020A
Arsenic, Dissolved	2.2	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:14	JMW	EPA 6020A
Barium, Dissolved	62	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:14	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:14	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 11:14	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:14	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:14	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 11:14	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 11:14	JMW	EPA 6020A
Iron, Dissolved	19	ug/L		10/12/21 06:52	5	10	10/13/21 11:14	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:14	JMW	EPA 6020A
Magnesium, Dissolved	5700	ug/L		10/12/21 06:52	5	100	10/13/21 11:14	JMW	EPA 6020A
Manganese, Dissolved	120	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:14	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 11:14	JMW	EPA 6020A
Molybdenum, Dissolved	5.3	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:14	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:14	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:14	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:14	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-25
Name: N-UA-2D
Matrix: Surface Water - Grab

Sampled: 10/05/21 09:40
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:14	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:51	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 16:15	5	3.0	10/13/21 13:09	JMW	EPA 6020A
Arsenic	3.4	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:09	JMW	EPA 6020A
Barium	210	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:09	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:09	JMW	EPA 6020A
Boron	130	ug/L		10/07/21 16:15	5	10	10/13/21 13:09	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:09	JMW	EPA 6020A
Calcium	22	mg/L		10/07/21 16:15	5	0.15	10/13/21 13:09	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 16:15	5	4.0	10/13/21 13:09	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 16:15	5	2.0	10/13/21 13:09	JMW	EPA 6020A
Iron	700	ug/L		10/07/21 16:15	5	10	10/13/21 13:09	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:09	JMW	EPA 6020A
Magnesium	5.6	mg/L		10/07/21 16:15	5	0.10	10/13/21 13:09	JMW	EPA 6020A
Manganese	330	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:09	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 16:15	5	0.20	10/13/21 13:09	JMW	EPA 6020A
Molybdenum	5.4	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:09	JMW	EPA 6020A
Phosphorus	120	ug/L		10/07/21 16:15	5	50	10/13/21 13:09	JMW	EPA 6020A*
Potassium	5.9	mg/L		10/07/21 16:15	5	0.10	10/13/21 13:09	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:09	JMW	EPA 6020A
Sodium	20	mg/L		10/07/21 16:15	5	0.10	10/13/21 13:09	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:09	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 16:15	1	20	10/12/21 12:33	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-26
Name: N-UA-2M
Matrix: Surface Water - Grab

Sampled: 10/05/21 09:25
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.4	mg/L		10/06/21 01:06	1	1.0	10/06/21 01:06	CRD	EPA 300.0 REV 2.1
Fluoride	0.490	mg/L		10/06/21 01:06	1	0.250	10/06/21 01:06	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 01:06	1	0.03	10/06/21 01:06	CRD	EPA 300.0 REV 2.1
Sulfate	39	mg/L		10/06/21 01:25	25	25	10/06/21 01:25	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	50	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	25	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:06	1	34	10/07/21 08:59	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.9	mg/L		10/08/21 21:02	1	0.50	10/08/21 21:02	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:36	1	0.20	10/12/21 15:36	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:36	5	0.21	10/13/21 11:17	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 11:17	JMW	EPA 6020A
Arsenic, Dissolved	1.8	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:17	JMW	EPA 6020A
Barium, Dissolved	63	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:17	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:17	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 11:17	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:17	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:17	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 11:17	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 11:17	JMW	EPA 6020A
Iron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 11:17	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:17	JMW	EPA 6020A
Magnesium, Dissolved	5700	ug/L		10/12/21 06:52	5	100	10/13/21 11:17	JMW	EPA 6020A
Manganese, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:17	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 11:17	JMW	EPA 6020A
Molybdenum, Dissolved	5.4	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:17	JMW	EPA 6020A
Potassium, Dissolved	5.9	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:17	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:17	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:17	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-26
Name: N-UA-2M
Matrix: Surface Water - Grab

Sampled: 10/05/21 09:25
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:17	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:54	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 16:15	5	3.0	10/13/21 13:13	JMW	EPA 6020A
Arsenic	2.2	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:13	JMW	EPA 6020A
Barium	73	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:13	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:13	JMW	EPA 6020A
Boron	130	ug/L		10/07/21 16:15	5	10	10/13/21 13:13	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:13	JMW	EPA 6020A
Calcium	21	mg/L		10/07/21 16:15	5	0.15	10/13/21 13:13	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 16:15	5	4.0	10/13/21 13:13	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 16:15	5	2.0	10/13/21 13:13	JMW	EPA 6020A
Iron	140	ug/L		10/07/21 16:15	5	10	10/13/21 13:13	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:13	JMW	EPA 6020A
Magnesium	5.4	mg/L		10/07/21 16:15	5	0.10	10/13/21 13:13	JMW	EPA 6020A
Manganese	52	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:13	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 16:15	5	0.20	10/13/21 13:13	JMW	EPA 6020A
Molybdenum	5.4	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:13	JMW	EPA 6020A
Phosphorus	68	ug/L		10/07/21 16:15	5	50	10/13/21 13:13	JMW	EPA 6020A*
Potassium	5.9	mg/L		10/07/21 16:15	5	0.10	10/13/21 13:13	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:13	JMW	EPA 6020A
Sodium	20	mg/L		10/07/21 16:15	5	0.10	10/13/21 13:13	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:13	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 16:15	1	20	10/12/21 12:36	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-27
Name: N-G-2D
Matrix: Surface Water - Grab

Sampled: 10/05/21 09:00
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.2	mg/L		10/06/21 01:44	1	1.0	10/06/21 01:44	CRD	EPA 300.0 REV 2.1
Fluoride	0.503	mg/L		10/06/21 01:44	1	0.250	10/06/21 01:44	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 01:44	1	0.03	10/06/21 01:44	CRD	EPA 300.0 REV 2.1
Sulfate	35	mg/L		10/06/21 02:03	25	25	10/06/21 02:03	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	200	mg/L		10/06/21 11:06	1	34	10/07/21 08:59	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	6.1	mg/L		10/08/21 21:20	1	0.50	10/08/21 21:20	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:36	1	0.20	10/12/21 15:36	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:36	5	0.21	10/13/21 11:21	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 11:21	JMW	EPA 6020A
Arsenic, Dissolved	2.5	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:21	JMW	EPA 6020A
Barium, Dissolved	70	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:21	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:21	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 11:21	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:21	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:21	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 11:21	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 11:21	JMW	EPA 6020A
Iron, Dissolved	15	ug/L		10/12/21 06:52	5	10	10/13/21 11:21	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:21	JMW	EPA 6020A
Magnesium, Dissolved	5600	ug/L		10/12/21 06:52	5	100	10/13/21 11:21	JMW	EPA 6020A
Manganese, Dissolved	400	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:21	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 11:21	JMW	EPA 6020A
Molybdenum, Dissolved	5.4	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:21	JMW	EPA 6020A
Potassium, Dissolved	5.9	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:21	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:21	JMW	EPA 6020A
Sodium, Dissolved	20	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:21	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-27
Name: N-G-2D
Matrix: Surface Water - Grab

Sampled: 10/05/21 09:00
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:21	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:56	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 16:15	5	3.0	10/13/21 13:16	JMW	EPA 6020A
Arsenic	3.5	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:16	JMW	EPA 6020A
Barium	640	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:16	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:16	JMW	EPA 6020A
Boron	130	ug/L		10/07/21 16:15	5	10	10/13/21 13:16	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:16	JMW	EPA 6020A
Calcium	22	mg/L		10/07/21 16:15	5	0.15	10/13/21 13:16	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 16:15	5	4.0	10/13/21 13:16	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 16:15	5	2.0	10/13/21 13:16	JMW	EPA 6020A
Iron	560	ug/L		10/07/21 16:15	5	10	10/13/21 13:16	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:16	JMW	EPA 6020A
Magnesium	5.6	mg/L		10/07/21 16:15	5	0.10	10/13/21 13:16	JMW	EPA 6020A
Manganese	570	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:16	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 16:15	5	0.20	10/13/21 13:16	JMW	EPA 6020A
Molybdenum	5.2	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:16	JMW	EPA 6020A
Phosphorus	300	ug/L		10/07/21 16:15	5	50	10/13/21 13:16	JMW	EPA 6020A*
Potassium	5.9	mg/L		10/07/21 16:15	5	0.10	10/13/21 13:16	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:16	JMW	EPA 6020A
Sodium	20	mg/L		10/07/21 16:15	5	0.10	10/13/21 13:16	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 13:16	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 16:15	1	20	10/12/21 12:38	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-28
Name: N-G-2M
Matrix: Surface Water - Grab

Sampled: 10/05/21 08:45
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.4	mg/L		10/06/21 02:22	1	1.0	10/06/21 02:22	CRD	EPA 300.0 REV 2.1
Fluoride	0.483	mg/L		10/06/21 02:22	1	0.250	10/06/21 02:22	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 02:22	1	0.03	10/06/21 02:22	CRD	EPA 300.0 REV 2.1
Sulfate	37	mg/L		10/06/21 03:18	25	25	10/06/21 03:18	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	210	mg/L		10/06/21 11:06	1	34	10/07/21 08:59	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.6	mg/L		10/08/21 21:37	1	0.50	10/08/21 21:37	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:37	1	0.20	10/12/21 15:37	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:37	5	0.21	10/13/21 11:25	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 11:25	JMW	EPA 6020A
Arsenic, Dissolved	1.8	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:25	JMW	EPA 6020A
Barium, Dissolved	64	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:25	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:25	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 11:25	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:25	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:25	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 11:25	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 11:25	JMW	EPA 6020A
Iron, Dissolved	22	ug/L		10/12/21 06:52	5	10	10/13/21 11:25	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:25	JMW	EPA 6020A
Magnesium, Dissolved	5600	ug/L		10/12/21 06:52	5	100	10/13/21 11:25	JMW	EPA 6020A
Manganese, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:25	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 11:25	JMW	EPA 6020A
Molybdenum, Dissolved	5.2	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:25	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:25	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:25	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:25	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-28
Name: N-G-2M
Matrix: Surface Water - Grab

Sampled: 10/05/21 08:45
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:25	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 14:58	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 16:15	5	3.0	10/13/21 14:01	JMW	EPA 6020A
Arsenic	2.2	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:01	JMW	EPA 6020A
Barium	71	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:01	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:01	JMW	EPA 6020A
Boron	140	ug/L		10/07/21 16:15	5	10	10/13/21 14:01	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:01	JMW	EPA 6020A
Calcium	22	mg/L		10/07/21 16:15	5	0.15	10/13/21 14:01	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 16:15	5	4.0	10/13/21 14:01	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 16:15	5	2.0	10/13/21 14:01	JMW	EPA 6020A
Iron	110	ug/L		10/07/21 16:15	5	10	10/13/21 14:01	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:01	JMW	EPA 6020A
Magnesium	5.5	mg/L		10/07/21 16:15	5	0.10	10/13/21 14:01	JMW	EPA 6020A
Manganese	62	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:01	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 16:15	5	0.20	10/13/21 14:01	JMW	EPA 6020A
Molybdenum	5.4	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:01	JMW	EPA 6020A
Phosphorus	73	ug/L		10/07/21 16:15	5	50	10/13/21 14:01	JMW	EPA 6020A*
Potassium	6.0	mg/L		10/07/21 16:15	5	0.10	10/13/21 14:01	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:01	JMW	EPA 6020A
Sodium	21	mg/L		10/07/21 16:15	5	0.10	10/13/21 14:01	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:01	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 16:15	1	20	10/12/21 12:40	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-29
Name: N-G-1
Matrix: Surface Water - Grab

Sampled: 10/05/21 08:05
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.5	mg/L	Q4	10/06/21 13:16	1	1.0	10/06/21 13:16	CRD	EPA 300.0 REV 2.1
Fluoride	0.488	mg/L		10/06/21 13:16	1	0.250	10/06/21 13:16	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 13:16	1	0.03	10/06/21 13:16	CRD	EPA 300.0 REV 2.1
Sulfate	39	mg/L	Q4	10/06/21 14:10	25	25	10/06/21 14:10	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	50	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	25	mg/L		10/12/21 08:33	1	10	10/12/21 08:33	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	170	mg/L		10/06/21 11:06	1	34	10/07/21 08:59	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.6	mg/L	Q3	10/09/21 00:19	1	0.50	10/09/21 00:19	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L	Q3	10/12/21 15:31	1	0.20	10/12/21 15:31	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:31	5	0.21	10/13/21 11:28	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 11:28	JMW	EPA 6020A
Arsenic, Dissolved	1.8	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:28	JMW	EPA 6020A
Barium, Dissolved	65	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:28	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:28	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 11:28	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:28	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:28	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 11:28	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 11:28	JMW	EPA 6020A
Iron, Dissolved	< 10	ug/L		10/12/21 06:52	5	10	10/13/21 11:28	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:28	JMW	EPA 6020A
Magnesium, Dissolved	5600	ug/L		10/12/21 06:52	5	100	10/13/21 11:28	JMW	EPA 6020A
Manganese, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:28	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 11:28	JMW	EPA 6020A
Molybdenum, Dissolved	5.3	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:28	JMW	EPA 6020A
Potassium, Dissolved	5.9	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:28	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:28	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:28	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-29
Name: N-G-1
Matrix: Surface Water - Grab

Sampled: 10/05/21 08:05
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:28	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 15:01	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/08/21 12:59	5	3.0	10/13/21 11:54	JMW	EPA 6020A
Arsenic	2.1	ug/L		10/08/21 12:59	5	1.0	10/13/21 11:54	JMW	EPA 6020A
Barium	69	ug/L		10/08/21 12:59	5	1.0	10/13/21 11:54	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/08/21 12:59	5	1.0	10/13/21 11:54	JMW	EPA 6020A
Boron	130	ug/L		10/08/21 12:59	5	10	10/13/21 11:54	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/08/21 12:59	5	1.0	10/13/21 11:54	JMW	EPA 6020A
Calcium	21	mg/L		10/08/21 12:59	5	0.15	10/13/21 11:54	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/08/21 12:59	5	4.0	10/13/21 11:54	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/08/21 12:59	5	2.0	10/13/21 11:54	JMW	EPA 6020A
Iron	120	ug/L		10/08/21 12:59	5	10	10/13/21 11:54	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/08/21 12:59	5	1.0	10/13/21 11:54	JMW	EPA 6020A
Magnesium	5.4	mg/L		10/08/21 12:59	5	0.10	10/13/21 11:54	JMW	EPA 6020A
Manganese	44	ug/L		10/08/21 12:59	5	1.0	10/13/21 11:54	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/08/21 12:59	5	0.20	10/13/21 11:54	JMW	EPA 6020A
Molybdenum	5.3	ug/L		10/08/21 12:59	5	1.0	10/13/21 11:54	JMW	EPA 6020A
Phosphorus	58	ug/L		10/08/21 12:59	5	50	10/13/21 11:54	JMW	EPA 6020A*
Potassium	5.8	mg/L		10/08/21 12:59	5	0.10	10/13/21 11:54	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/08/21 12:59	5	1.0	10/13/21 11:54	JMW	EPA 6020A
Sodium	20	mg/L		10/08/21 12:59	5	0.10	10/13/21 11:54	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/08/21 12:59	5	1.0	10/13/21 11:54	JMW	EPA 6020A
Lithium	< 20	ug/L		10/08/21 12:59	1	20	10/12/21 13:15	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EJ00598-30
Name: N-F-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 16:55
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.6	mg/L	Q4	10/06/21 14:28	1	1.0	10/06/21 14:28	CRD	EPA 300.0 REV 2.1
Fluoride	0.504	mg/L		10/06/21 14:28	1	0.250	10/06/21 14:28	CRD	EPA 300.0 REV 2.1
Nitrate-N	< 0.03	mg/L		10/06/21 14:28	1	0.03	10/06/21 14:28	CRD	EPA 300.0 REV 2.1
Sulfate	40	mg/L	Q4	10/06/21 15:59	25	25	10/06/21 15:59	CRD	EPA 300.0 REV 2.1
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 10	mg/L		10/11/21 13:10	1	10	10/11/21 13:10	JAA	SM 2320B 1997*
Solids - total dissolved solids (TDS)	200	mg/L		10/06/21 11:06	1	34	10/07/21 08:59	JAA	SM 2540C
Sulfide	< 2.0	mg/L		10/07/21 00:00	1	2.0	10/07/21 00:00	DLE	SM 4500 S2 F 2000*
Total Organic Carbon (TOC)	5.5	mg/L		10/08/21 21:55	1	0.50	10/08/21 21:55	CRD	SM 5310C 2000
Soluble General Chemistry - PIA									
Ferrous iron	< 0.20	mg/L		10/12/21 15:38	1	0.20	10/12/21 15:38	CRD	SM 3500-Fe D MOD*
Ferric iron	< 0.21	mg/L		10/12/21 15:38	5	0.21	10/13/21 11:32	JMW	calculated
Soluble Metals - PIA									
Antimony, Dissolved	< 3.0	ug/L		10/12/21 06:52	5	3.0	10/13/21 11:32	JMW	EPA 6020A
Arsenic, Dissolved	1.7	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:32	JMW	EPA 6020A
Barium, Dissolved	66	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:32	JMW	EPA 6020A
Beryllium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:32	JMW	EPA 6020A
Boron, Dissolved	140	ug/L		10/12/21 06:52	5	10	10/13/21 11:32	JMW	EPA 6020A
Cadmium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:32	JMW	EPA 6020A
Calcium, Dissolved	22	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:32	JMW	EPA 6020A
Chromium, Dissolved	< 4.0	ug/L		10/12/21 06:52	5	4.0	10/13/21 11:32	JMW	EPA 6020A
Cobalt, Dissolved	< 2.0	ug/L		10/12/21 06:52	5	2.0	10/13/21 11:32	JMW	EPA 6020A
Iron, Dissolved	14	ug/L		10/12/21 06:52	5	10	10/13/21 11:32	JMW	EPA 6020A*
Lead, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:32	JMW	EPA 6020A
Magnesium, Dissolved	5600	ug/L		10/12/21 06:52	5	100	10/13/21 11:32	JMW	EPA 6020A
Manganese, Dissolved	16	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:32	JMW	EPA 6020A
Mercury, Dissolved	< 0.20	ug/L		10/12/21 06:52	5	0.20	10/13/21 11:32	JMW	EPA 6020A
Molybdenum, Dissolved	5.5	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:32	JMW	EPA 6020A
Potassium, Dissolved	6.0	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:32	JMW	EPA 6020A
Selenium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:32	JMW	EPA 6020A
Sodium, Dissolved	21	mg/L		10/12/21 06:52	5	0.10	10/13/21 11:32	JMW	EPA 6020A

ANALYTICAL RESULTS

Sample: EJ00598-30
Name: N-F-2D
Matrix: Surface Water - Grab

Sampled: 10/04/21 16:55
Received: 10/05/21 14:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Thallium, Dissolved	< 1.0	ug/L		10/12/21 06:52	5	1.0	10/13/21 11:32	JMW	EPA 6020A
Lithium, Dissolved	< 20	ug/L		10/12/21 12:52	1	20	10/12/21 15:12	TJJ	EPA 6010B*
Total Metals - PIA									
Antimony	< 3.0	ug/L		10/07/21 16:15	5	3.0	10/13/21 14:05	JMW	EPA 6020A
Arsenic	2.3	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:05	JMW	EPA 6020A
Barium	80	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:05	JMW	EPA 6020A
Beryllium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:05	JMW	EPA 6020A
Boron	140	ug/L		10/07/21 16:15	5	10	10/13/21 14:05	JMW	EPA 6020A
Cadmium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:05	JMW	EPA 6020A
Calcium	22	mg/L		10/07/21 16:15	5	0.15	10/13/21 14:05	JMW	EPA 6020A
Chromium	< 4.0	ug/L		10/07/21 16:15	5	4.0	10/13/21 14:05	JMW	EPA 6020A
Cobalt	< 2.0	ug/L		10/07/21 16:15	5	2.0	10/13/21 14:05	JMW	EPA 6020A
Iron	440	ug/L		10/07/21 16:15	5	10	10/13/21 14:05	JMW	EPA 6020A*
Lead	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:05	JMW	EPA 6020A
Magnesium	5.6	mg/L		10/07/21 16:15	5	0.10	10/13/21 14:05	JMW	EPA 6020A
Manganese	110	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:05	JMW	EPA 6020A
Mercury	< 0.20	ug/L		10/07/21 16:15	5	0.20	10/13/21 14:05	JMW	EPA 6020A
Molybdenum	5.2	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:05	JMW	EPA 6020A
Phosphorus	82	ug/L		10/07/21 16:15	5	50	10/13/21 14:05	JMW	EPA 6020A*
Potassium	5.9	mg/L		10/07/21 16:15	5	0.10	10/13/21 14:05	JMW	EPA 6020A
Selenium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:05	JMW	EPA 6020A
Sodium	20	mg/L		10/07/21 16:15	5	0.10	10/13/21 14:05	JMW	EPA 6020A
Thallium	< 1.0	ug/L		10/07/21 16:15	5	1.0	10/13/21 14:05	JMW	EPA 6020A
Lithium	< 20	ug/L		10/07/21 16:15	1	20	10/12/21 12:43	TJJ	EPA 6010B*

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B144544 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B144544-CCB1)				Prepared & Analyzed: 10/05/21					
Sulfate	0.00	mg/L							
Nitrate-N	0.00	mg/L							
Fluoride	0.00	mg/L							
Chloride	0.224	mg/L							
Calibration Check (B144544-CCV1)				Prepared & Analyzed: 10/05/21					
Sulfate	4.98	mg/L		5.000		100	90-110		
Nitrate-N	0.969	mg/L		1.000		97	90-110		
Fluoride	5.26	mg/L		5.000		105	90-110		
Chloride	4.83	mg/L		5.000		97	90-110		
Batch B144547 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B144547-CCB1)				Prepared & Analyzed: 10/05/21					
Sulfate	0.00	mg/L							
Nitrate-N	0.00	mg/L							
Chloride	0.748	mg/L							
Calibration Check (B144547-CCV1)				Prepared & Analyzed: 10/05/21					
Chloride	4.61	mg/L		5.000		92	90-110		
Nitrate-N	0.941	mg/L		1.000		94	90-110		
Sulfate	4.81	mg/L		5.000		96	90-110		
Batch B144549 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B144549-CCB1)				Prepared & Analyzed: 10/05/21					
Sulfate	0.0699	mg/L							
Chloride	0.625	mg/L							
Fluoride	0.00	mg/L							
Nitrate-N	0.00	mg/L							
Calibration Check (B144549-CCV1)				Prepared & Analyzed: 10/05/21					
Sulfate	5.05	mg/L		5.000		101	90-110		
Chloride	4.88	mg/L		5.000		98	90-110		
Fluoride	5.04	mg/L		5.000		101	90-110		
Nitrate-N	1.01	mg/L		1.000		101	90-110		
Batch B144564 - No Prep - SM 2540C									
Blank (B144564-BLK1)				Prepared & Analyzed: 10/06/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B144564-BS1)				Prepared & Analyzed: 10/06/21					
Solids - total dissolved solids (TDS)	967	mg/L		1000		97	84.9-109		
Duplicate (B144564-DUP1)	**Sample: EJ00598-19**			Prepared & Analyzed: 10/06/21					
Solids - total dissolved solids (TDS)	173	mg/L			173			0	5
Duplicate (B144564-DUP2)	**Sample: EJ00598-20**			Prepared & Analyzed: 10/06/21					
Solids - total dissolved solids (TDS)	227	mg/L			173			27	5
Batch B144565 - No Prep - SM 2540C									

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B144565 - No Prep - SM 2540C									
Blank (B144565-BLK1)				Prepared: 10/06/21 Analyzed: 10/07/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B144565-BS1)				Prepared: 10/06/21 Analyzed: 10/07/21					
Solids - total dissolved solids (TDS)	940	mg/L		1000		94	84.9-109		
Duplicate (B144565-DUP1)	**Sample: EJ00598-22**			Prepared: 10/06/21 Analyzed: 10/07/21					
Solids - total dissolved solids (TDS)	173	mg/L	M		200			14	5
Duplicate (B144565-DUP2)	**Sample: EJ00598-23**			Prepared: 10/06/21 Analyzed: 10/07/21					
Solids - total dissolved solids (TDS)	187	mg/L	M		173			7	5
Batch B144695 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B144695-CCB1)				Prepared & Analyzed: 10/06/21					
Chloride	0.498	mg/L							
Sulfate	0.0888	mg/L							
Nitrate-N	0.00	mg/L							
Calibration Check (B144695-CCV1)				Prepared & Analyzed: 10/06/21					
Sulfate	4.87	mg/L		5.000		97	90-110		
Nitrate-N	0.985	mg/L		1.000		98	90-110		
Chloride	4.76	mg/L		5.000		95	90-110		
Batch B144698 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B144698-CCB1)				Prepared & Analyzed: 10/06/21					
Chloride	0.969	mg/L							
Nitrate-N	0.00	mg/L							
Fluoride	0.00	mg/L							
Sulfate	0.00	mg/L							
Calibration Check (B144698-CCV1)				Prepared & Analyzed: 10/06/21					
Nitrate-N	1.04	mg/L		1.000		104	90-110		
Fluoride	5.23	mg/L		5.000		105	90-110		
Sulfate	5.10	mg/L		5.000		102	90-110		
Chloride	4.80	mg/L		5.000		96	90-110		
Matrix Spike (B144698-MS1)	**Sample: EJ00598-29**			Prepared & Analyzed: 10/06/21					
Fluoride	2.02	mg/L		1.500	0.488	102	80-120		
Nitrate-N	0.32	mg/L		0.3000	ND	106	80-120		
Chloride	1.0E9	mg/L	Q4	1.500	9.5	NR	80-120		
Sulfate	1.00E9	mg/L	Q4	1.500	39.1	NR	80-120		
Matrix Spike (B144698-MS2)	**Sample: EJ00598-30**			Prepared & Analyzed: 10/06/21					
Sulfate	1.00E9	mg/L	Q4	1.500	40.1	NR	80-120		
Nitrate-N	0.31	mg/L		0.3000	ND	102	80-120		
Fluoride	1.91	mg/L		1.500	0.504	94	80-120		
Chloride	1.0E9	mg/L	Q4	1.500	9.6	NR	80-120		
Matrix Spike Dup (B144698-MSD1)	**Sample: EJ00598-29**			Prepared & Analyzed: 10/06/21					
Chloride	1.0E9	mg/L	Q4	1.500	9.5	NR	80-120	0	20
Fluoride	2.02	mg/L		1.500	0.488	102	80-120	0.3	20
Sulfate	1.00E9	mg/L	Q4	1.500	39.1	NR	80-120	0	20

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B144698 - IC No Prep - EPA 300.0 REV 2.1									
Matrix Spike Dup (B144698-MSD1)	**Sample: EJ00598-29**			Prepared & Analyzed: 10/06/21					
Nitrate-N	0.33	mg/L		0.3000	ND	111	80-120	4	20
Matrix Spike Dup (B144698-MSD2)	**Sample: EJ00598-30**			Prepared & Analyzed: 10/06/21					
Fluoride	2.01	mg/L		1.500	0.504	101	80-120	5	20
Nitrate-N	0.33	mg/L		0.3000	ND	110	80-120	7	20
Chloride	1.0E9	mg/L	Q4	1.500	9.6	NR	80-120	0	20
Sulfate	1.00E9	mg/L	Q4	1.500	40.1	NR	80-120	0	20
Batch B144735 - No Prep - SM 5310C 2000									
Calibration Blank (B144735-CCB1)				Prepared & Analyzed: 10/06/21					
Total Organic Carbon (TOC)	0.00	mg/L							
Calibration Check (B144735-CCV1)				Prepared & Analyzed: 10/06/21					
Total Organic Carbon (TOC)	5.15	mg/L		5.000		103	90-110		
Matrix Spike (B144735-MS1)	**Sample: EJ00598-01**			Prepared & Analyzed: 10/06/21					
Total Organic Carbon (TOC)	10.9	mg/L		5.000	5.48	108	80-120		
Matrix Spike Dup (B144735-MSD1)	**Sample: EJ00598-01**			Prepared & Analyzed: 10/06/21					
Total Organic Carbon (TOC)	11.3	mg/L		5.000	5.48	117	80-120	4	20
Batch B144743 - SW 3015 - EPA 6020A									
Blank (B144743-BLK1)				Prepared: 10/07/21 Analyzed: 10/12/21					
Antimony	< 3.0	ug/L							
Arsenic	< 1.0	ug/L							
Barium	< 1.0	ug/L							
Beryllium	< 1.0	ug/L							
Boron	< 10	ug/L							
Cadmium	< 1.0	ug/L							
Calcium	< 0.20	mg/L							
Chromium	< 4.0	ug/L							
Cobalt	< 2.0	ug/L							
Iron	< 10	ug/L							
Lead	< 1.0	ug/L							
Magnesium	< 0.10	mg/L							
Manganese	< 1.0	ug/L							
Mercury	< 0.20	ug/L							
Molybdenum	< 1.0	ug/L							
Phosphorus	< 50	ug/L							
Potassium	< 0.10	mg/L							
Selenium	< 1.0	ug/L							
Sodium	< 0.10	mg/L							
Thallium	< 1.0	ug/L							
Lithium	< 20	ug/L							
LCS (B144743-BS1)				Prepared: 10/07/21 Analyzed: 10/12/21					
Antimony	554	ug/L		555.6		100	80-120		
Arsenic	521	ug/L		555.6		94	80-120		

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B144743 - SW 3015 - EPA 6020A									
LCS (B144743-BS1)				Prepared: 10/07/21 Analyzed: 10/12/21					
Barium	563	ug/L		555.6		101	80-120		
Beryllium	494	ug/L		555.6		89	80-120		
Boron	470	ug/L		555.6		85	80-120		
Cadmium	531	ug/L		555.6		96	80-120		
Calcium	5.72	mg/L		5.556		103	80-120		
Chromium	583	ug/L		555.6		105	80-120		
Cobalt	573	ug/L		555.6		103	80-120		
Iron	579	ug/L		555.6		104	80-120		
Lead	546	ug/L		555.6		98	80-120		
Magnesium	5.75	mg/L		5.556		103	80-120		
Manganese	570	ug/L		555.6		103	80-120		
Mercury	50.3	ug/L		55.56		90	80-120		
Molybdenum	504	ug/L		555.6		91	80-120		
Phosphorus	519	ug/L		555.6		93	80-120		
Potassium	5.68	mg/L		5.556		102	80-120		
Selenium	540	ug/L		555.6		97	80-120		
Sodium	5.73	mg/L		5.556		103	80-120		
Thallium	544	ug/L		555.6		98	80-120		
Lithium	640	ug/L		555.6		115	80-120		
Batch B144772 - No Prep - SM 4500 S2 F 2000									
Calibration Check (B144772-CCV1)				Prepared & Analyzed: 10/08/21					
Sulfide	23.6	mg/L		25.00		94	0-200		
Duplicate (B144772-DUP1)	**Sample: EJ00598-29**			Prepared & Analyzed: 10/08/21					
Sulfide	< 2.0	mg/L			0.0899				200
Batch B144793 - SW 3015 - EPA 6020A									
Blank (B144793-BLK1)				Prepared: 10/07/21 Analyzed: 10/13/21					
Antimony	< 3.0	ug/L							
Arsenic	< 1.0	ug/L							
Barium	< 1.0	ug/L							
Beryllium	< 1.0	ug/L							
Boron	< 10	ug/L							
Cadmium	< 1.0	ug/L							
Calcium	< 0.20	mg/L							
Chromium	< 4.0	ug/L							
Cobalt	< 2.0	ug/L							
Iron	< 10	ug/L							
Lead	< 1.0	ug/L							
Magnesium	< 0.10	mg/L							
Manganese	< 1.0	ug/L							
Mercury	< 0.20	ug/L							
Molybdenum	< 1.0	ug/L							

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B144793 - SW 3015 - EPA 6020A									
Blank (B144793-BLK1)				Prepared: 10/07/21 Analyzed: 10/13/21					
Phosphorus	< 50	ug/L							
Potassium	< 0.10	mg/L							
Selenium	< 1.0	ug/L							
Sodium	< 0.10	mg/L							
Thallium	< 1.0	ug/L							
Lithium	< 20	ug/L							
LCS (B144793-BS1)				Prepared: 10/07/21 Analyzed: 10/13/21					
Antimony	573	ug/L		555.6		103	80-120		
Arsenic	544	ug/L		555.6		98	80-120		
Barium	569	ug/L		555.6		102	80-120		
Beryllium	547	ug/L		555.6		99	80-120		
Boron	563	ug/L		555.6		101	80-120		
Cadmium	526	ug/L		555.6		95	80-120		
Calcium	5.88	mg/L		5.556		106	80-120		
Chromium	561	ug/L		555.6		101	80-120		
Cobalt	553	ug/L		555.6		100	80-120		
Iron	501	ug/L		555.6		90	80-120		
Lead	545	ug/L		555.6		98	80-120		
Magnesium	5.89	mg/L		5.556		106	80-120		
Manganese	553	ug/L		555.6		100	80-120		
Mercury	51.0	ug/L		55.56		92	80-120		
Molybdenum	520	ug/L		555.6		94	80-120		
Phosphorus	560	ug/L		555.6		101	80-120		
Potassium	5.56	mg/L		5.556		100	80-120		
Selenium	545	ug/L		555.6		98	80-120		
Sodium	5.54	mg/L		5.556		100	80-120		
Thallium	517	ug/L		555.6		93	80-120		
Lithium	661	ug/L		555.6		119	80-120		
Batch B144887 - SW 3015 - EPA 6020A									
Blank (B144887-BLK1)				Prepared: 10/08/21 Analyzed: 10/13/21					
Antimony	< 3.0	ug/L							
Arsenic	< 1.0	ug/L							
Barium	< 1.0	ug/L							
Beryllium	< 1.0	ug/L							
Boron	< 10	ug/L							
Cadmium	< 1.0	ug/L							
Calcium	< 0.20	mg/L							
Chromium	< 4.0	ug/L							
Cobalt	< 2.0	ug/L							
Iron	< 10	ug/L							
Lead	< 1.0	ug/L							
Magnesium	< 0.10	mg/L							

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B144887 - SW 3015 - EPA 6020A									
Blank (B144887-BLK1)				Prepared: 10/08/21 Analyzed: 10/13/21					
Manganese	< 1.0	ug/L							
Mercury	< 0.20	ug/L							
Molybdenum	< 1.0	ug/L							
Phosphorus	< 50	ug/L							
Potassium	< 0.10	mg/L							
Selenium	< 1.0	ug/L							
Sodium	< 0.10	mg/L							
Thallium	< 1.0	ug/L							
Lithium	< 20	ug/L							
LCS (B144887-BS1)				Prepared: 10/08/21 Analyzed: 10/13/21					
Antimony	572	ug/L		555.6		103	80-120		
Arsenic	549	ug/L		555.6		99	80-120		
Barium	570	ug/L		555.6		103	80-120		
Beryllium	549	ug/L		555.6		99	80-120		
Boron	568	ug/L		555.6		102	80-120		
Cadmium	538	ug/L		555.6		97	80-120		
Calcium	5.88	mg/L		5.556		106	80-120		
Chromium	564	ug/L		555.6		102	80-120		
Cobalt	564	ug/L		555.6		101	80-120		
Iron	511	ug/L		555.6		92	80-120		
Lead	549	ug/L		555.6		99	80-120		
Magnesium	5.95	mg/L		5.556		107	80-120		
Manganese	560	ug/L		555.6		101	80-120		
Mercury	52.4	ug/L		55.56		94	80-120		
Molybdenum	534	ug/L		555.6		96	80-120		
Phosphorus	559	ug/L		555.6		101	80-120		
Potassium	5.53	mg/L		5.556		100	80-120		
Selenium	550	ug/L		555.6		99	80-120		
Sodium	5.59	mg/L		5.556		101	80-120		
Thallium	527	ug/L		555.6		95	80-120		
Lithium	563	ug/L		555.6		101	80-120		
Matrix Spike (B144887-MS1)	**Sample: EJ00598-29**			Prepared: 10/08/21 Analyzed: 10/13/21					
Antimony	578	ug/L		555.6	0.178	104	75-125		
Arsenic	548	ug/L		555.6	2.07	98	75-125		
Barium	645	ug/L		555.6	68.9	104	75-125		
Beryllium	546	ug/L		555.6	ND	98	75-125		
Boron	682	ug/L		555.6	131	99	75-125		
Cadmium	533	ug/L		555.6	ND	96	75-125		
Calcium	27.2	mg/L		5.556	21.3	106	75-125		
Chromium	571	ug/L		555.6	ND	103	75-125		
Cobalt	553	ug/L		555.6	ND	100	75-125		
Iron	669	ug/L		555.6	123	98	75-125		
Lead	549	ug/L		555.6	ND	99	75-125		
Magnesium	11.1	mg/L		5.556	5.42	102	75-125		

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B144887 - SW 3015 - EPA 6020A									
Matrix Spike (B144887-MS1)	**Sample: EJ00598-29**			Prepared: 10/08/21 Analyzed: 10/13/21					
Manganese	606	ug/L		555.6	44.4	101	75-125		
Mercury	51.5	ug/L		55.56	ND	93	75-125		
Molybdenum	536	ug/L		555.6	5.26	95	75-125		
Phosphorus	615	ug/L		555.6	57.5	100	75-125		
Potassium	11.1	mg/L		5.556	5.82	96	75-125		
Selenium	550	ug/L		555.6	0.817	99	75-125		
Sodium	25.6	mg/L		5.556	20.3	96	75-125		
Thallium	523	ug/L		555.6	ND	94	75-125		
Lithium	582	ug/L		555.6	ND	105	75-125		
Matrix Spike Dup (B144887-MSD1)	**Sample: EJ00598-29**			Prepared: 10/08/21 Analyzed: 10/13/21					
Antimony	577	ug/L		555.6	0.178	104	75-125	0.1	20
Arsenic	557	ug/L		555.6	2.07	100	75-125	2	20
Barium	646	ug/L		555.6	68.9	104	75-125	0.2	20
Beryllium	558	ug/L		555.6	ND	100	75-125	2	20
Boron	700	ug/L		555.6	131	103	75-125	3	20
Cadmium	542	ug/L		555.6	ND	98	75-125	2	20
Calcium	27.0	mg/L		5.556	21.3	102	75-125	0.7	20
Chromium	570	ug/L		555.6	ND	103	75-125	0.2	20
Cobalt	555	ug/L		555.6	ND	100	75-125	0.3	20
Iron	642	ug/L		555.6	123	93	75-125	4	20
Lead	549	ug/L		555.6	ND	99	75-125	0.09	20
Magnesium	11.2	mg/L		5.556	5.42	105	75-125	1	20
Manganese	613	ug/L		555.6	44.4	102	75-125	1	20
Mercury	53.1	ug/L		55.56	ND	96	75-125	3	20
Molybdenum	552	ug/L		555.6	5.26	98	75-125	3	20
Phosphorus	638	ug/L		555.6	57.5	105	75-125	4	20
Potassium	11.2	mg/L		5.556	5.82	97	75-125	0.7	20
Selenium	553	ug/L		555.6	0.817	99	75-125	0.6	20
Sodium	25.7	mg/L		5.556	20.3	98	75-125	0.4	20
Thallium	525	ug/L		555.6	ND	94	75-125	0.3	20
Lithium	552	ug/L		555.6	ND	99	75-125	5	200
Batch B144898 - IC No Prep - EPA 300.0 REV 2.1									
Calibration Blank (B144898-CCB1)				Prepared & Analyzed: 10/07/21					
Fluoride	0.00	mg/L							
Calibration Check (B144898-CCV1)				Prepared & Analyzed: 10/07/21					
Fluoride	4.97	mg/L		5.000		99	90-110		
Batch B144948 - No Prep - SM 5310C 2000									
Calibration Blank (B144948-CCB1)				Prepared & Analyzed: 10/08/21					
Total Organic Carbon (TOC)	0.00	mg/L							
Calibration Check (B144948-CCV1)				Prepared & Analyzed: 10/08/21					
Total Organic Carbon (TOC)	5.00	mg/L		5.000		100	90-110		

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B144948 - No Prep - SM 5310C 2000									
Matrix Spike (B144948-MS1)	**Sample: EJ00598-17**			Prepared & Analyzed: 10/08/21					
Total Organic Carbon (TOC)	11.0	mg/L		5.000	5.51	110	80-120		
Matrix Spike (B144948-MS2)	**Sample: EJ00598-29**			Prepared & Analyzed: 10/09/21					
Total Organic Carbon (TOC)	11.1	mg/L	Q1	5.000	5.64	110	80-120		
Matrix Spike Dup (B144948-MSD1)	**Sample: EJ00598-17**			Prepared & Analyzed: 10/08/21					
Total Organic Carbon (TOC)	10.9	mg/L		5.000	5.51	108	80-120	1	20
Matrix Spike Dup (B144948-MSD2)	**Sample: EJ00598-29**			Prepared & Analyzed: 10/09/21					
Total Organic Carbon (TOC)	11.8	mg/L	Q2	5.000	5.64	123	80-120	6	20
Batch B145002 - No Prep - SM 2540C									
Blank (B145002-BLK1)				Prepared & Analyzed: 10/11/21					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B145002-BS1)				Prepared & Analyzed: 10/11/21					
Solids - total dissolved solids (TDS)	867	mg/L		1000		87	84.9-109		
Batch B145055 - No Prep - SM 2320B 1997									
Blank (B145055-BLK1)				Prepared & Analyzed: 10/11/21					
Alkalinity - bicarbonate as CaCO3	2.50	mg/L							
Duplicate (B145055-DUP1)	**Sample: EJ00598-01**			Prepared & Analyzed: 10/11/21					
Alkalinity - bicarbonate as CaCO3	87.5	mg/L	M		75.0			15	10
Batch B145056 - No Prep - SM 2320B 1997									
Blank (B145056-BLK1)				Prepared & Analyzed: 10/11/21					
Alkalinity - carbonate as CaCO3	< 2.0	mg/L							
Blank (B145056-BLK2)				Prepared & Analyzed: 10/11/21					
Alkalinity - carbonate as CaCO3	< 2.0	mg/L							
Duplicate (B145056-DUP1)	**Sample: EJ00598-01**			Prepared & Analyzed: 10/11/21					
Alkalinity - carbonate as CaCO3	< 10	mg/L			ND				10
Batch B145066 - 6020 Sol no prep - EPA 6020A									
Blank (B145066-BLK1)				Prepared: 10/12/21 Analyzed: 10/13/21					
Antimony	< 3.0	ug/L							
Arsenic	< 1.0	ug/L							
Barium	< 1.0	ug/L							
Beryllium	< 1.0	ug/L							
Boron	< 10	ug/L							
Cadmium	< 1.0	ug/L							
Calcium	< 0.10	mg/L							
Chromium	< 4.0	ug/L							
Cobalt	< 2.0	ug/L							
Iron	< 10	ug/L							
Lead	< 1.0	ug/L							
Magnesium	< 100	ug/L							
Manganese	< 1.0	ug/L							

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B145066 - 6020 Sol no prep - EPA 6020A									
Blank (B145066-BLK1)				Prepared: 10/12/21 Analyzed: 10/13/21					
Mercury	< 0.20	ug/L							
Molybdenum	< 1.0	ug/L							
Potassium	< 0.10	mg/L							
Selenium	< 1.0	ug/L							
Sodium	< 0.10	mg/L							
Thallium	< 1.0	ug/L							
LCS (B145066-BS1)				Prepared: 10/12/21 Analyzed: 10/13/21					
Antimony	252	ug/L		250.0		101	80-120		
Arsenic	242	ug/L		250.0		97	80-120		
Barium	240	ug/L		250.0		96	80-120		
Beryllium	237	ug/L		250.0		95	80-120		
Boron	2350	ug/L		2500		94	80-120		
Cadmium	236	ug/L		250.0		95	80-120		
Calcium	23.7	mg/L		25.00		95	80-120		
Chromium	237	ug/L		250.0		95	80-120		
Cobalt	248	ug/L		250.0		99	80-120		
Iron	21200	ug/L		25000		85	80-120		
Lead	246	ug/L		250.0		99	80-120		
Magnesium	24100	ug/L		25000		96	80-120		
Manganese	233	ug/L		250.0		93	80-120		
Mercury	22.8	ug/L		25.00		91	80-120		
Molybdenum	237	ug/L		250.0		95	80-120		
Potassium	22.9	mg/L		25.00		92	80-120		
Selenium	246	ug/L		250.0		98	80-120		
Sodium	23.2	mg/L		25.00		93	80-120		
Thallium	243	ug/L		250.0		97	80-120		
Matrix Spike (B145066-MS3)	**Sample: EJ00598-18**			Prepared: 10/12/21 Analyzed: 10/13/21					
Antimony	257	ug/L		250.0	ND	103	75-125		
Arsenic	252	ug/L		250.0	3.51	99	75-125		
Barium	314	ug/L		250.0	67.3	99	75-125		
Beryllium	239	ug/L		250.0	ND	96	75-125		
Boron	2600	ug/L		2500	134	98	75-125		
Cadmium	234	ug/L		250.0	ND	94	75-125		
Calcium	45.3	mg/L		25.00	22.0	93	75-125		
Chromium	239	ug/L		250.0	0.490	95	75-125		
Cobalt	252	ug/L		250.0	ND	101	75-125		
Iron	21500	ug/L		25000	211	85	75-125		
Lead	248	ug/L		250.0	ND	99	75-125		
Magnesium	29700	ug/L		25000	5580	97	75-125		
Manganese	818	ug/L		250.0	607	84	75-125		
Mercury	23.6	ug/L		25.00	ND	94	75-125		
Molybdenum	241	ug/L		250.0	5.31	94	75-125		
Potassium	29.2	mg/L		25.00	5.92	93	75-125		
Selenium	249	ug/L		250.0	0.795	99	75-125		

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B145066 - 6020 Sol no prep - EPA 6020A									
Matrix Spike (B145066-MS3)	**Sample: EJ00598-18**			Prepared: 10/12/21 Analyzed: 10/13/21					
Sodium	42.9	mg/L		25.00	20.1	91	75-125		
Thallium	241	ug/L		250.0	ND	96	75-125		
Matrix Spike Dup (B145066-MSD3)	**Sample: EJ00598-18**			Prepared: 10/12/21 Analyzed: 10/13/21					
Antimony	256	ug/L		250.0	ND	102	75-125	0.3	20
Arsenic	254	ug/L		250.0	3.51	100	75-125	0.9	20
Barium	310	ug/L		250.0	67.3	97	75-125	1	20
Beryllium	241	ug/L		250.0	ND	96	75-125	1	20
Boron	2590	ug/L		2500	134	98	75-125	0.3	20
Cadmium	237	ug/L		250.0	ND	95	75-125	1	20
Calcium	45.3	mg/L		25.00	22.0	93	75-125	0.2	20
Chromium	238	ug/L		250.0	0.490	95	75-125	0.6	20
Cobalt	251	ug/L		250.0	ND	100	75-125	0.4	20
Iron	21400	ug/L		25000	211	85	75-125	0.8	20
Lead	249	ug/L		250.0	ND	100	75-125	0.6	20
Magnesium	29500	ug/L		25000	5580	96	75-125	0.8	20
Manganese	817	ug/L		250.0	607	84	75-125	0.1	20
Mercury	23.2	ug/L		25.00	ND	93	75-125	2	20
Molybdenum	243	ug/L		250.0	5.31	95	75-125	0.7	20
Potassium	28.7	mg/L		25.00	5.92	91	75-125	2	20
Selenium	250	ug/L		250.0	0.795	100	75-125	0.3	20
Sodium	42.5	mg/L		25.00	20.1	90	75-125	0.8	20
Thallium	246	ug/L		250.0	ND	98	75-125	2	20
Batch B145132 - 6010 Sol no prep - EPA 6010B									
Blank (B145132-BLK1)				Prepared & Analyzed: 10/12/21					
Lithium	< 20	ug/L							
LCS (B145132-BS1)				Prepared & Analyzed: 10/12/21					
Lithium	513	ug/L		500.0		103	80-120		
Matrix Spike (B145132-MS1)	**Sample: EJ00598-01**			Prepared & Analyzed: 10/12/21					
Lithium	522	ug/L		500.0	1.01	104	75-125		
Matrix Spike (B145132-MS2)	**Sample: EJ00598-29**			Prepared & Analyzed: 10/12/21					
Lithium	548	ug/L		500.0	1.15	109	75-125		
Matrix Spike Dup (B145132-MSD1)	**Sample: EJ00598-01**			Prepared & Analyzed: 10/12/21					
Lithium	521	ug/L		500.0	1.01	104	75-125	0.1	200
Matrix Spike Dup (B145132-MSD2)	**Sample: EJ00598-29**			Prepared & Analyzed: 10/12/21					
Lithium	527	ug/L		500.0	1.15	105	75-125	4	200
Batch B145143 - No Prep - SM 2320B 1997									
Blank (B145143-BLK1)				Prepared & Analyzed: 10/12/21					
Alkalinity - bicarbonate as CaCO3	2.50	mg/L							
Duplicate (B145143-DUP1)	**Sample: EJ00598-03**			Prepared & Analyzed: 10/12/21					
Alkalinity - bicarbonate as CaCO3	50.0	mg/L			50.0			0	10
Duplicate (B145143-DUP2)	**Sample: EJ00598-29**			Prepared & Analyzed: 10/12/21					

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B145143 - No Prep - SM 2320B 1997									
Duplicate (B145143-DUP2)	**Sample: EJ00598-29**			Prepared & Analyzed: 10/12/21					
Alkalinity - bicarbonate as CaCO3	50.0	mg/L			50.0			0	10
Batch B145145 - No Prep - SM 2320B 1997									
Blank (B145145-BLK1)				Prepared & Analyzed: 10/12/21					
Alkalinity - carbonate as CaCO3	2.50	mg/L							
Duplicate (B145145-DUP1)	**Sample: EJ00598-03**			Prepared & Analyzed: 10/12/21					
Alkalinity - carbonate as CaCO3	25.0	mg/L			25.0			0	10
Duplicate (B145145-DUP2)	**Sample: EJ00598-29**			Prepared & Analyzed: 10/12/21					
Alkalinity - carbonate as CaCO3	25.0	mg/L			25.0			0	10
Batch B145176 - No Prep - SM 3500-Fe D MOD									
Calibration Blank (B145176-CCB1)				Prepared & Analyzed: 10/12/21					
Ferrous iron	-0.0233	mg/L							
Calibration Check (B145176-CCV1)				Prepared & Analyzed: 10/12/21					
Ferrous iron	1.00	mg/L		1.004		100	90-110		
Matrix Spike (B145176-MS1)	**Sample: EJ00598-01**			Prepared & Analyzed: 10/12/21					
Ferrous iron	0.978	mg/L		1.004	ND	97	80-120		
Matrix Spike Dup (B145176-MSD1)	**Sample: EJ00598-01**			Prepared & Analyzed: 10/12/21					
Ferrous iron	1.02	mg/L		1.004	ND	102	80-120	4	20
Batch B145177 - No Prep - SM 3500-Fe D MOD									
Calibration Blank (B145177-CCB1)				Prepared & Analyzed: 10/12/21					
Ferrous iron	-0.00662	mg/L							
Calibration Check (B145177-CCV1)				Prepared & Analyzed: 10/12/21					
Ferrous iron	1.00	mg/L		1.004		100	90-110		
Matrix Spike (B145177-MS1)	**Sample: EJ00598-11**			Prepared & Analyzed: 10/12/21					
Ferrous iron	0.416	mg/L	Q1	1.004	ND	41	80-120		
Matrix Spike Dup (B145177-MSD1)	**Sample: EJ00598-11**			Prepared & Analyzed: 10/12/21					
Ferrous iron	0.527	mg/L	Q2	1.004	ND	53	80-120	24	20
Batch B145178 - No Prep - SM 3500-Fe D MOD									
Calibration Blank (B145178-CCB1)				Prepared & Analyzed: 10/12/21					
Ferrous iron	0.0101	mg/L							
Calibration Check (B145178-CCV1)				Prepared & Analyzed: 10/12/21					
Ferrous iron	1.05	mg/L		1.000		105	90-110		
Matrix Spike (B145178-MS1)	**Sample: EJ00598-29**			Prepared & Analyzed: 10/12/21					
Ferrous iron	< 0.20	mg/L	Q1	1.000	ND		80-120		
Matrix Spike Dup (B145178-MSD1)	**Sample: EJ00598-29**			Prepared & Analyzed: 10/12/21					
Ferrous iron	< 0.20	mg/L	Q2	1.000	ND		80-120		20
Batch B145182 - No Prep - SM 2320B 1997									
Blank (B145182-BLK1)				Prepared & Analyzed: 10/12/21					
Alkalinity - carbonate as CaCO3	< 2.0	mg/L							

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B145182 - No Prep - SM 2320B 1997									
Duplicate (B145182-DUP1)	**Sample: EJ00598-21**			Prepared & Analyzed: 10/12/21					
Alkalinity - carbonate as CaCO3	< 2.0	mg/L			ND				10
Batch B145183 - No Prep - SM 2320B 1997									
Blank (B145183-BLK1)				Prepared & Analyzed: 10/12/21					
Alkalinity - bicarbonate as CaCO3	< 2.0	mg/L							
Duplicate (B145183-DUP1)	**Sample: EJ00598-21**			Prepared & Analyzed: 10/12/21					
Alkalinity - bicarbonate as CaCO3	2.00	mg/L			ND				10

NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

* Not a TNI accredited analyte

Memos

Radium Subcontracted - report attached
Revised Report - QC added

Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050
TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615
TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553
Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)
Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)
Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807
USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050
Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

M	Analyte failed to meet the required acceptance criteria for duplicate analysis.
Q1	Matrix Spike failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
Q2	Matrix Spike Duplicate failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
Q3	Matrix Spike/Matrix Spike Duplicate both failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
Q4	The matrix spike recovery result is unusable since the analyte concentration in the sample is greater than four times the spike level. The associated blank spike was acceptable.

Gail J Schindler

Certified by: Gail Schindler, Project Manager

ANALYTICAL REPORT

October 29, 2021

PDC Laboratory, Inc.

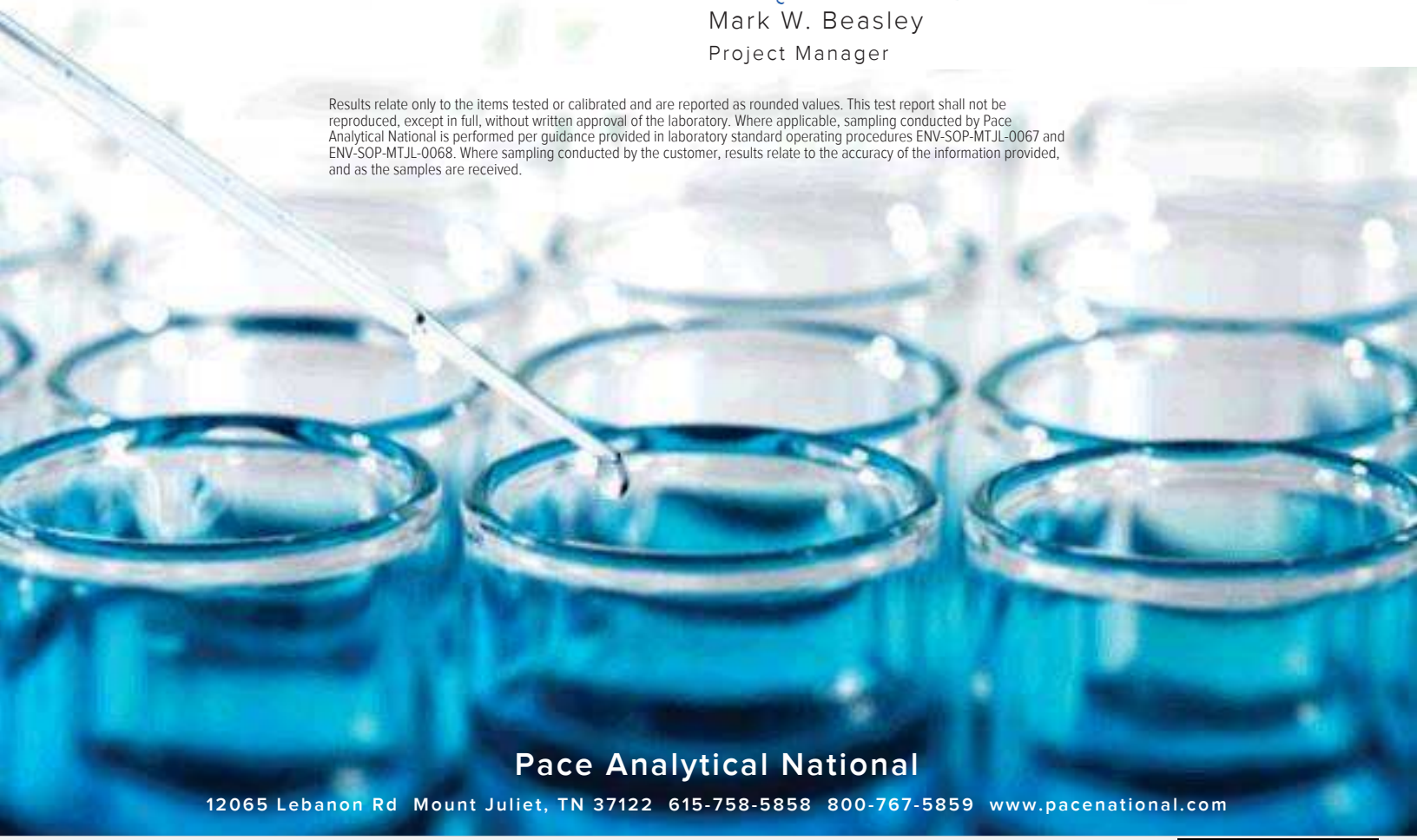
Sample Delivery Group:	L1416552
Samples Received:	10/12/2021
Project Number:	EJ00598
Description:	

Report To: Gail Schindler
2231 W. Altorfer Drive
Peoria, IL 61615

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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EJ00598-01 L1416552-01 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 13:05	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-02 L1416552-02 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 11:50	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-03 L1416552-03 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 11:30	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-04 L1416552-04 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 11:15	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-05 L1416552-05 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 10:45	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-06 L1416552-06 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 10:35	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-07 L1416552-07 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 09:35	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-08 L1416552-08 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 09:15	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-09 L1416552-09 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 08:50	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-10 L1416552-10 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 16:30	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-11 L1416552-11 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 16:10	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-12 L1416552-12 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 15:50	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-13 L1416552-13 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 15:20	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-14 L1416552-14 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 14:55	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-15 L1416552-15 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 14:35	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/25/21 18:31	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/25/21 18:31	RGT	Mt. Juliet, TN

EJ00598-16 L1416552-16 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 14:00	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-17 L1416552-17 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 13:35	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-18 L1416552-18 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 13:18	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-19 L1416552-19 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 08:15	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-20 L1416552-20 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 10:00	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1754684	1	10/18/21 13:39	10/22/21 13:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1754684	1	10/18/21 13:39	10/20/21 12:45	RGT	Mt. Juliet, TN

EJ00598-21 L1416552-21 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 14:10	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1754684	1	10/18/21 13:39	10/22/21 13:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1754684	1	10/18/21 13:39	10/20/21 12:45	RGT	Mt. Juliet, TN

EJ00598-22 L1416552-22 Non-Potable Water

	Collected by	Collected date/time	Received date/time
		10/04/21 10:45	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1754684	1	10/18/21 13:39	10/22/21 13:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1754684	1	10/18/21 13:39	10/20/21 12:45	RGT	Mt. Juliet, TN

EJ00598-23 L1416552-23 Non-Potable Water

	Collected by	Collected date/time	Received date/time
		10/04/21 10:30	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1754684	1	10/18/21 13:39	10/22/21 13:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1754684	1	10/18/21 13:39	10/20/21 12:45	RGT	Mt. Juliet, TN

EJ00598-24 L1416552-24 Non-Potable Water

	Collected by	Collected date/time	Received date/time
		10/04/21 10:00	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1754684	1	10/18/21 13:39	10/22/21 13:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1754684	1	10/18/21 13:39	10/20/21 21:27	RGT	Mt. Juliet, TN

EJ00598-25 L1416552-25 Non-Potable Water

	Collected by	Collected date/time	Received date/time
		10/04/21 09:40	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1754684	1	10/18/21 13:39	10/22/21 13:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1754684	1	10/18/21 13:39	10/20/21 12:45	RGT	Mt. Juliet, TN

EJ00598-26 L1416552-26 Non-Potable Water

	Collected by	Collected date/time	Received date/time
		10/04/21 09:25	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1754684	1	10/18/21 13:39	10/22/21 13:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1754684	1	10/18/21 13:39	10/20/21 12:45	RGT	Mt. Juliet, TN

EJ00598-27 L1416552-27 Non-Potable Water

	Collected by	Collected date/time	Received date/time
		10/04/21 09:00	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1754684	1	10/18/21 13:39	10/22/21 13:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1754684	1	10/18/21 13:39	10/20/21 12:45	RGT	Mt. Juliet, TN

EJ00598-28 L1416552-28 Non-Potable Water

	Collected by	Collected date/time	Received date/time
		10/04/21 08:45	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1754684	1	10/18/21 13:39	10/22/21 13:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1754684	1	10/18/21 13:39	10/20/21 12:45	RGT	Mt. Juliet, TN

EJ00598-29 L1416552-29 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 08:05	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758750	1	10/22/21 10:08	10/22/21 16:19	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758750	1	10/22/21 10:08	10/22/21 16:19	RGT	Mt. Juliet, TN

EJ00598-30 L1416552-30 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 16:55	10/12/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1754684	1	10/18/21 13:39	10/22/21 13:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1754684	1	10/18/21 13:39	10/20/21 12:45	RGT	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	-0.721	U	0.368	0.699	10/19/2021 14:00	WG1755794
(T) Barium	*104*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*104*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.0773	U	0.540	0.994	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0773	U	0.172	0.295	10/22/2021 16:19	WG1758750
(T) Barium-133	*93.0*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.000	U	0.351	0.649	10/19/2021 14:00	WG1755794
(T) Barium	*102*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*96.5*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.0119	U	0.474	0.936	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0119	U	0.123	0.287	10/22/2021 16:19	WG1758750
(T) Barium-133	*89.3*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.227	U	0.344	0.632	10/19/2021 14:00	WG1755794
(T) Barium	*92.5*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*106*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.420	J	0.580	0.956	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.194	J	0.236	0.324	10/22/2021 16:19	WG1758750
(T) Barium-133	*96.7*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.467	J	0.341	0.618	10/19/2021 14:00	WG1755794
(T) Barium	*96.5*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*89.7*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.534	J	0.517	0.946	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0677	U	0.176	0.328	10/22/2021 16:19	WG1758750
(T) Barium-133	*87.5*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.201	U	0.294	0.54	10/19/2021 14:00	WG1755794
(T) Barium	*90.3*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*99.5*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.326	J	0.459	0.768	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.125	J	0.165	0.228	10/22/2021 16:19	WG1758750
(T) Barium-133	*92.5*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.169	U	0.312	0.586	10/19/2021 14:00	WG1755794
(T) Barium	*98.6*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*104*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.0308	U	0.410	0.803	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0308	U	0.0983	0.217	10/22/2021 16:19	WG1758750
(T) Barium-133	*92.5*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.0798	U	0.462	0.856	10/19/2021 14:00	WG1755794
(T) Barium	*104*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*104*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.0636	U	0.573	1.04	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0636	U	0.111	0.184	10/22/2021 16:19	WG1758750
(T) Barium-133	*97.5*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.633		0.347	0.624	10/19/2021 14:00	WG1755794
(T) Barium	*100*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*106*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.713	J	0.487	0.856	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0800	U	0.140	0.232	10/22/2021 16:19	WG1758750
(T) Barium-133	*85.5*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.704	J	0.461	0.834	10/19/2021 14:00	WG1755794
(T) Barium	*97.9*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*104*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.722	J	0.572	1.09	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0179	U	0.111	0.256	10/22/2021 16:19	WG1758750
(T) Barium-133	*96.3*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.62		0.345	0.586	10/19/2021 14:00	WG1755794
(T) Barium	*99.1*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*102*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.63		0.462	0.859	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0113	U	0.117	0.273	10/22/2021 16:19	WG1758750
(T) Barium-133	*94.0*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.457	J	0.325	0.589	10/19/2021 14:00	WG1755794
(T) Barium	*104*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*97.9*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.531	J	0.471	0.844	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0735	U	0.146	0.255	10/22/2021 16:19	WG1758750
(T) Barium-133	*88.0*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.370	J	0.286	0.519	10/19/2021 14:00	WG1755794
(T) Barium	*104*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*101*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.370	U	0.455	0.918	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	-0.0197	U	0.169	0.399	10/22/2021 16:19	WG1758750
(T) Barium-133	*82.2*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.433	J	0.278	0.502	10/19/2021 14:00	WG1755794
(T) Barium	*104*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*106*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.464	J	0.376	0.719	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0308	U	0.0983	0.217	10/22/2021 16:19	WG1758750
(T) Barium-133	*89.2*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.49		0.331	0.565	10/19/2021 14:00	WG1755794
(T) Barium	*88.4*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*105*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.75		0.544	0.756	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.256		0.213	0.191	10/22/2021 16:19	WG1758750
(T) Barium-133	*90.7*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	-0.0289	U	0.306	0.569	10/19/2021 14:00	WG1755794
(T) Barium	*102*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*106*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.0381	U	0.443	0.834	10/25/2021 18:31	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0381	U	0.137	0.265	10/25/2021 18:31	WG1758750
(T) Barium-133	*101*			*30.0-143*	*10/25/2021 18:31*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.140	U	0.328	0.601	10/19/2021 14:00	WG1755794
(T) Barium	*106*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*98.8*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.252	U	0.502	0.869	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.112	J	0.174	0.268	10/22/2021 16:19	WG1758750
(T) Barium-133	*89.7*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.255	U	0.307	0.579	10/19/2021 14:00	WG1755794
(T) Barium	*93.5*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*103*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.0987	U	0.507	0.914	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0987	U	0.200	0.335	10/22/2021 16:19	WG1758750
(T) Barium-133	*84.8*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.771		0.283	0.5	10/19/2021 14:00	WG1755794
(T) Barium	*96.9*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*99.4*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.826		0.450	0.817	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0550	U	0.167	0.317	10/22/2021 16:19	WG1758750
(T) Barium-133	*97.6*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.231	U	0.288	0.528	10/19/2021 14:00	WG1755794
(T) Barium	*97.2*			*62.0-143*	*10/19/2021 14:00*	WG1755794
(T) Yttrium	*106*			*79.0-136*	*10/19/2021 14:00*	WG1755794

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.231	U	0.456	0.871	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	-0.00423	U	0.168	0.343	10/22/2021 16:19	WG1758750
(T) Barium-133	*100*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.49		0.509	0.932	10/22/2021 13:00	WG1755799
(T) Barium	*85.8*			*62.0-143*	*10/22/2021 13:00*	WG1755799
(T) Yttrium	*98.6*			*79.0-136*	*10/22/2021 13:00*	WG1755799

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.49		0.650	1.26	10/22/2021 13:00	WG1754684

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.00523	U	0.141	0.332	10/20/2021 12:45	WG1754684
(T) Barium-133	*93.4*			*30.0-143*	*10/20/2021 12:45*	WG1754684

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.330	U	0.438	0.833	10/22/2021 13:00	WG1755799
(T) Barium	*85.1*			*62.0-143*	*10/22/2021 13:00*	WG1755799
(T) Yttrium	*94.6*			*79.0-136*	*10/22/2021 13:00*	WG1755799

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.378	U	0.614	1.17	10/22/2021 13:00	WG1754684

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0489	U	0.176	0.341	10/20/2021 12:45	WG1754684
(T) Barium-133	*92.1*			*30.0-143*	*10/20/2021 12:45*	WG1754684

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.582	J	0.345	0.648	10/22/2021 13:00	WG1755799
(T) Barium	*86.8*			*62.0-143*	*10/22/2021 13:00*	WG1755799
(T) Yttrium	*108*			*79.0-136*	*10/22/2021 13:00*	WG1755799

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.926	J	0.620	0.935	10/22/2021 13:00	WG1754684

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.344		0.275	0.287	10/20/2021 12:45	WG1754684
(T) Barium-133	*103*			*30.0-143*	*10/20/2021 12:45*	WG1754684

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.413	U	0.299	0.592	10/22/2021 13:00	WG1755799
(T) Barium	*92.6*			*62.0-143*	*10/22/2021 13:00*	WG1755799
(T) Yttrium	*103*			*79.0-136*	*10/22/2021 13:00*	WG1755799

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.52		0.817	0.815	10/22/2021 13:00	WG1754684

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.52		0.518	0.223	10/20/2021 12:45	WG1754684
(T) Barium-133	*94.9*			*30.0-143*	*10/20/2021 12:45*	WG1754684

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.353	U	0.312	0.616	10/22/2021 13:00	WG1755799
(T) Barium	*87.7*			*62.0-143*	*10/22/2021 13:00*	WG1755799
(T) Yttrium	*103*			*79.0-136*	*10/22/2021 13:00*	WG1755799

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.109	U	0.480	0.875	10/22/2021 13:00	WG1754684

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.109	J	0.168	0.259	10/20/2021 21:27	WG1754684
(T) Barium-133	*95.3*			*30.0-143*	*10/20/2021 21:27*	WG1754684

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.292	J	0.322	0.61	10/22/2021 13:00	WG1755799
(T) Barium	*91.6*			*62.0-143*	*10/22/2021 13:00*	WG1755799
(T) Yttrium	*100*			*79.0-136*	*10/22/2021 13:00*	WG1755799

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.502	J	0.523	0.83	10/22/2021 13:00	WG1754684

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.210	J	0.201	0.22	10/20/2021 12:45	WG1754684
(T) Barium-133	*91.2*			*30.0-143*	*10/20/2021 12:45*	WG1754684

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.14		0.319	0.576	10/22/2021 13:00	WG1755799
(T) Barium	*92.6*			*62.0-143*	*10/22/2021 13:00*	WG1755799
(T) Yttrium	*103*			*79.0-136*	*10/22/2021 13:00*	WG1755799

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.17		0.406	0.768	10/22/2021 13:00	WG1754684

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0273	U	0.0871	0.192	10/20/2021 12:45	WG1754684
(T) Barium-133	*93.6*			*30.0-143*	*10/20/2021 12:45*	WG1754684

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.69		0.383	0.685	10/22/2021 13:00	WG1755799
(T) Barium	*85.7*			*62.0-143*	*10/22/2021 13:00*	WG1755799
(T) Yttrium	*110*			*79.0-136*	*10/22/2021 13:00*	WG1755799

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.05		0.628	0.887	10/22/2021 13:00	WG1754684

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.356		0.245	0.202	10/20/2021 12:45	WG1754684
(T) Barium-133	*98.3*			*30.0-143*	*10/20/2021 12:45*	WG1754684

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.000	U	0.310	0.598	10/22/2021 13:00	WG1755799
(T) Barium	*89.7*			*62.0-143*	*10/22/2021 13:00*	WG1755799
(T) Yttrium	*101*			*79.0-136*	*10/22/2021 13:00*	WG1755799

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.404	J	0.602	0.873	10/22/2021 13:00	WG1754684

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.404		0.292	0.275	10/20/2021 12:45	WG1754684
(T) Barium-133	*89.7*			*30.0-143*	*10/20/2021 12:45*	WG1754684

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.282	J	0.311	0.592	10/22/2021 13:00	WG1755799
(T) Barium	*89.4*			*62.0-143*	*10/22/2021 13:00*	WG1755799
(T) Yttrium	*90.9*			*79.0-136*	*10/22/2021 13:00*	WG1755799

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.382	U	0.487	0.884	10/22/2021 16:19	WG1758750

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.101	U	0.176	0.292	10/22/2021 16:19	WG1758750
(T) Barium-133	*74.8*			*30.0-143*	*10/22/2021 16:19*	WG1758750

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.378	J	0.305	0.576	10/22/2021 13:00	WG1755799
(T) Barium	*89.5*			*62.0-143*	*10/22/2021 13:00*	WG1755799
(T) Yttrium	*106*			*79.0-136*	*10/22/2021 13:00*	WG1755799

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.534	J	0.510	0.866	10/22/2021 13:00	WG1754684

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.156	J	0.205	0.29	10/20/2021 12:45	WG1754684
(T) Barium-133	*88.2*			*30.0-143*	*10/20/2021 12:45*	WG1754684

Method Blank (MB)

(MB) R3719504-1 10/19/21 14:00

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / -	MB MDA pCi/l
Radium-228	0.0509	U	0.247	0.456
(T) Barium	*103*		*103*	
(T) Yttrium	*93.5*		*93.5*	

L1416552-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1416552-06 10/19/21 14:00 • (DUP) R3719504-5 10/19/21 14:00

Analyte	Original Result pCi/l	Original Uncertainty + / -	DUP Result pCi/l	DUP Uncertainty + / -	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	-0.169	0.312	0.943	0.841	1	200	1.24	J	20	3
(T) Barium	*98.6*		*97.0*	*97.0*						
(T) Yttrium	*104*		*101*	*101*						

Laboratory Control Sample (LCS)

(LCS) R3719504-2 10/19/21 14:00

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	4.72	94.4	80.0-120	
(T) Barium			*100*		
(T) Yttrium			*105*		

L1416552-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1416552-07 10/19/21 14:00 • (MS) R3719504-3 10/19/21 14:00 • (MSD) R3719504-4 10/19/21 14:00

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	-0.0798	19.2	17.9	115	107	1	70.0-130			7.44		20
(T) Barium		*104*			*102*	*100*							
(T) Yttrium		*104*			*94.8*	*99.1*							

Method Blank (MB)

(MB) R3723020-1 10/22/21 13:00

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-228	0.549		0.219	0.406
(T) Barium	*100*		*100*	
(T) Yttrium	*101*		*101*	

L1410735-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1410735-01 10/22/21 13:00 • (DUP) R3723020-5 10/22/21 13:00

Analyte	Original Result pCi/l	Original Uncertainty + / -	DUP Result pCi/l	DUP Uncertainty + / -	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	13.8	0.572	12.3	1.02	1	11.9	1.33		20	3
(T) Barium	*198*		*146*	*146*				C1		
(T) Yttrium	*96.0*		*96.0*	*96.0*						

Laboratory Control Sample (LCS)

(LCS) R3723020-2 10/22/21 13:00

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	4.41	88.2	80.0-120	
(T) Barium			*102*		
(T) Yttrium			*96.8*		

L1416552-29 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1416552-29 10/22/21 13:00 • (MS) R3723020-3 10/22/21 13:00 • (MSD) R3723020-4 10/22/21 13:00

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	0.282	21.6	19.1	128	113	1	70.0-130			12.4		20
(T) Barium		*89.4*			*88.8*	*92.7*							
(T) Yttrium		*90.9*			*101*	*105*							

Method Blank (MB)

(MB) R3719656-1 10/20/21 12:45

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-226	0.0141	U	0.0450	0.0994
(T) Barium-133	*54.8*		*54.8*	

L1407821-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1407821-01 10/20/21 12:45 • (DUP) R3719656-5 10/20/21 12:45

Analyte	Original Result pCi/l	Original Uncertainty + / -	DUP Result pCi/l	DUP Uncertainty + / -	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	26.1	2.14	25.0	2.03	1	4.07	0.353		20	3
(T) Barium-133	*95.8*		*97.9*	*97.9*						

Laboratory Control Sample (LCS)

(LCS) R3719656-2 10/20/21 12:45

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	5.12	102	80.0-120	
(T) Barium-133			*65.2*		

L1417794-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1417794-01 10/20/21 12:45 • (MS) R3719656-3 10/20/21 12:45 • (MSD) R3719656-4 10/20/21 12:45

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	0.124	19.8	20.3	97.7	100	1	75.0-125			2.50		20
(T) Barium-133		*85.7*			*92.3*	*87.2*							

Method Blank (MB)

(MB) R3721064-1 10/22/21 16:19

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-226	-0.0110	U	0.0210	0.0691
(T) Barium-133	*96.0*		*96.0*	

L1416552-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1416552-01 10/22/21 16:19 • (DUP) R3721064-5 10/22/21 16:19

Analyte	Original Result pCi/l	Original Uncertainty + / -	DUP Result pCi/l	DUP Uncertainty + / -	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.0773	0.172	0.0376	0.0930	1	69.0	0.203	U	20	3
(T) Barium-133	*93.0*		*95.0*	*95.0*						

Laboratory Control Sample (LCS)

(LCS) R3721064-2 10/22/21 16:19

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	5.08	101	80.0-120	
(T) Barium-133			*98.1*		

L1416552-29 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1416552-29 10/22/21 16:19 • (MS) R3721064-3 10/22/21 16:19 • (MSD) R3721064-4 10/22/21 16:19

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	0.101	18.8	19.4	93.1	96.1	1	75.0-125			3.09		20
(T) Barium-133		*74.8*			*93.8*	*95.5*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
C1	Tracer recovery limits have been exceeded; values are outside upper control limits.
J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc. B115

EJ00598

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

Pace Analytical - Mt Juliet, Tn
12065 Lebanon Rd
Mt Juliet, TN 37122
(615) 758-5858

L1416552

Sample: EJ00598-01
Name: N-D-2M

Sampled: 10/04/21 13:05
Matrix: Surface Water
Preservative: HNO3, pH <2

-01

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 13:05	

Sample: EJ00598-02
Name: ~~N-A-1D~~ N-A-2D GS

Sampled: 10/04/21 11:50
Matrix: Surface Water
Preservative: HNO3, pH <2

-02

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 11:50	

Sample: EJ00598-03
Name: ~~N-A-1M~~ N-A-2M GS

Sampled: 10/04/21 11:30
Matrix: Surface Water
Preservative: HNO3, pH <2

-03

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 11:30	

Sample: EJ00598-04
Name: N-A-1

Sampled: 10/04/21 11:15
Matrix: Surface Water
Preservative: HNO3, pH <2

-04

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 11:15	

Sample: EJ00598-05
Name: N-B-2D

Sampled: 10/04/21 10:45
Matrix: Surface Water
Preservative: HNO3, pH <2

-05

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 10:45	

21.5+0=21.5 ATGA

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc.

EJ00598

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

Pace Analytical - Mt Juliet, Tn
12065 Lebanon Rd
Mt Juliet, TN 37122
(615) 758-5858

L1416662

Sample: EJ00598-06
Name: N-B-2M

Sampled: 10/04/21 10:35
Matrix: Surface Water
Preservative: HNO3, pH <2

-06

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 10:35	

Sample: EJ00598-07
Name: N-B-1

Sampled: 10/04/21 09:35
Matrix: Surface Water
Preservative: HNO3, pH <2

-07

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 09:35	

Sample: EJ00598-08
Name: N-C-2D

Sampled: 10/04/21 09:15
Matrix: Surface Water
Preservative: HNO3, pH <2

-08

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 09:15	

Sample: EJ00598-09
Name: N-C-2M

Sampled: 10/04/21 08:50
Matrix: Surface Water
Preservative: HNO3, pH <2

-09

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 08:50	

Sample: EJ00598-10
Name: N-F-2M

Sampled: 10/04/21 16:30
Matrix: Surface Water
Preservative: HNO3, pH <2

-10

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 16:30	21.5+0 = 21.5 Alm

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc.

EJ00598

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

Pace Analytical - Mt Juliet, Tn
12065 Lebanon Rd
Mt Juliet, TN 37122
(615) 758-5858

L1416552

Sample: EJ00598-11
Name: N-F-1

Sampled: 10/04/21 16:10
Matrix: Surface Water
Preservative: HNO3, pH <2

-11

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 16:10	

Sample: EJ00598-12
Name: N-UA-1D

Sampled: 10/04/21 15:50
Matrix: Surface Water
Preservative: HNO3, pH <2

-12

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 15:50	

Sample: EJ00598-13
Name: N-UA-1M

Sampled: 10/04/21 15:20
Matrix: Surface Water
Preservative: HNO3, pH <2

-13

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 15:20	

Sample: EJ00598-14
Name: N-E-2D

Sampled: 10/04/21 14:55
Matrix: Surface Water
Preservative: HNO3, pH <2

-14

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 14:55	

Sample: EJ00598-15
Name: N-E-2M

Sampled: 10/04/21 14:35
Matrix: Surface Water
Preservative: HNO3, pH <2

-15

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 14:35	

21.5 to = 21.5
Alm

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc.

EJ00598

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

Pace Analytical - Mt Juliet, Tn
12065 Lebanon Rd
Mt Juliet, TN 37122
(615) 758-5858

L1416552

Sample: EJ00598-16
Name: N-E-1

Sampled: 10/04/21 14:00
Matrix: Surface Water
Preservative: HNO3, pH <2

-16

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 14:00	

Sample: EJ00598-17
Name: N-D-1

Sampled: 10/04/21 13:35
Matrix: Surface Water
Preservative: HNO3, pH <2

-17

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 13:35	

Sample: EJ00598-18
Name: N-D-2D

Sampled: 10/04/21 13:18
Matrix: Surface Water
Preservative: HNO3, pH <2

-18

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 13:18	

Sample: EJ00598-19
Name: N-C-1

Sampled: 10/04/21 08:15
Matrix: Surface Water
Preservative: HNO3, pH <2

-19

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 08:15	

Sample: EJ00598-20
Name: N-DUP-1

Sampled: 10/04/21 10:00
Matrix: Surface Water
Preservative: HNO3, pH <2

-20

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 10:00	

21.5+0=21.5
AMK

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc.

EJ00598

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

Pace Analytical - Mt Juliet, Tn
12065 Lebanon Rd
Mt Juliet, TN 37122
(615) 758-5858

LH16552

Sample: EJ00598-21
Name: N-FB-1

Sampled: 10/04/21 14:10
Matrix: Surface Water
Preservative: HNO3, pH <2

-21

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 14:10	

Sample: EJ00598-22
Name: N-I-2D

Sampled: 10/05/21 10:45
Matrix: Surface Water
Preservative: HNO3, pH <2

-22

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/03/22 10:45	

Sample: EJ00598-23
Name: N-I-2M

Sampled: 10/05/21 10:30
Matrix: Surface Water
Preservative: HNO3, pH <2

-23

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/03/22 10:30	

Sample: EJ00598-24
Name: N-I-1

Sampled: 10/05/21 10:00
Matrix: Surface Water
Preservative: HNO3, pH <2

-24

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/03/22 10:00	

Sample: EJ00598-25
Name: N-UA-2D

Sampled: 10/05/21 09:40
Matrix: Surface Water
Preservative: HNO3, pH <2

-25

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/03/22 09:40	

2.5 to = 21.5
Add

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc.

EJ00598

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

Pace Analytical - Mt Juliet, Tn
12065 Lebanon Rd
Mt Juliet, TN 37122
(615) 758-5858

L1416552

Sample: EJ00598-26
Name: N-UA-2M

Sampled: 10/05/21 09:25
Matrix: Surface Water
Preservative: HNO3, pH <2

-26

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/03/22 09:25	

Sample: EJ00598-27
Name: N-G-2D

Sampled: 10/05/21 09:00
Matrix: Surface Water
Preservative: HNO3, pH <2

-27

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/03/22 09:00	

Sample: EJ00598-28
Name: N-G-2M

Sampled: 10/05/21 08:45
Matrix: Surface Water
Preservative: HNO3, pH <2

-28

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/03/22 08:45	

Sample: EJ00598-29
Name: N-G-1

Sampled: 10/05/21 08:05
Matrix: Surface Water
Preservative: HNO3, pH <2

-29

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/03/22 08:05	ADD MS/MSD

Sample: EJ00598-30
Name: N-F-2D

Sampled: 10/04/21 16:55
Matrix: Surface Water
Preservative: HNO3, pH <2

-30

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	10/14/21 16:00	04/02/22 16:55	

21.5 + 0 = 21.5

AGW

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc.

EJ00598

L14116552

Sample Receipt Checklist

COC Seal Present/Intact:	Y	N	If Applicable		
COC Signed/Accurate:	Y	N	VOA Zero Headspace:	Y	N
Bottles arrive intact:	Y	N	Pres.Correct/Check:	Y	N
Correct bottles used:	Y	N			
Sufficient volume sent:	Y	N			
RAD Screen <0.5 mR/hr:	Y	N			

Please email results to Gail Schindler at gschindler@pdclab.com

Date Shipped: 10-6-21 Total # of Containers: 32 Sample Origin (State): IL PO #: 15532

Turn-Around Time Requested ☑ NORMAL ☐ RUSH Date Results Needed: _____

Relinquished By	Date/Time	Received By	Date/Time
[signature]	10-6-21 12:50		
		[signature]	10/11/21 9:30

Sample Temperature Upon Receipt	____ °C
Sample(s) Received on Ice	Y or N
Proper Bottles Received in Good Condition	Y or N
Bottles Filled with Adequate Volume	Y or N
Samples Received Within Hold Time	Y or N
Date/Time Taken From Sample Bottle	Y or N

PDC LABORATORIES, INC.
WWW.PDCLAB.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED IL

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

1 CLIENT: **GOLDER & ASSOCIATES**

ADDRESS: **13515 BARRETT PKY DR, SUITE 260**

CITY / STATE / ZIP: **BALLWIN MO 63021**

CONTACT PERSON: **JEFFREY INGRAM**

PROJECT NUMBER | PROJECT LOCATION | PURCHASE ORDER #

PHONE NUMBER | E-MAIL | DATE SHIPPED

SAMPLER (PLEASE PRINT)

SAMPLER'S SIGNATURE

MATRIX TYPES:
WW- WASTEWATER
DW- DRINKING WATER
GW- GROUND WATER
WWSL- SLUDGE
NAS- NON AQUEOUS SOLID
LCHT-LEACHATE
OIL-OIL
SO-SOIL
SOL-SOLID

3 ANALYSIS REQUESTED

4 (FOR LAB USE ONLY)
LOGIN # EJ00598-30
LOGGED BY: KEG
CLIENT: GOLDER & ASSOCIATES
PROJECT: GOLDER VISTRA NEWTON
PROJ. MGR.: GAIL SCHINDLER

2 SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	CL,F,NO3,SO4,CO,HCO3	AS*,B*,BA*,BE*,CA*	CD*,CO*,CR*,FE*,	FE+3**,FE+2**,K*,LI*	HG*,MG*,MN*,MO*,NA*,	P,PB*,S2,SB*,TOC,SE*	TDS,TL*,RAD 226/228	REMARKS
N-D-2M	10-4-21	1305	G		SW	9	2,3,4,6	✓	✓	✓	✓	✓	✓	✓	*DISSOLVED & TOTAL
N-A-2D		1150													**DISSOLVED Report as N-A-2M
N-A-1M		1130													Report as N-A-2M
N-A-2		1115													
N-B-2D		1045													
N-B-2M		~~1033~~ 1035													
N-B-1		0935													
N-C-2D		0915													
N-C-2M		0850													

CHEMICAL PRESERVATION CODES: 1 – HCL | 2 – H2SO4 | 3 – HNO3 | 4 – NAOH | 5 – NA2S2O3 | 6 – UNPRESERVED | 7 – OTHER

5 TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)

DATE RESULTS NEEDED

RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE

EMAIL IF DIFFERENT FROM ABOVE:

PHONE # IF DIFFERENT FROM ABOVE:

6 *I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities.*

PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) _____

7 RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
	10/5/21	1330		10/5/21	1330
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
	10/5/21	1630		10/05/21	1630

8 COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 2.2 °C

CHILL PROCESS STARTED PRIOR TO RECEIPT Y OR N
SAMPLE(S) RECEIVED ON ICE Y OR N
SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED Y OR N

DATE AND TIME TAKEN FROM SAMPLE BOTTLE _____

PDC LABORATORIES, INC.
WWW.PDCLAB.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED IL

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

(1) CLIENT: GOLDER & ASSOCIATES
ADDRESS: 13515 BARRETT PKY DR, SUITE 260
CITY STATE ZIP: BALLWIN MO 63021
CONTACT PERSON: JEFFREY INGRAM

PROJECT NUMBER | PROJECT LOCATION | PURCHASE ORDER #
PHONE NUMBER | E-MAIL | DATE SHIPPED
SAMPLER (PLEASE PRINT)
SAMPLER'S SIGNATURE

MATRIX TYPES:
WW- WASTEWATER
DW- DRINKING WATER
GW- GROUND WATER
WWSL- SLUDGE
NAS- NON AQUEOUS SOLID
LCHT-LEACHATE
OIL-OIL
SO-SOIL
SOL-SOLID

(3) ANALYSIS REQUESTED

(4) (FOR LAB USE ONLY)
LOGIN # EJ00598-30
LOGGED BY: KEG
CLIENT: GOLDER & ASSOCIATES
PROJECT: GOLDER VISTRA NEWTON
PROJ. MGR.: GAIL SCHINDLER

(2) SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	CL,F,NO3,SO4,CO,HCO3	AS*,B*,BA*,BE*,CA*	CD*,CO*,CR*,FE*,	FE+3**,FE+2**,K*,LI*	HG*,MG*,MN*,MO*,NA*,	P,PB*,S2,SB*,TOC,SE*	TDS,TL*,RAD 226/228	REMARKS
N-F-2M	10/4/21	1630	G		SW	9	2,3,4,1	✓	✓	✓	✓	✓	✓	✓	*DISSOLVED & TOTAL
N-F-1		1610													**DISSOLVED
N-UA-1D		1550													
N-UA-1M		1520													
N-E-2D		1455													
N-E-2M		1435													
N-E-1		1400													
N-D-1		1335													
N-D-2D		1318													

CHEMICAL PRESERVATION CODES: 1 – HCL | 2 – H2SO4 | 3 – HNO3 | 4 – NAOH | 5 – NA2S2O3 | 6 – UNPRESERVED | 7 – OTHER

(5) TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)
DATE RESULTS NEEDED
RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE
EMAIL IF DIFFERENT FROM ABOVE:
PHONE # IF DIFFERENT FROM ABOVE:

(6) *I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities.*
PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) _____

(7) RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
	10/5/21	1330		10/5/21	1330
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
	10/5/21	1630	Kathryn Gray	10/05/21	1630

(8) COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 2.2 °C
CHILL PROCESS STARTED PRIOR TO RECEIPT Y OR N
SAMPLE(S) RECEIVED ON ICE Y OR N
SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED Y OR N
DATE AND TIME TAKEN FROM SAMPLE BOTTLE _____

2

PDC LABORATORIES, INC.
WWW.PDCLAB.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

OF CUSTODY RECORD

ERE SAMPLE COLLECTED IL

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

1 CLIENT: **GOLDER & ASSOCIATES**

ADDRESS: **13515 BARRETT PKY DR, SUITE 260**

CITY / STATE / ZIP: **BALLWIN MO 63021**

CONTACT PERSON: **JEFFREY INGRAM**

PROJECT NUMBER | PROJECT LOCATION | PURCHASE ORDER #

PHONE NUMBER | E-MAIL | DATE SHIPPED

SAMPLER (PLEASE PRINT)

SAMPLER'S SIGNATURE

MATRIX TYPES:
WW- WASTEWATER
DW- DRINKING WATER
GW- GROUND WATER
WWSL- SLUDGE
NAS- NON AQUEOUS SOLID
LCHT-LEACHATE
OIL-OIL
SO-SOIL
SOL-SOLID

3 ANALYSIS REQUESTED

4 (FOR LAB USE ONLY)
LOGIN # EJ00598-30
LOGGED BY: KEG
CLIENT: GOLDER & ASSOCIATES
PROJECT: GOLDER VISTRA NEWTON
PROJ. MGR.: GAIL SCHINDLER

2 SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	CL,F,NO3,SO4,CO,HCO3	AS*,B*,BA*,BE*,CA*	CD*,CO*,CR*,FE*,	FE+3**,FE+2**,K*,LI*	HG*,MG*,MN*,MO*,NA*,	P,PB*,S2,SB*,TOC,SE*	TDS,TL*,RAD 226/228	REMARKS
N-C-1	10-4-21	0805	G		SW	9	2,3,4,	✓	✓	✓	✓	✓	✓	✓	*DISSOLVED & TOTAL
N-DUP-1	"	1000													**DISSOLVED
N-FB-1	"	1410													
N-MS-1	10/5/21	0805													
N-MSD-1	"	0805													

CHEMICAL PRESERVATION CODES: 1 – HCL | 2 – H2SO4 | 3 – HNO3 | 4 – NAOH | 5 – NA2S2O3 | 6 – UNPRESERVED | 7 – OTHER

5 TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)

DATE RESULTS NEEDED

RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE

EMAIL IF DIFFERENT FROM ABOVE:

PHONE # IF DIFFERENT FROM ABOVE:

6 *I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities.*

PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) _____

7		DATE		
RELINQUISHED BY: (SIGNATURE)		10/5/21	RECEIVED BY: (SIGNATURE)	10/5/21
		TIME 1330		TIME 1850
RELINQUISHED BY: (SIGNATURE)		DATE	RECEIVED BY: (SIGNATURE)	DATE
		TIME		TIME
RELINQUISHED BY: (SIGNATURE)		DATE 10/5/21	RECEIVED BY: (SIGNATURE)	DATE 10/05/21
		TIME 1630		TIME 1630

8 COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 2-2 °C

CHILL PROCESS STARTED PRIOR TO RECEIPT Y OR N
SAMPLE(S) RECEIVED ON ICE Y OR N
SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED Y OR N

DATE AND TIME TAKEN FROM SAMPLE BOTTLE _____

3

PDC LABORATORIES, INC.
WWW.PDCLAB.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED IL

ALL HIGHLIGHTED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

1 CLIENT: GOLDER & ASSOCIATES

ADDRESS: 13515 BARRETT PKY DR, SUITE 260

CITY / STATE / ZIP: BALLWIN MO 63021

CONTACT PERSON: JEFFREY INGRAM

PROJECT NUMBER: 21454831

PROJECT LOCATION: Newton

PURCHASE ORDER #:

PHONE NUMBER: 719-213-8548

E-MAIL: Jeffrey_Ingram@golder.com

DATE SHIPPED: 10/5/2021

SAMPLER (PLEASE PRINT): Eric Schneider

SAMPLER'S SIGNATURE:

MATRIX TYPES: WW- WASTEWATER; DW- DRINKING WATER; GW- GROUND WATER; WWSL- SLUDGE; NAS- NON AQUEOUS SOLID; LCHT-LEACHATE; OIL-OIL; SO-SOIL; SOL-SOLID

3 ANALYSIS REQUESTED

4 (FOR LAB USE ONLY)

LOGIN # EJ00598-30

LOGGED BY: KEN

CLIENT: GOLDER & ASSOCIATES

PROJECT: GOLDER VISTRA NEWTON

PROJ. MGR.: GAIL SCHINDLER

2 SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE (CLIENT PROVIDED)	CL,F,NO3,SO4,CO,HCO3	AS*,B*,BA*,BE*,CA*	CD*,CO*,CR*,FE*,	FE+3**,FE+2**,K*,LI*	HG*,MG*,MN*,MO*,NA*,	P,PB*,S2,SB*,TOC,SE*	TDS,TL*,RAD 226/228	REMARKS
~~N-F-2~~ N-I-2D	10-5-21	1045	G		SW	9	2, 3, 4,	✓	✓	✓	✓	✓	✓	✓	*DISSOLVED & TOTAL
N-I-2M		1030													**DISSOLVED
N-I-1		1000													
N-UA-2D		0940													
N-UA-2M		0925													
N-G-2D		0900													
N-G-2M		0845													
N-G-1		0805													
N-F-2D	10/4/21	1655													

CHEMICAL PRESERVATION CODES: 1 – HCL; 2 – H2SO4; 3 – HNO3; 4 – NAOH; 5 – NA2S2O3; 6 – UNPRESERVED; 7 – OTHER

5 TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)

RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE

EMAIL IF DIFFERENT FROM ABOVE:

PHONE # IF DIFFERENT FROM ABOVE:

DATE RESULTS NEEDED

6 *I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities.*

PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) _____

7	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
		10/5/21	1330		10/5/21	1330
	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
		10/5/21	1330			
	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
		10/5/21	1630	Kathryn Gray	10/05/21	1630

8 COMMENTS: (FOR LAB USE ONLY)

SAMPLE TEMPERATURE UPON RECEIPT 2.0 °C

CHILL PROCESS STARTED PRIOR TO RECEIPT Y OR N

SAMPLE(S) RECEIVED ON ICE Y OR N

SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED Y OR N

DATE AND TIME TAKEN FROM SAMPLE BOTTLE _____

4

MEMORANDUM

DATE November 19, 2021 **Project No.** 21454831

TO Project File
Golder Associates

CC Jeff Ingram

FROM Annie Muehlfarth **EMAIL AMuehlfarth@golder.com**

DATA VALIDATION SUMMARY, VISTRA MNA – NEWTON, SURFACE WATER SAMPLING, DATA PACKAGE EJ00598, INORGANIC

The following is a summary of instances where quality control criteria in the functional guidelines were not met and data qualification was required:

- When a compound was detected in a blank (i.e. method, field), and the blank comparison criterion was not met, associated sample results were qualified as estimates (J) or non-detects (U).
- When duplicate criterion was not met, the associated sample result was qualified as an estimate (J for detects, UJ for non-detects).
- When matrix spike/matrix spike duplicate (MS/MSD) criterion was not met, the associated sample result was qualified as an estimate (J for detects, UJ for non-detects).
- When a compound was detected in a sample result between the MDL and the PQL the results were recorded at the detection value and qualified as estimates (J).

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QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates, Inc
Project Manager: J. Ingram
Project Name: Vistra IL MNA - Newton
Project Number: 21454831
Reviewer: A. Muehlfarth
Validation Date: 11/19/2021

Laboratory: PDC and Pace Analytical National (Radium)
SDG #: EJ00598
Analytical Method (type and no.): Anions (EPA 300.0), Alkalinity (SM 2320B), TDS (SM 2540C), Sulfide (SM 4500 S2 F 2000*), Ferrous and Ferric Iron (SM 3500-Fe D MOD*),
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐ Dissolved and Total Metals (EPA 6020A/EPA 6010B*)
Sample Names N-D-2M, N-A-2D, N-A-2M, N-A-1, N-B-2D, N-B-2M, N-B-1, N-C-2D, N-C-2M, N-F-2M, N-F-1, N-UA-1D, N-UA-1M, N-E-2D, N-E-2M, N-E-1, N-D-1, N-D-2D, N-C-1, N-DUP-1, N-FB-1, N-I-2D, N-I-2M, N-I-1, N-UA-2D, N-UA-2M, N-G-2D, N-G-2M, N-G-1, N-F-2D

NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			10/4/2021 - 10/5/2021
b) Sampling team indicated?	x			EMS/JI/AMM
c) Sample location noted?	x			
d) Sample depth indicated (Soils)?			x	
e) Sample type indicated (grab/composite)?	x			Grab
f) Field QC noted?	x			See notes
g) Field parameters collected (note types)?	x			pH, Spec. Conductivity, turbidity, temperature, DO, ORP
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies:

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	x			
b) Was the COC signed by both field and laboratory personnel?	x			
c) Were samples received in good condition?	x			

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	x			
b) Were hold times met for sample analysis?	x			
c) Were the correct preservatives used?	x			
d) Was the correct method used?	x			
e) Were appropriate reporting limits achieved?	x			
f) Were any sample dilutions noted?	x			See Notes
g) Were any matrix problems noted?	x			See Notes

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	x			See Notes
b) Were analytes detected in the field blank(s)?	x			See Notes
c) Were analytes detected in the equipment blank(s)?			x	
d) Were analytes detected in the trip blank(s)?			x	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	x			
b) Were the proper analytes included in the LCS?	x			
c) Was the LCS accuracy criteria met?	x			

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	x			N-DUP-1 @ N-B-1
b) Were field dup. precision criteria met (note RPD)?		x		See Notes
c) Were lab duplicates analyzed (note original and duplicate samples)?	x			
d) Were lab dup. precision criteria met (note RPD)?		x		

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?			x	
b) Was the %D within control limits?			x	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?		x		See Notes
Recovery could not be calculated since sample contained high concentration of analyte?			x	
b) Was MSD accuracy criteria met?		x		See Notes
Recovery could not be calculated since sample contained high concentration of analyte?			x	
c) Were MS/MSD precision criteria met?		x		See Notes

Comments/Notes:

Dilutions: Sulfate, Ferric Iron, Soluble Metals (excluding lithium), and Total Metals (excluding lithium) were analyzed at a dilution in multiple samples. No qualification was required.

Blanks:

B145055-BLK1: Alkalinity (2.50), associated with samples -01, -02, -05 through -09, -12 through -15, -17, -18, -20, 25, 27, and -30.

Sample results greater than 10x blank result, no qualification necessary.

B145143-BLK1: Alkalinity (2.50), associated with samples -03, -04, -10, -11, -16, -19, -22, -23, -24, -26, -29, -29.

Sample results greater than 10x blank result, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

B145145-BLK1: Alkalinity (2.50), associated with samples -03, -04, -10, -11, -16, -19, -22, -23, -24, -26, -29, -29. Sample results greater than 10x blank result, no qualification necessary.

(MB) R3723020-1: Radium-228 (0.549 +/- 0.219). Associated with samples L1416552-20 through -30. Sample results <10x blank were qualified as an estimate (J).

FB:

N-FB-1 @ N-E-1: Dissolved Sodium (0.12). Associated result is >RL and 10x blank, no qualification necessary.

DUP:

N-DUP-1 @ N-B-1: DUP RPD exceeded limit (20%) for Total Iron (27.0%); Total Nitrate Nitrogen and Radium-228 detected in DUP and non-detect in sample.

The lab analyzed sample duplicates for Radium, TDS,

B144564-DUP2: RPD limit (5%) exceeded by TDS (27%). Associated with sample -20

B144565-DUP1: RPD limit (5%) exceeded by TDS (14%). Associated with sample -22

B144565-DUP2: RPD limit (5%) exceeded by TDS (7%). Associated with sample -23

B145055-DUP1: RPD limit (10%) exceeded by Alkalinity (15%). Associated with sample -01

MS/MSD:

B144698-MS1/B144698-MSD1: MS/MSD % recovery unusable since analyte concentration in sample is >4x spike for Chloride and Sulfate, associated with sample -29. Qualified as an estimate.

B144698-MS2/B144698-MSD2: MS/MSD % recovery unusable since analyte concentration in sample is >4x spike for Chloride and Sulfate, associated with sample -30. Qualified as an estimate.

B145177-MS1/B145177-MSD1: % recovery low and RPD exceeds limit for Ferrous Iron, associated with sample N-F-1. Qualified as an estimate.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
N-B-1	Total Iron	210	J	DUP RPD exceeds limit
"	Total Nitrate Nitrogen	0.03	UJ	Detected in DUP, ND in sample
"	Radium-228	-0.0798 +/- 0.462	UJ	Detected in MB, result <10x blank; Detected in DUP, ND in sample
N-DUP-1	Total Iron	160	J	DUP RPD exceeds limit
"	Total Nitrate Nitrogen	0.04	J	Detected in DUP, ND in sample
"	Radium-228	1.49 +/- 0.509	J	"
N-DUP-1	TDS	170	J	Lab DUP RPD exceeds limit
N-I-2D	"	200	J	"
N-I-2M	"	170	J	"
N-D-2M	Alkalinity	75	J	"
N-G-1	Chloride	9.5	J	MS/MSD % recovery not calculated, result >4x spike
"	Sulfate	39	J	"
N-F-2D	Chloride	9.6	J	"
"	Sulfate	40	J	"
"	Radium-228	0.378 +/- 0.305	J	Detected in MB, result <10x blank
N-I-2D	"	0.582 +/- 0.345	J	"
N-UA-2D	"	0.292 +/- 0.322	J	"
N-UA-2M	"	1.14 +/- 0.319	J	"
N-G-2D	"	1.69 +/- 0.383	J	"
N-G-1	"	0.282 +/- 0.311	J	"
N-F-1	Ferrous Iron	0.21	UJ	Non-detect, MS/MSD % recovery and RPD outside control limits

Signature: Ann Muehlforth Date: 11/19/2021

MEMORANDUM

DATE November 19, 2021 **Project No.** 21454831

TO Project File
Golder Associates

CC Jeff Ingram

FROM Annie Muehlfarth **EMAIL AMuehlfarth@golder.com**

DATA VALIDATION SUMMARY, VISTRA MNA – NEWTON, SURFACE WATER SAMPLING, DATA PACKAGE EJ00598, ORGANIC

The following is a summary of instances where quality control criteria in the functional guidelines were not met and data qualification was required:

- None.

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QA LEVEL II - ORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates, Inc
Project Manager: J. Ingram
Project Name: Vistra IL MNA - Newton
Project Number: 21454831
Reviewer: A. Muehlfarth
Validation Date: 11/1/2021

Laboratory: PDC
SDG #: EJ00598
Analytical Method (type and no.): Total Organic Carbon (SM 5310C 2000)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐
Sample Names N-D-2M, N-A-2D, N-A-2M, N-A-1, N-B-2D, N-B-2M, N-B-1, N-C-2D, N-C-2M, N-F-2M, N-F-1, N-UA-1D, N-UA-1M, N-E-2D, N-E-2M, N-E-1, N-D-1, N-D-2D, N-C-1, N-DUP-1, N-FB-1, N-I-2D, N-I-2M, N-I-1, N-UA-2D, N-UA-2M, N-G-2D, N-G-2M, N-G-1, N-F-2D

NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	☒	☐	☐	10/4/2021 - 10/5/2021
b) Sampling team indicated?	☒	☐	☐	EMS/JI/AMM
c) Sample location noted?	☒	☐	☐	
d) Sample depth indicated (Soils)?	☐	☐	☒	
e) Sample type indicated (grab/composite)?	☒	☐	☐	Grab
f) Field QC noted?	☒	☐	☐	See notes
g) Field parameters collected (note types)?	☒	☐	☐	pH, Spec. Conductivity, turbidity, temperature, DO, ORP
h) Field Calibration within control limits?	☒	☐	☐	
i) Notations of unacceptable field conditions/performances from field logs or field notes?	☐	☒	☐	
j) Does the laboratory narrative indicate deficiencies?	☐	☐	☒	

Note Deficiencies:

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	☒	☐	☐	
b) Was the COC signed by both field and laboratory personnel?	☒	☐	☐	
c) Were samples received in good condition?	☒	☐	☐	

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	☒	☐	☐	
b) Were hold times met for sample analysis?	☒	☐	☐	
c) Were the correct preservatives used?	☒	☐	☐	
d) Was the correct method used?	☒	☐	☐	
e) Were appropriate reporting limits achieved?	☒	☐	☐	
f) Were any sample dilutions noted?	☐	☒	☐	
g) Were any matrix problems noted?	☒	☐	☐	See Notes

QA LEVEL II - ORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	☐	☒	☐	
b) Were analytes detected in the field blank(s)?	☐	☒	☐	N-FB-1 @ N-E-1
c) Were analytes detected in the equipment blank(s)?	☐	☐	☒	
d) Were analytes detected in the trip blank(s)?	☐	☐	☒	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	☐	☒	☐	No LCS analyzed for TOC
b) Were the proper compounds included in the LCS?	☐	☐	☒	
c) Was the LCS accuracy criteria met?	☐	☐	☒	

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	☒	☐	☐	N-DUP-1 @ N-B-1
b) Were field dup. precision criteria met (note RPD)?	☒	☐	☐	Max RPD: 3.6% [<20%]
c) Were lab duplicates analyzed (note original and duplicate samples)?	☐	☐	☒	
d) Were lab dup. precision criteria met (note RPD)?	☐	☐	☒	

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, compounds included and concentrations)?	☐	☐	☒	
b) Was the %D within control limits?	☐	☐	☒	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	☒	☐	☐	
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☒	
b) Was MSD accuracy criteria met?	☐	☒	☐	See Notes
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☒	
c) Were MS/MSD precision criteria met?	☒	☐	☐	

Surrogate Spikes	YES	NO	NA	COMMENTS
a) Were surrogate recoveries within control limits?	☐	☐	☒	
b) Were surrogate recoveries not calculated due to dilutions?	☐	☐	☒	

Comments/Notes:

MS/MSD:

B144948-MSD2: MSD % recovery exceeds control limits. Associated with sample N-G-1. Only 1 QC indicator outside control limits, no qualification necessary.

QA LEVEL II - ORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason

Signature: Ann Muehlfarth

Date: 11/1/2021

APPENDIX C
Geochemical Conceptual Site Model

Intended for
Illinois Power Generating Company

Date
April 3, 2024

Project No.
1940103584-008

GEOCHEMICAL CONCEPTUAL SITE MODEL

NEWTON PRIMARY ASH POND

NEWTON POWER PLANT

NEWTON, ILLINOIS

RAMBOLL Bright ideas. Sustainable change.

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ATTACHMENTS

Attachment 1. Golder Sampling Technical Memorandum
Attachment 2. Eurofins Sequential Extraction Laboratory Report
Attachment 3. SGS Sequential Extraction Laboratory Report
Attachment 4. SGS X-Ray Diffraction (XRD) Laboratory Report
Attachment 5. SGS X-Ray Fluorescence (XRF) Laboratory Report
Attachment 6. SGS TESCAN Integrated Mineral Analysis (TIMA) Laboratory Report
Attachment 7. SGS Electron Microprobe Analysis (EMPA) and Laser Ablation-Inductively Coupled Plasma-Mass Spectrometry (LA-ICP-MS) Lab Report
Attachment 8. Aqueous Data
Attachment 9. Principal Components Analysis (PCA) Input Data
Attachment 10. Laboratory Treatability Study Report

ACRONYMS AND ABBREVIATIONS

35 I.A.C.	Title 35 of the Illinois Administrative Code
CCR	Coal combustion residuals
CEC	Cation exchange capacity
ft bgs	Feet below ground surface
KD	Linear sorption coefficient
KL	Langmuir sorption coefficient
LOI	Loss on ignition
N&E	Nature and extent
NPP	Newton Power Plant
ORP	Oxidation reduction potential
PAP	Primary Ash Pond
PC	Principal component
PCA	Principal components analysis
Redox	Reduction-oxidation
SEP	Sequential extraction procedure
TDS	Total dissolved solids
UA	Uppermost aquifer
UD/PMP	Upper drift/potential migration pathway
XRD	X-ray diffraction
XRF	X-ray fluorescence

1. EXECUTIVE SUMMARY

This report documents the geochemical conceptual site model GCSM describing the conditions of the groundwater in the vicinity of Newton Power Plant (NPP) Primary Ash Pond (PAP). A GCSM describes the geochemical processes that contribute to the mobilization, distribution, and attenuation of chemicals in the environment. This report describes the GCSM for parameters that have exceeded the GWPS in PAP groundwater and which will be addressed in the corrective action plan. The exceedances observed at the PAP were sulfate, total dissolved solids (TDS), and lithium.

Groundwater was monitored in two hydrostratigraphic units: the shallow upper drift/potential migration pathway (UD/PMP) and the deeper uppermost aquifer (UA). The uppermost aquifer is shallowest (*i.e.*, in closest proximity to the upper drift/primary migration pathway) on the east side of the PAP. Groundwater in the UD/PMP and eastern UA wells tend to be geochemically similar: groundwater from these locations tends to be more oxidizing, exhibit lower pH, and have a cation signature dominated by calcium and magnesium. Groundwater in the rest of the UA tends to be more reducing (exhibiting higher dissolved iron concentrations), have higher pH, and have a greater contribution of sodium and potassium to the cation signature. These results suggest some degree of hydraulic connection between the UD/PMP and UA east of the PAP.

Sulfate is the major contributor to TDS in the PAP groundwater. Therefore, processes that control sulfate concentrations also control TDS. Elevated sulfate concentrations were observed in shallow groundwater wells (screened in the upper drift/primary migration pathway) and uppermost aquifer wells located east of the PMP. Sulfate in CCR porewater and the UD/PMP groundwater is correlated with sodium, indicating that dissolution of sodium sulfate from the CCR material is the primary source of sulfate to the CCR porewater. Sulfate exceedances in the UA, which occur exclusively on the east side of the PAP, are consistent with water migration from the UD/PMP. Potential sulfate attenuation mechanisms at the NPP PAP include sorption to solid-phase iron oxides. Based on results from laboratory batch testing, sulfate sorption may be more likely in the UA.

Lithium concentrations in groundwater are highest in UD/PMP and eastern UA groundwater. Although lithium was identified in solid samples located both upgradient and downgradient of the PAP, the similar distributions of lithium and sulfate suggest that CCR porewater is the primary source of lithium to the groundwater. The difference in groundwater lithium concentrations may be due to variability in porewater concentration or in attenuation to aquifer solids. Lithium in groundwater may be attenuated by sorption to exchangeable sites (readily reversible) or incorporation in clay mineral matrices (poorly reversible). According to results from laboratory batch testing, lithium may sorb to both UA/PMP and UA solids.

2. INTRODUCTION

This report documents the GCSM describing the conditions of the groundwater in the vicinity of NPP PAP. This GCSM serves as an attachment to thee NPP PAP Nature and Extent Report (NPP PAP N&E Report) and describes the chemical processes that contribute to the mobilization, distribution, and potential attenuation mechanisms of parameters that exceed the GWPS in PAP groundwater (*i.e.*, the nature of the exceedance parameters). Exceedances in PAP monitoring network wells were submitted to the Illinois Environmental Protection Agency (IEPA) in accordance with Illinois Administrative Code (I.A.C) Title 35 § 845 (35 I.A.C. § 845) for the second, third, and fourth quarters of 2023 (Ramboll, 2023, 2024a, b).The exceedances observed at the PAP were sulfate and total dissolved solids (TDS) at monitoring wells APW02, APW04, APW05S, and APW10 and lithium at monitoring well APW02. Wells APW02, APW04, and APW05 are screened in the upper drift/potential migration pathway (UD/PMP) and well APW10 is screened in the uppermost aquifer (UA).

2.1 Site Overview

A detailed overview of the site history, geology, and hydrogeology is presented in (NPP PAP N&E Report). Briefly, the NPP is located in Jasper County in the southeastern part of central Illinois, approximately seven miles southwest of the town of Newton. The PAP is located south of the NPP and surrounded by Newton Lake to the south, east, and west (**Figure 2-1**). Beyond the lake is agricultural land. The PAP is an unlined coal combustion residual (CCR) surface impoundment constructed in 1977 and used to manage CCR and non-CCR waste streams at the NPP. The PAP is known to contain bottom ash and fly ash derived from Illinois (pre-1997) and Powder River Basin (post-1997) coals.

There are six hydrostratigraphic units in the vicinity of the PAP: CCR, the UD/PMP, the upper confining unit, the UA, the lower confining unit, and the bedrock unit (from shallowest to deepest). The UD/PMP is composed of low permeability clays and silts of the Peoria Silt and Sangamon Soil with discontinuous sand and sandy clay lenses of the Hagarstown Member. The UA is a continuous zone of moderate permeability comprising poorly graded sand, silty sand, clayey sand, and gravel of the Mulberry Grove Formation. The UA is shallowest east of the PAP and deeper west of the PAP. Background and compliance monitoring well locations (per the Groundwater Monitoring Plan for the PAP; Ramboll, 2021) and the fourth quarter 2023 (Q4 2023) UA groundwater contours are shown on **Figure 2-1**. Groundwater flow in the UA is generally north to south beneath the center of the PAP (from APW05/APW06 toward APW09/APW15). Beneath the western portion of the PAP, flow is west to southwest converging towards a former surface drainage feature located west of the PAP and an area where the uppermost aquifer is lowest in elevation and has the highest hydraulic conductivity. Beneath the eastern portion of the PAP groundwater flows east to southeast (from APW05 toward APW11-APW14). The groundwater elevation within the PAP is greater than the groundwater elevation in the UD/PMP, indicating that there may be radial flow away from the unit within the UD/PMP.

2.2 Constituent Transport and Fate

Sulfate is the primary form of oxidized sulfur (S(VI)) in the environment and is a divalent oxyanion at pH values greater than 2 SU (Stumm and Morgan 1996). Sulfate in groundwater may sorb onto positively charged sites on solid metal oxide phases, most commonly iron and manganese oxides (Brown et al., 1999). The extent and strength of sulfate sorption to metal

oxide surfaces depends on pH, ionic strength, and oxide surface area available for sorption. Sulfate can also form insoluble complexes such as barite (BaSO4) (Nation Center for Biotechnology Information (NCBI), n.d.). Sulfate in groundwater may be reduced to elemental sulfur (S(0)) or sulfide (S(-II)) under sufficiently reducing conditions, a process governed by local microbial communities(Stumm and Morgan, 1996). Generally, reduced sulfur is less mobile in groundwater than sulfate. Reduced sulfur readily precipitates as metal sulfides and sorbs to solid phases (such as iron and manganese oxides; Stumm and Morgan, 1996).

TDS represents the mass of dissolved material in the water rather than a specific chemical constituent. Individual constituent contributions to TDS depend on both the concentration and molar mass of each contributor. Typically, major ions (*i.e.*, calcium, sodium, magnesium, potassium, chloride, sulfate, and carbonate species) represent the primary contributors to TDS. Therefore, source and sink terms that affect the primary contributors to TDS, such as sulfate, will ultimately have the greatest effect on TDS concentrations.

Lithium is a monovalent cation in the same periodic table group as sodium and potassium but has a smaller ionic radius. Lithium can sorb to exchangeable sites on metal oxides and clay minerals (Steinhoefel et al., 2021) but tends to be displaced by other cations during ion exchange. However, lithium sorbed to clays may be incorporated deeper into the mineral matrix for more permanent immobilization, a process which drives lithium fractionation in the environment (Li and Liu, 2020; Steinhoefel et al., 2021).

3. SOLIDS CHARACTERIZATION

3.1 Methods

Attachment 1 details CCR and aquifer solid boring locations and collection methodology. Both CCR and aquifer solid borings were located adjacent to monitoring wells at depth corresponding to screened intervals. **Table 3-1** summarizes boring identifiers and collection depths per **Attachment 1**; adjacent groundwater monitoring well names, used in this section to refer to the solid phase samples for easier comparison with groundwater results; and methods of analysis. Aquifer solids collected adjacent to APW05 represent upgradient (*i.e.*, background) conditions in the UA. The UD and PMP are discussed together because they are screened at similar depths and only one sample location represents the PMP (APW05S). The UD/PMP does not have background samples due to the hydraulic gradients between the pond and the UD/PMP.

Bulk solids characterization included cation exchange capacity (CEC), loss on ignition (LOI), X-ray fluorescence (XRF), and total metals. The CEC of a solid phase represents the negative surface charge, and therefore the potential to sorb cations such as lithium. Clays and organic matter in aquifer materials typically carry a negative surface charge and therefore tend to enhance cation exchange capacity. LOI represents the combustible portion of a solid material and is often an approximation of organic matter in a sample. Therefore, it may be inferred that organic matter (as quantified by LOI) is a major contributor to CEC if CEC and LOI are directly correlated in solid phase materials. XRF analysis is a test that measures the fluorescent x-rays emitted from a solid sample excited by a primary x-ray source to quantify the relative proportions of major elements in a sample. Results from XRF analysis are reported as oxides due to the borate fusion preparation method used.

Sequential extraction procedure (SEP) is an analytical method that uses progressively stronger reagents to dissolve solid phase fractions and measures the metal content associated with each fraction. The natures of the solid-phase fractions are functionally defined by the reagents used in each dissolution step and should therefore not be considered definitive characterizations.

Metals in aquifer solids samples were analyzed by SEP by Eurofins in 2021 and by SGS in 2023. The two labs used different methods for the SEP analysis: Eurofins used a seven-step procedure while SGS used a six-step procedure (**Attachment 2** and **Attachment 3** respectively for details). The extractions performed for the two test methods generally target a similar set of soil fractions, though variations in extraction conditions and reagents (**Table 3-2**) may lead to differences in absolute values. It is therefore helpful to define nomenclature to discuss results based on the target fractions. In the Eurofins 2021 seven-step procedure, step three ("Non-Crystalline Materials") represents, in part, non-crystalline iron and manganese oxides, while step four ("Metal Hydroxides") encompasses more crystalline iron and manganese oxides. In the SGS 2023 six-step procedure, the iron and manganese oxides (implicitly both non-crystalline and crystalline) are represented by a single "Fe and Mn Oxides" fraction (step four). In the following discussion, "metal oxides" is used to describe Eurofins steps three and four and SGS step four results across analyses. In the Eurofins 2021 seven-step procedure, the most recalcitrant (*i.e.,* resistant to mobilization) fractions are extracted separately as "Acid/Sulfides" (step six, extracted by aqua regia) and "Residual" (step seven, extracted by mixed acids including HF), whereas in the SGS 2023 six-step procedure the "Residual" (step six, extracted by mixed acids including HF) fraction will encompass all of the recalcitrant material. Therefore, "recalcitrant" is used to

describe Eurofins steps six and seven and SGS step six results across analyses. Differences in results between the two methods may also be due to sample heterogeneity as different depths may have been analyzed for the same location and hydrostratigraphic unit (summarized in **Table 3-1**). The percent contribution of each fraction was calculated by summing the results of fractions one through seven (excluding non-detect values) and dividing each detected result by that sum.

Mineralogy was determined using x-ray diffraction (XRD), TESCAN integrated mineral analysis (TIMA), and electron microprobe analysis (EMPA) with laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS). Identifying mineral phases aids in understanding attenuation mechanisms and aquifer capacity. XRD quantifies the relative proportion of crystalline mineral phases by comparing the x-ray diffraction patterns observed in a sample to those of known compounds in a reference database. TIMA identifies mineral phases using a combination of energy dispersive X-ray silicon drift detectors and backscattered electron and secondary electron detectors. EMPA analyzes the chemical composition of selected minerals (in this case, clays and micas). LA-ICP-MA is combined with EMPA to determine the lithium content of the clays and micas characterized by EMPA.

3.2 CCR

The SEP results for lithium, iron, and manganese in CCR materials are shown in **Figure 3-1** and tabulated in **Table 3-3**. Iron and manganese oxides and hydroxides tend to coat soil particles and carry a surface charge that vary based on pH. Iron and manganese oxides and hydroxides therefore represent possible sorption sites for many ions, including lithium and sulfate. There is considerable heterogeneity in lithium, iron, and manganese concentrations and dominant SEP fractions between the two sampling locations.

Results of XRD characterization of CCR solids are summarized in **Table 3-4** (lab report in **Attachment 4**). The material from XPW01 was primarily quartz with other major contributions from albite (a sodium-rich feldspar), microcline (a potassium-rich feldspar), and muscovite (a mica). In contrast, the material from XPW04 contained a lower proportion of quartz and had at least 8% contribution each from albite, calcite (calcium carbonate), diopside, perovskite, and gehlenite. Perovskite, gehlenite, and many of the trace (<5% abundance) minerals found in XPW04 (periclase, hematite, magnetite, mullite, and ganophyllite) were not detected in XPW01.

The SEP and XRD characterization of these two CCR samples suggest considerable variability in the chemical composition of the CCR stored in the PAP. Additionally, the differences in SEP fractions and minerals suggest differences in chemical mobility between the two samples. The ash composition and the local geochemical environment will control porewater composition within the unit.

3.3 Aquifer Solids

3.3.1 Bulk Characterization

Figure 3-2 shows the CEC and LOI results for solid samples from the aquifer solids. The UD and PMP samples typically had a higher CEC and lower LOI (suggesting lower organic content) relative to the UA samples. This suggests that the greater CEC of the UD and PMP samples is not related to greater organic matter content and may instead be due to clay mineral components.

3.3.2 Metals

Figure 3-3 shows the concentrations of iron, manganese, and lithium in each SEP fraction as well as the proportion each fraction represents out of the summed SEP results for samples analyzed in 2021 (**Figure 3-3a**) and 2023 (**Figure 3-3b**) (results tabulated in **Table 3-3**). Summed iron in the 2021 UD/PMP results was lowest in APW05S and highest in APW02. In 2023 analyses, summed SEP iron was lowest in APW05S and highest in APW04. APW05S may have the lowest concentrations of iron due to a smaller surface area of sandier PMP material. In both analyses, over 50% of the total iron was in the recalcitrant fractions followed by presence in the metal oxide fractions. The 2021 results indicate that in the UD/PMP, iron was not abundant in the non-crystalline material (<3% of iron). Summed SEP iron concentrations in the UA were similar to UD/PMP concentrations, and downgradient concentrations were not consistently different from the background location. Similar to in the UD/PMP, iron in UA samples in both the 2021 and 2023 analyses was most abundant in the recalcitrant fractions followed by the metal oxide fractions. Results from the 2021 samples indicate that iron in UA samples is present in more equal proportion between the non-crystalline material and metal hydroxide fractions in the UA relative to the UD/PMP. The exception to this is the sample from APW10, which has a distribution more similar to UD/PMP wells. Non-crystalline iron hydroxides tend to have a greater capacity to sorb ions compared to more crystalline phases (Trivedi & Axe, 2001). These results suggest that despite similar concentrations of iron in the combined non-crystalline material and metal hydroxide fractions in the UD/PMP and UA, solid-phase iron in many UA locations may have greater capacity for sorbing ions.

Summed SEP manganese concentrations in the UD/PMP were lowest in APW05S and highest in APW04 in both 2021 and 2023 results. Similar to iron, APW05S may have the lowest concentrations of manganese due to a smaller surface area of sandier PMP material. Summed SEP manganese concentrations at downgradient UA locations were not consistently different from the background location. The 2021 analysis of UD/PMP and UA samples shows manganese distributed throughout the carbonate, non-crystalline material, metal hydroxide, and recalcitrant fractions, whereas the 2023 analysis showed the majority of the manganese in the carbonate fraction in both UA and UD/PMP samples. The 2021 analysis shows that the proportion of manganese in the non-crystalline material in UA samples tended to be lower relative to the UD/PMP, potentially indicating greater manganese oxide crystallinity in the UA compared to the UD/PMP. These results indicate that manganese is predominantly in reactive, rather than recalcitrant, in UD/PMP and UA aquifer solids.

Summed SEP results for lithium are slightly higher in the UD/PMP relative to the UA in both 2021 and 2023 analyses. Summed SEP lithium concentrations at UA compliance locations were not consistently different from the background location. Results from 2021 SEP analysis indicate that lithium is predominantly in the recalcitrant fractions and organic fraction with a small proportion in the metal hydroxide fraction in both the UD/PMP and UA. Results from 2023 suggest that lithium is predominantly in the recalcitrant fractions with a some in the Fe Mn oxide fraction and even less in the organic, carbonate, and exchangeable fractions in both UD/PMP and UA samples. This discrepancy in organic phase results may be due to the difference in reagents used (see **Section 3.1**). The higher lithium concentrations in the UD/PMP relative to the UA are largely due to a higher concentration measured in the recalcitrant fractions.

In general, these results indicate that lithium is strongly associated with recalcitrant solid-phase fractions (rather than weakly bound in the water soluble or exchangeable fractions). The

presence of lithium in the recalcitrant fraction of the background location indicates some naturally occurring lithium within the aquifer. However, aqueous lithium in groundwater may contribute to the lithium found in the metal oxide fractions by co-precipitation or sorption and/or to the recalcitrant fractions by sorption to clays and incorporation into the clay matrix (Steinhoefel, et al., 2021).

Aquifer solid contents were also analyzed by X-ray fluorescence (XRF) (**Attachment 5**). XRF analyses determine the percent by weight of individual elements (reported as their oxides due to the analytical method) based on their electron properties. Unlike in XRD, the XRF results are not normalized to 100%, so some proportion of the mass remains uncharacterized. **Figure 3-4** shows XRF results for the 2023 solids samples (the 2021 samples were not analyzed by XRF; **Table 3-1**). The dominant element in the XRF analysis was silicon, a major component of quartz (omitted from **Figure 3-4** due to scale). The next most prevalent species was aluminum, the other major component of aluminosilicate minerals. Calcium and magnesium, the central species in many carbonate minerals, were also abundant in all samples with the exception of APW05S. Iron was also relatively abundant in the XRF analysis, consistent with SEP results.

3.3.3 Mineralogical Analysis

The mineralogical composition of UD/PMP and UA solid phase samples was characterized by XRD (**Attachment 4**) and TESCAN integrated mineral analysis (TIMA) (**Attachment 6**). **Figure 3-5** shows the XRD results for the 2021 and 2023 samples (tabulated with mineral formulas in **Table 3-4**). XRD results are normalized to 100% of the total weight, meaning that material not characterized by XRD is ignored in the percent calculation. The dominant crystalline mineral contributor to solids in the UD and UA is quartz, which is omitted from **Figure 3-5** due to scale. In most samples, the next most abundant mineral phases were the carbonate minerals dolomite ($CaMg(CO_3)_2$) and calcite ($CaCO_3$). This finding is consistent with the abundance of manganese associated with the carbonate fraction in the SEP analysis. The one notable exception to the general abundance of carbonate minerals is the 2023 sample of APW05S, which had minimal carbonate minerals detected in the 2023 sample. This is consistent with the low contributions of calcium and magnesium in the XRF results measured on a sample from the same depth range, 10 to 16.6 feet below ground surface (ft bgs). In contrast, the 2021 XRD analysis for APW05S (collected from 18-20 ft bgs; **Table 3-1**) showed more abundant carbonate minerals. This difference in results at APW-05S indicates variability in aquifer solid composition within the PMP at this location. Muscovite, a phyllosilicate clay mineral, is more prevalent in most UD/PMP samples relative to UA samples. Other mineral phases detected include tectosilicate minerals (albite, orthoclase, and microcline); other phyllosilicate minerals (biotite and chlorite); inosilicate minerals (diopside and actinolite); ankerite (a carbonate mineral with varying proportions of calcium, magnesium, iron, and manganese as cations); and fluorapatite (a phosphate mineral). These minerals do not show substantial variability between UD/PMP and UA samples. Montmorillonite was detected only in the 2023 APW05S sample. The UA compliance samples did now show consistent variability relative to the background sample results.

Three UD/PMP samples were analyzed by TIMA (**Figure 3-5**). These samples represented the same depth ranges as those analyzed by XRD in 2023 (**Table 3-1**). The dominant mineral phase in all samples was quartz (omitted from **Figure 3-5** due to scale). Mixed clays/micas represented the next most abundant phase at APW04 and APW05S and had notably lower contributions to APW02. Plagioclase minerals (the mineral family to which albite, which was identified in XRD analysis, belongs) were prevalent in all three samples. Calcite and dolomite were also prevalent

phases samples from APW02 and APW04 but not in APW05S, consistent with the 2023 XRD results for carbonate minerals.

Figure 3-6 shows the results of the EMPA and LA-ICP-MS analysis. Data for EMPA is reported as a mass percent for the simple oxide of each element (**Attachment 7**). For Figure 3-6, mass percent was converted to the moles of each element and the mole fraction was obtained by normalizing to total moles of all elements. Using mole fraction rather than mass percent allows for a direct comparison of the abundance of each element independent of their weight. EMPA analysis identified that the composition of mixed clays/micas is predominantly silicon and aluminum followed by either calcium (APW02) or iron (APW04 and APW05S) (**Figure 3-6**). Concentrations of lithium in mixed clays/micas were between 53.3 mg/kg and 93.3 mg/kg, which are higher than concentrations observed in the total soil analyzed by SEP. This suggests that lithium is at higher concentrations in mixed clays/micas than in other mineral phases.

4. AQUEOUS CHARACTERIZATION

The PAP porewater and groundwater data discussed in this section are summarized in **Table 4-1** and tabulated in full in **Attachment 8**. Over time, different parameters have been collected at different frequencies at various wells due to the regulatory history of the unit. Wells in this discussion are grouped by the hydrostratigraphic unit in which they are screened (CCR porewater, UA, or UD/PMP) and by their classification in the monitoring network (background [B] or compliance [C]). Background wells are only screened in the UA (APW05 and APW06); upgradient UD/PMP locations are not available due to the hydraulic gradients present around the unit (NPP PAP N&E Report). Porewater is evaluated as a mobile source endmember representing conditions within the unit since collection began in 2021 (**Table 4-1**).

4.1 Exceedance Parameters and CCR Tracers

Figure 4-1 shows boxplots of boron, sulfate, and lithium data collected since 2015 from porewater, background groundwater, and compliance groundwater. Boron and sulfate are commonly used CCR tracers, and sulfate and lithium are the exceedance parameters of interest at the PAP because TDS includes sulfate concentrations. Boron is higher in all CCR porewater wells relative to groundwater and is highest in XPW01. With the exception of UD well APW03, boron concentrations in compliance groundwater are within the range of background boron concentrations. Compliance wells with the highest sulfate concentrations are UD/PMP wells and UA wells located east of the PAP where the UA is closest to the ground surface (APW10, APW11, APW13, and APW14). These eastern UA wells represent the extent of elevated sulfate in the UA and are referred to as a group throughout this discussion. Sulfate concentrations at other UA wells were largely consistent with background. Lithium was highest in porewater location XPW01 and UD well APW02. Lithium concentrations were generally higher in the UD and in eastern UA wells compared to background and other UA compliance wells.

4.2 Redox/pH Summary

The reduction-oxidation (redox) potential and pH of water are major controls on the speciation of redox-active chemicals such as iron, manganese, and sulfate. The redox potential of a solution is often measured in the field as the oxidation-reduction potential (ORP). ORP measurements represent the average electrical potential of all chemical species an aqueous solution. Eh is the measure of redox potential based on the standard hydrogen electrode and is calculated by converting an ORP measurement using an equation appropriate to the type of electrode used in the ORP sensor (typically silver/silver chloride or calomel). All Eh values presented here were converted from ORP measurements based on the guidance[1] provided by the field meter manufacturer (Horiba).

Figure 4-2 summarizes all available[2] measurements of Eh and pH in boxplots. CCR porewater tends to have more reducing and more basic conditions relative to groundwater wells. Wells in the UD tend to have more oxidizing conditions relative to wells in the UA (including UA background) with the exception of APW10, which has the most oxidizing groundwater in the UA and is comparable to conditions in the UD/PMP. Other UA compliance wells have Eh potentials

[1] https://static.horiba.com/fileadmin/Horiba/Products/Process_and_Environmental/Water_Pollution/Instruction_Manuals/U-50/U-50_Manual.pdf
[2] Data from 2023 Q1 excluded due to a malfunctioning ORP meter.

consistent with background. Wells in the UD/PMP tend to have lower pH relative to UA wells, and UA compliance wells have pH values consistent with background locations.

4.2.1 Pourbaix Diagram

Pourbaix diagrams show the predicted speciation of a constituent across pH values and redox potentials at thermodynamic equilibrium. **Figure 4-3** shows the median of the three most recent groundwater samples (Q2, Q3, and Q4 of 2024) plotted on the Pourbaix diagrams for manganese and iron species. Iron and manganese oxides and hydroxides tend to coat soil particles and carry a surface charge that varies based on pH. Iron and manganese oxides and hydroxides therefore represent possible sorption sites for many ions, including lithium and sulfate. The median metal concentrations (below), groundwater temperature (17 degrees Celsius), and bicarbonate alkalinity concentration (504 mg/L) were used to generate the aqueous and mineral equilibrium phases present on the diagram. Using median results as inputs allows for an evaluation of the prevailing conditions in the groundwater; however, speciation predictions for individual sample points are approximate.

The median dissolved manganese concentration in groundwater (0.083 mg/L) was used in the manganese Pourbaix diagram (**Figure 4-3a**). Manganese oxides (represented by birnessite, a common manganese oxide in soils) are not expected to be stable at any of the Eh and pH values observed in the porewater and groundwater. At lower pH values, manganese is expected to exist as the reduced divalent cation (Mn^{++}). At higher pH values representative of background and UA groundwater conditions, samples plot closer to rhodochrosite ($MnCO_3$) stability. The pH at which rhodochrosite is expected to form depends on the alkalinity. In general, rhodochrosite is closer to saturation in UA samples relative to UD/PMP samples. Although rhodochrosite was not observed in the XRD or TIMA analysis, manganese was associated with the carbonate phase in the SEP analysis and reduced manganese may substitute as a cation in carbonate minerals.

The median dissolved iron concentration in groundwater (1.3 mg/L) was used in the iron Pourbaix diagram (**Figure 4-3b**). Crystalline iron oxide phases (hematite, magnetite, and goethite) are suppressed because these phases were not detected in XRD or TIMA samples. Amorphous solid-phase iron hydroxides ($Fe(OH)_3$(ppd)) are expected to be generally stable at UD/PMP locations and at UA well APW10. The pH and redox signatures of other UA groundwaters approaches the line of equilibrium between iron oxides, dissolved ferrous iron (Fe^{++}), and siderite. Although siderite was not observed in the XRD or TIMA analysis, ankerite with a composition of $CaFe(CO_3)_2$ was detected in XRD and a small amount of iron was associated with the carbonate phase in the SEP analysis. Therefore, a mixed cation carbonate phase may host iron. The position of the UA samples relatively close to the intersection of $Fe(OH)_3$(ppd), ferrous iron, and an iron carbonate suggest that equilibrium reactions between these phases may occur in the groundwater.

4.2.2 Manganese and Iron Concentrations

Figure 4-4 presents boxplots summarizing dissolved ferrous iron, dissolved iron, and dissolved manganese concentrations in groundwater and porewater. Aqueous manganese concentrations are lowest in the porewater, and the median concentration of manganese is higher in the UD/PMP than the UA. The highest UA manganese concentrations were in the eastern UA wells. Dissolved ferrous iron (measured on filtered samples in the field using a colorimetric kit with a range of 0 to 6 mg/L and photometer) and dissolved iron concentrations were highest in both background and downgradient UA samples. APW10 was a low outlier in dissolved iron concentrations in the UA,

which is consistent with the more oxidizing conditions at this well contributing to $Fe(OH)_3$ stability. The UD/PMP groundwater samples had the highest frequency of dissolved ferrous iron and dissolved total iron below the detection limits but had lower median and maximum concentration than in CCR porewater.

Median dissolved manganese and dissolved iron concentrations for each well are shown in **Figure 4-5** with respect to longitude (x axis) and depth below ground surface (y axis), with all wells projected onto the same plane. Dissolved manganese is higher in UD/PMP and shallow eastern UA wells, whereas dissolved iron concentrations are higher in UA wells (with the exception of APW10, which is a low outlier as discussed earlier) relative to UD/PMP wells. Dissolution of manganese-containing carbonate minerals due to lower pH may be the source of elevated manganese in UD/PMP and eastern UA wells. Based on the dissolved iron concentrations and the Pourbaix diagram (**Figure 4-3b**), conditions in the UD/PMP and APW10 groundwater are insufficiently reducing to cause substantial iron reduction, whereas the rest of the UA groundwater is more likely to be iron reducing.

4.3 Major Ion Distribution/Signature

The major ion signature of the porewater and groundwater can be visualized using a Piper diagram. A piper diagram of the three most recent sampling events for each sampling location is shown in **Figure 4-6**. Porewater is consistently characterized by a higher proportion (>65%) of monovalent cations (*i.e.*, Na^+ and K^+) relative to divalent cations (*i.e.*, Ca^{2+} and Mg^{2+}), with monovalent cation contributions at porewater locations XPW01 and XPW04 consistently greater than 95%. Porewater locations show considerable heterogeneity in anion composition by location. Porewater location XPW03 has a relatively even proportion of carbonate species (i.e., HCO_3^- and CO_3^{-2}) versus sulfate and chloride, while XPW04 has over 95% contribution from sulfate and chloride.

Background groundwater at the site has roughly equivalent proportions of monovalent and divalent cations and is dominated by carbonate species over sulfate and chloride. Groundwater in the UD/PMP has a predominantly divalent cation signature and a wide range of anion signatures (from 88% carbonate species at APW03 to 84% sulfate and chloride at APW02). Groundwater in the UA varies from a similar signature as background to having a more prevalent divalent cation signature similar to the UD/PMP, with APW10 representing this extreme in the UA wells.

4.4 Statistical Analyses Supporting Source/Sink Terms

4.4.1 Multivariate Analysis

Groundwater data is frequently defined by many chemical parameters and may therefore be described statistically as "multivariate". Principal components analysis (PCA) is a common multivariate statistical approach that simplifies multivariate data by combining those variables into a smaller number of new variables called principal components. This is possible because in multivariate data sets, there is often some correlation between variables. These correlations represent "redundant" information that may be mathematically removed by PCA. The principal components (PCs) represent linear combinations of the original data which maximize the variance between the samples, and which are uncorrelated with one another. The PCs explain some proportion of the variance in the data, with a robust PCA analysis usually explaining at least 50% of the variance in the first two PCs. PCA thereby allows patterns in the data to be more easily recognized and correlations between input variables to be assessed. The goal of this PCA was to

characterize chemical composition similarities and differences between porewater and groundwater.

The PCA analysis included samples collected since the beginning of 2021 through fourth quarter of 2023 to represent the most recent site conditions. Samples with a turbidity greater than 50 nephelometric turbidity units (NTU) were excluded from the analysis to mitigate the confounding influence of suspended solids. Geochemical parameters were excluded from PCA when greater than 50% of the measurements were either missing or below detectable limits. Individual samples were excluded for those samples missing greater than 50% of measured parameters. Any measurements that were below the reporting limit were assumed to be half the reporting limit. Results for pH were converted to milligrams per liter (mg/L) H^+ ion for consistency with other analytes. Any missing values were imputed (*i.e.,* interpolated based on the available data) using the nearest neighbor method. The final data set (**Attachment 9**) contained 2,352 parameter measurements (145 of which were imputed) from 147 individual groundwater samples at 22 wells in the vicinity of the PAP (four porewater wells, two background wells, and 16 compliance wells). All data were log transformed, scaled, and centered so that parameters with larger concentrations did not have disproportionate influence on the results.

The results of PCA can be understood by evaluating how parameters relate to one another and the relationships between individual samples and the PCs. A PCA biplot is used to show the relationship of parameters and individual samples with the first two PCs. In a PCA biplot, the axes represent the PCs, and arrows originating from the center represent the input parameters. The length of the arrows and alignment with the axes represent how strongly each input parameter contributes to the PCs, and the direction of the arrow along an axis represents the direction of the contribution (positive or negative). Each data point represents a sample plotted according to the PCs.

Figure 4-7 shows a biplot of the first two PCs with the percent of variance explained by each PC indicated in the axis label. Sulfate concentrations are shown in a log scale by point size. CCR porewater samples plot most negatively on PC 1 (the x axis) and mostly in the upper-left quadrant, indicating a correlation with boron and potassium. This is consistent with the elevated boron concentrations (**Figure 4-1**) and the dominance of monovalent cations shown by the Piper diagram (**Figure 4-6**). Groundwater tends to plot positively on PC1 and therefore tends to be more acidic and have higher contributions from divalent cations. UD and eastern UA groundwater tends to plot positively on PC2 (upper right quadrant), in the direction of higher sulfate concentrations. In contrast, background and other UA groundwater plot negatively on PC2 (lower right quadrant) in the direction of higher barium. The inverse relationship between sulfate and barium in the PCA are consistent with barite formation as a control on sulfate and barium concentrations. Manganese and calcium characterize the signature (*i.e.*, point in the direction) of UD groundwater, which is consistent with a mixed calcium manganese carbonate mineral contributing these elements to the groundwater.

The cyan outline (within upper right quadrant) is the 95% confidence ellipse (which encompasses the area where 95% of the sample points fall) for the UD/PMP locations with sulfate exceedances. The darker blue outline represents the 95% confidence ellipse for eastern UA groundwater samples. There is considerable overlap between 95% confidence ellipses for the UD/PMP locations with sulfate exceedances and the eastern UA samples, indicating that these groups of samples have similar chemical compositions. In contrast, background and other UA groundwater samples plot in a distinct group from the UD and eastern UA groundwater.

4.4.2 Correlation Analysis

Figure 4-9a shows a biplot of sodium and sulfate in porewater and UD/PMP groundwater (the hydrostratigraphic unit with the highest sulfate concentrations[3]) with the results of a least squares linear regression. Concentrations in this figure are presented in millimolar (mM) rather than in mg/L to understand potential reaction stoichiometry. The relationship between sulfate and sodium in porewater and UD/PMP samples is strong (coefficient of determination $R^2 = 0.77$) and statistically significant ($p < 0.001$). Sulfate in UD/PMP groundwater is correlated with sodium in a similar ratio as CCR porewater (**Figure 4-8a**). The consistent relationship between sodium and sulfate in the porewater and UD/PMP groundwater suggests a similar source of both elements. In the porewater wells XPW01 and XPW04, which have distinctly elevated sulfate and sodium concentrations, the R^2 is even stronger at 0.89 and the slope of this regression is 0.49 (**Figure 4-8b**). This slope indicating that each atom of sulfate is associated with approximately two atoms of sodium.

One potential attenuation sulfate attenuation mechanism in groundwater is precipitation as barite (**Section 2.2**). **Figure 4-9** show a biplot of barium and sulfate in PAP groundwater. Concentrations in this figure are presented in millimolar (mM) rather than in mg/L to understand potential reaction stoichiometry. Concentrations of lower sulfate correspond to higher barium concentrations in the most of UA wells, indicating that barite may affect concentrations of sulfate and barium in the deeper groundwater. However, the molar concentrations of barium are generally much lower than sulfate, indicating a limited capacity for barite formation to remove sulfate from groundwater.

[3] Sulfate and sodium concentrations in UA wells do not show sufficient variability to contribute to this analysis.

5. LABORATORY TEST RESULTS

In 2021, aquifer solids and groundwater samples were submitted by Golder WSP to SiREM laboratory to test sorption and desorption behavior of sulfate and lithium using batch testing. Batch test studies combine soil and groundwater collected from a site of interest to evaluate the sorption and desorption of chemical constituents (**Attachment 10**).

5.1 Adsorption Batch Tests

For the adsorption tests, soil from APW05 (60.0 to 67.1 ft bgs) was paired with groundwater from well APW-04, representing sorption to UA soils. Soil from APW04 (12 to 18 ft bgs) was paired with groundwater from APW-14, representing sorption to UD/PMP soils. Groundwater was spiked to known concentrations of lithium and sulfate before being combined with soil in soil:water ratios ranging from 2:1 to 1:20. Control samples using only groundwater were also prepared. Samples and controls were prepared under an anoxic atmosphere and incubated in the dark under anoxic conditions at room temperature for 7 days. At the end of the test, concentrations of lithium and sulfate in the water were analyzed. The total amount of lithium and sulfate in the water versus in the solids of each sample were plotted according to three sorption models: linear, Langmuir, and Freundlich (for additional details about these sorption models, see **Attachment 10**). The fit of each sorption model to the data was evaluated using the coefficient of determination (R^2).

The sulfate sorption data for the UD/PMP did not exhibit good fit for any sorption model (see **Attachment 10** for full results). The sulfate data for the UA showed a linear relationship and had a linear sorption coefficient (K_d) of 3.58 L/kg (**Figure 5-1**). These results suggest the potential for some sulfate sorption in the UA, but do not support sorption in the UD/PMP.

The lithium sorption data for both the UD/PMP and UA samples were strongly consistent with the Langmuir sorption model (**Figure 5-1**). The Langmuir sorption coefficients (K_L) were 1.2×10^9 L/kg for the UD/PMP solid sample and 4.2×10^8 L/kg for the UA solid sample. These results suggest the potential for lithium sorption in both the UD/PMP and UA, with somewhat greater sorption in the UA indicated by the higher K_L.

5.2 Desorption Batch Tests

For the desorption tests, APW-05 groundwater (representing UA background) was paired with soil from APW02 (N-SB-02 at 12.5 to 20 ft bgs; UD/PMP) and from APW07 (N-SB-07 at 65 to 71.5 ft bgs; UA) at a 1:10 soil:water ratio. Samples were prepared under an anoxic atmosphere. Three sets of samples were prepared in duplicate and incubated either under ambient conditions, with oxygen sparging (representing oxic groundwater conditions), or with hydrogen sparging (representing anoxic groundwater conditions). Samples were incubated at room temperature for 7 days. The ambient control pH and ORP values on day 7 were more similar to results from hydrogen sparged samples than oxygen sparged samples (**Figure 5-2**).

Desorption of sulfate and lithium from the UD/PMP sample was observed under all redox conditions (**Figure 5-3**). There were no substantial differences in desorption under different redox conditions, which may be due to the variability between duplicates. These results suggest that sulfate and lithium are sorbed to UD/PMP solids and that sorption is to some extent reversible under background groundwater conditions. No sulfate or lithium sorption was observed

from the UA sample under any redox condition (with the exception of lithium in one oxygen-sparged duplicate sample; **Figure 5-3**). This may indicate little sorption of sulfate and lithium to UA solids and/or that existing sorption is not reversible under background groundwater conditions.

6. GEOCHEMICAL CONCEPTUAL SITE MODEL

6.1 Source and Distribution of Sulfate and TDS

Following evaluation of the solids and aqueous geochemical data collected, the primary source of sulfate to the UD/PMP is the CCR porewater. No minerals were identified in aquifer material that would contribute sulfate to groundwater. Heterogeneity in UD/PMP sulfate concentrations may be due to differences in porewater contribution or differences in local porewater contributions.

Sulfates in CCR material are commonly created during desulfurization processes. Commonly, materials such as calcium oxide, calcium carbonates, or sodium carbonates are used. The process by which these materials remove sulfate from flue gas is the formation of solid phase sulfates (*e.g.*, $CaSO_4$ and Na_2SO_4). When sodium carbonates are used as the desulfurization material, other sodium salts (residual sodium chemicals) may also be present in the waste material as combustion by-products (Raclavska et al., 2010; Kalisz et al., 2023). The use of sodium bicarbonates and the presence of residual sodium chemicals in fly ash may drive a higher leaching potential of TDS, sulfates, and metals (Raclavska et al., 2010; Kalisz et al., 2023). The molar ratio between sulfate and sodium in high-sulfate porewater (*i.e.*, from XPW01 and XPW04) is consistent with sodium sulfate dissolution (**Figure 4-9b**), suggesting that the dissolution of sodium sulfates in CCR material within the PAP is the primary driver of high sulfate concentrations in the porewater. The heterogeneity of sodium and sulfate concentrations in the PAP porewater suggests sporadic placement within the PAP of CCR produced when sodium carbonate injection was used in desulfurization processes at the NPP from 1979 to 1996.

Sulfate exceedances in the UA, which occur exclusively on the east side of the PAP, are consistent with water migration from the UD/PMP. The UA is shallower on the eastern side of the PAP, putting the UD/PMP and UA in closer proximity (NPP PMP N&E Report, Figure 2-8). Water in the UD/PMP and eastern UA wells is similar in redox chemistry (**Section 4.2**) and geochemical signature (**Section 4.3** and **Section 4.4.1**), suggesting communication between the UD/PMP and UA in this area.

6.2 Source and Distribution of Lithium

Both naturally occurring soil and CCR porewater sources of lithium were identified (**Section 3.3** and **Section 4.1**). The bedrock underlying the site is shale (NPP PAP N&E Report). Lithium is naturally occurring in shale bedrock and overlying regolith and is released to groundwater during weathering processes (Steinhoefel et al., 2021). SEP analysis indicates lithium in recalcitrant aquifer solid fractions which is consistent with soil native lithium. However, lithium is higher in wells with elevated sulfate concentrations, suggesting a similar source as sulfate (**Figure 4-1**). Additionally, lithium concentrations are not elevated in background wells. It is therefore likely that the PAP is the source of most of the lithium contributing the GWPS exceedance.

6.3 Potential Attenuation Mechanisms

The primary mechanisms of sulfate in the environment are reduction to sulfide followed by mineral precipitation, sorption to positively charged sites on iron oxides, and precipitation as insoluble sulfate minerals (**Section 3.3**). Given the observed redox chemistry of the PAP groundwater, reduction of sulfate to sulfide is unlikely. Concentrations of barium in the groundwater are substantially lower than those of sulfate, suggesting limited capacity for barite precipitation to attenuate sulfate. The presence of iron oxides in the aquifer solids is indicated by

SEP results. Iron oxides may not have appeared in the XRD results due to poor crystallinity. Amorphous (*i.e.*, poorly crystalline) iron oxides tend to provide greater capacity for ion sorption (Trivedi and Axe, 2001). The surface charge on iron oxides is related to groundwater pH, with the surface carrying a more positive charge at more acidic pH values (Stumm and Morgan, 1996). The circumneutral to slightly acidic pH of the UD/PMP and the presence of iron oxides are therefore conducive to sulfate sorption and attenuation. However, the batch test results indicate that the capacity of UD/PMP solid phase materials to sorb sulfate may be saturated.

Lithium in groundwater may be attenuated by sorption to exchangeable sites or incorporation in clay mineral matrices. Lithium is readily displaced by exchangeable sites by other cations which are abundant in the PAP groundwater. However, some proportion of lithium may sorb to clay minerals, particularly aluminum hydroxides, and subsequently become incorporated into the mineral matrix with poor reaction reversibility (Pistiner and Henderson, 2003; Prodromou, 2016). TIMA results identified micas/clays as an abundant solid phase (>20%) at APW04 and APW05S, supported by the identification of clays in boring logs (NPP PAP N&E Report). The abundance of clays/micas was lower in APW02 (<10%) where aqueous lithium concentrations are highest. These results suggest that sequestration to clay minerals may provide a sink for lithium in the UD/PMP.

7. REFERENCES

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TABLES

Table 3-1. Summary of Solids Samples
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Boring Name	Paired Well	Depth Range (ft bgs)	CEC	LOI	SEP	XRD	XRF	TIMA
CCR	N-SB-XPW 01 (10.0-12.7)	XPW01	10-12.7	2021	2021	2021 (Eurofins)	2021 (SGS)		
CCR	N-SB-XPW04 (10.0-15.0)	XPW04	10-15	2021		2021 (Eurofins)	2021 (SGS)		
UD	N-SB-02 (10-13)	APW02	10-13			2023 (SGS)	2023 (SGS)	2023 (SGS)	2023 (SGS)
UD	N-SB-02 (12.5-20.0)	APW02	12.5-20	2021	2021	2021 (Eurofins)	2021 (SGS)		
UD	N-SB-04 (12.0-18.0)	APW04	12-18	2021	2021	2021 (Eurofins) 2023 (SGS)	2021 (SGS) 2023 (SGS)	2023 (SGS)	2023 (SGS)
PMP	N-SB-05 (10.0-16.6)	APW05S	10-16.6			2023 (SGS)	2023 (SGS)	2023 (SGS)	2023 (SGS)
PMP	N-SB-05 (18.0-20.0)	APW05S	18-20	2021	2021	2021 (Eurofins)	2021 (SGS)		
UA	N-SB-05 (60.0-67.0)	APW05	60-67	2021	2021		2021 (SGS)		
UA	N-SB-05 (60.0-67.1)	APW05	60-67.1			2021 (Eurofins)			
UA	N-SB-04 (38.7-45.4)	APW10	38.7-45.4			2021 (Eurofins)			
UA	N-SB-04 (40-45)	APW10	40-45	2021	2021	2023 (SGS)	2021 (SGS) 2023 (SGS)	2023 (SGS)	
UA	N-SB-14 (44.2-52.0)	APW14	44.2-52			2021 (Eurofins)			
UA	N-SB-14 (50-52)	APW14	50-52	2021	2021	2023 (SGS)	2021 (SGS) 2023 (SGS)	2023 (SGS)	
UA	N-SB-02 (65.0-71.5)	APW17	65-71.5	2021	2021	2021 (Eurofins)	2021 (SGS)		
UA	N-SB-18 (77.5-80.0)	APW18	77.5-80	2021	2021	2021 (Eurofins)	2021 (SGS)		

Notes:
CEC = cation exchange capacity
ft bgs = feet below ground surface
LOI = loss on ignition
SEP = sequential extraction procedure
TIMA = TESCAN integrated mineral analysis
XRD = X-ray diffraction
XRF = X-ray fluorescence

Table 3-2. Summary of Sequential Extraction Procedures
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

SEP Step	SEP Fraction	Extractant
		Seven Step Extraction (Eurofins, 2021)
Step 1	Exchangeable	1 M magnesium sulfate
Step 2	Carbonates	1 M sodium acetate/acetic acid at pH 5
Step 3	Non-Crystalline Materials	0.2 M ammonium oxalate at pH 3
Step 4	Metal Hydroxides	1 M hydroxylamine hydrochloride in 25% acetic acid
Step 5	Organics	5% sodium hypochlorite at pH 9.5
Step 6	Acid/Sulfides	3:1:2 v/v HCl:HNO_3:H_2O
Step 7	Residual	HF, HNO_3, HCl, H_3BO_3
		Six Step Extraction (SGS, 2023)
Step 1	Water Soluble	Nanopure water
Step 2	Exchangeable	1 M magnesium chloride
Step 3	Carbonates	1 M sodium acetate/acetic acid at pH 5
Step 4	Fe and Mn Oxides	0.04 M hydroxylamine hydrochloride in 25% acetic acid
Step 5	Organics	3:5:5 v/v 0.02 M HNO_3:30%H_2O_2:1.2 M ammonium acetate in 20% HNO_3
Step 6	Residual	HF, HNO_3, HCl, $HClO_4$

Notes:
M = molar
v/v = volume ratio

Table 3-3. Sequential Extraction Procedure Results
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

							Iron		Manganese		Lithium	
HSU	**Location**	**Depth Range (ft bgs)**	**Analyst**	**Analysis Year**	**SEP Step**	**SEP Fraction**	*Concentration (mg/kg)*	*Percent of Sum (%)*	*Concentration (mg/kg)*	*Percent of Sum (%)*	*Concentration (mg/kg)*	*Percent of Sum (%)*
CCR	XPW01	10-12.7	Eurofins	2021	Step 1	Exchangeable	<15	0	3.50	0.6	<0.78	0
CCR	XPW01	10-12.7	Eurofins	2021	Step 2	Carbonates	1,600	9.2	190	35.2	<0.58	0
CCR	XPW01	10-12.7	Eurofins	2021	Step 3	Non-Crystalline Materials	2,500	14.4	120	22.2	<0.19	0
CCR	XPW01	10-12.7	Eurofins	2021	Step 4	Metal Hydroxides	5,400	31	140	25.9	2.00	8.5
CCR	XPW01	10-12.7	Eurofins	2021	Step 5	Organics	<57	0	13.0	2.4	8.80	37.3
CCR	XPW01	10-12.7	Eurofins	2021	Step 6	Acid/Sulfides	4,400	25.3	23.0	4.3	3.60	15.3
CCR	XPW01	10-12.7	Eurofins	2021	Step 7	Residual	3,500	20.1	51.0	9.4	9.20	39
CCR	XPW01	10-12.7	Eurofins	2021	Total	Total	15,000	NA	350	NA	13.0	NA
CCR	XPW01	10-12.7	Eurofins	2021	Sum	Sum	17,400	NA	540	NA	23.6	NA
CCR	XPW04	10-15	Eurofins	2021	Step 1	Exchangeable	<21	0	<0.22	0	<1.1	0
CCR	XPW04	10-15	Eurofins	2021	Step 2	Carbonates	2,000	5.8	12.0	5.6	1.40	2.3
CCR	XPW04	10-15	Eurofins	2021	Step 3	Non-Crystalline Materials	2,400	7	2.70	1.3	0.610	1
CCR	XPW04	10-15	Eurofins	2021	Step 4	Metal Hydroxides	12,000	34.9	91.0	42.5	9.90	16.3
CCR	XPW04	10-15	Eurofins	2021	Step 5	Organics	<78	0	9.20	4.3	14.0	23
CCR	XPW04	10-15	Eurofins	2021	Step 6	Acid/Sulfides	12,000	34.9	60.0	28.1	16.0	26.3
CCR	XPW04	10-15	Eurofins	2021	Step 7	Residual	6,000	17.4	39.0	18.2	19.0	31.2
CCR	XPW04	10-15	Eurofins	2021	Total	Total	27,000	NA	160	NA	34.0	NA
CCR	XPW04	10-15	Eurofins	2021	Sum	Sum	34,400	NA	214	NA	60.9	NA
UD/PMP	APW02	12.5-20	Eurofins	2021	Step 1	Exchangeable	<12	0	3.10	0.4	<0.64	0
UD/PMP	APW02	12.5-20	Eurofins	2021	Step 2	Carbonates	19.0	0.1	150	20.8	<0.48	0
UD/PMP	APW02	12.5-20	Eurofins	2021	Step 3	Non-Crystalline Materials	310	1	210	29.1	<0.16	0
UD/PMP	APW02	12.5-20	Eurofins	2021	Step 4	Metal Hydroxides	8,000	24.6	170	23.5	1.40	4.5
UD/PMP	APW02	12.5-20	Eurofins	2021	Step 5	Organics	<47	0	17.0	2.4	10.0	32.3
UD/PMP	APW02	12.5-20	Eurofins	2021	Step 6	Acid/Sulfides	19,000	58.4	120	16.6	6.60	21.3
UD/PMP	APW02	12.5-20	Eurofins	2021	Step 7	Residual	5,200	16	52.0	7.2	13.0	41.9
UD/PMP	APW02	12.5-20	Eurofins	2021	Total	Total	34,000	NA	590	NA	19.0	NA
UD/PMP	APW02	12.5-20	Eurofins	2021	Sum	Sum	32,500	NA	722	NA	31.0	NA
UD/PMP	APW02	10-13	SGS	2023	Step 1	Water Soluble	9.53	0	0.0997	0	0.339	1.7
UD/PMP	APW02	10-13	SGS	2023	Step 2	Exchangeable	8.99	0	7.76	1.5	0.422	2.1
UD/PMP	APW02	10-13	SGS	2023	Step 3	Carbonates	1,460	6	329	63.1	1.05	5.3
UD/PMP	APW02	10-13	SGS	2023	Step 4	Fe and Mn Oxides	2,980	12.3	65.9	12.6	2.65	13.4
UD/PMP	APW02	10-13	SGS	2023	Step 5	Organics	465	1.9	7.28	1.4	1.19	6
UD/PMP	APW02	10-13	SGS	2023	Step 6	Residual	19,300	79.7	111	21.4	14.1	71.4
UD/PMP	APW02	10-13	SGS	2023	Sum	Sum	24,200	NA	522	NA	19.8	NA
UD/PMP	APW04	12-18	Eurofins	2021	Step 1	Exchangeable	<13	0	0.620	0.1	<0.67	0

Table 3-3. Sequential Extraction Procedure Results
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

							Iron		Manganese		Lithium	
HSU	**Location**	**Depth Range (ft bgs)**	**Analyst**	**Analysis Year**	**SEP Step**	**SEP Fraction**	*Concentration (mg/kg)*	*Percent of Sum (%)*	*Concentration (mg/kg)*	*Percent of Sum (%)*	*Concentration (mg/kg)*	*Percent of Sum (%)*
UD/PMP	APW04	12-18	Eurofins	2021	Step 2	Carbonates	<9.7	0	170	16.5	<0.50	0
UD/PMP	APW04	12-18	Eurofins	2021	Step 3	Non-Crystalline Materials	330	1.3	450	43.8	<0.17	0
UD/PMP	APW04	12-18	Eurofins	2021	Step 4	Metal Hydroxides	6,700	27	220	21.4	1.70	4.9
UD/PMP	APW04	12-18	Eurofins	2021	Step 5	Organics	<49	0	11.0	1.1	8.40	24.3
UD/PMP	APW04	12-18	Eurofins	2021	Step 6	Acid/Sulfides	13,000	52.4	130	12.7	8.50	24.6
UD/PMP	APW04	12-18	Eurofins	2021	Step 7	Residual	4,800	19.3	46.0	4.5	16.0	46.2
UD/PMP	APW04	12-18	Eurofins	2021	Total	Total	23,000	NA	770	NA	28.0	NA
UD/PMP	APW04	12-18	Eurofins	2021	Sum	Sum	24,800	NA	1,030	NA	34.6	NA
UD/PMP	APW04	12-18	SGS	2023	Step 1	Water Soluble	14.6	0	0.111	0	0.319	1.1
UD/PMP	APW04	12-18	SGS	2023	Step 2	Exchangeable	17.8	0.1	4.75	0.6	0.467	1.6
UD/PMP	APW04	12-18	SGS	2023	Step 3	Carbonates	747	2.1	583	72	1.10	3.8
UD/PMP	APW04	12-18	SGS	2023	Step 4	Fe and Mn Oxides	2,770	8	54.8	6.8	3.28	11.3
UD/PMP	APW04	12-18	SGS	2023	Step 5	Organics	394	1.1	8.95	1.1	1.36	4.7
UD/PMP	APW04	12-18	SGS	2023	Step 6	Residual	30,900	88.7	158	19.5	22.6	77.6
UD/PMP	APW04	12-18	SGS	2023	Sum	Sum	34,800	NA	810	NA	29.1	NA
UD/PMP	APW05S	18-20	Eurofins	2021	Step 1	Exchangeable	<13	0	2.80	0.8	<0.66	0
UD/PMP	APW05S	18-20	Eurofins	2021	Step 2	Carbonates	36.0	0.3	84.0	24	<0.50	0
UD/PMP	APW05S	18-20	Eurofins	2021	Step 3	Non-Crystalline Materials	240	2.1	51.0	14.6	<0.17	0
UD/PMP	APW05S	18-20	Eurofins	2021	Step 4	Metal Hydroxides	3,900	34	93.0	26.6	0.990	3.8
UD/PMP	APW05S	18-20	Eurofins	2021	Step 5	Organics	<49	0	5.20	1.5	14.0	54.3
UD/PMP	APW05S	18-20	Eurofins	2021	Step 6	Acid/Sulfides	4,500	39.2	61.0	17.4	3.90	15.1
UD/PMP	APW05S	18-20	Eurofins	2021	Step 7	Residual	2,800	24.4	53.0	15.1	6.90	26.8
UD/PMP	APW05S	18-20	Eurofins	2021	Total	Total	10,000	NA	280	NA	12.0	NA
UD/PMP	APW05S	18-20	Eurofins	2021	Sum	Sum	11,500	NA	350	NA	25.8	NA
UD/PMP	APW05S	10-16.6	SGS	2023	Step 1	Water Soluble	73.5	0.3	0.616	0.3	0.211	1
UD/PMP	APW05S	10-16.6	SGS	2023	Step 2	Exchangeable	13.6	0.1	13.2	6.6	0.354	1.6
UD/PMP	APW05S	10-16.6	SGS	2023	Step 3	Carbonates	1,030	4.4	71.9	35.6	0.615	2.8
UD/PMP	APW05S	10-16.6	SGS	2023	Step 4	Fe and Mn Oxides	3,230	13.8	23.9	11.8	2.41	11.1
UD/PMP	APW05S	10-16.6	SGS	2023	Step 5	Organics	679	2.9	7.0	3.5	0.762	3.5
UD/PMP	APW05S	10-16.6	SGS	2023	Step 6	Residual	18,300	78.5	85.3	42.2	17.4	80
UD/PMP	APW05S	10-16.6	SGS	2023	Sum	Sum	23,400	NA	202	NA	21.8	NA
UA	APW05	60-67.1	Eurofins	2021	Step 1	Exchangeable	<14	0	2.70	0.4	<0.74	0
UA	APW05	60-67.1	Eurofins	2021	Step 2	Carbonates	380	2.2	85.0	13.9	<0.55	0
UA	APW05	60-67.1	Eurofins	2021	Step 3	Non-Crystalline Materials	4,100	23.9	42.0	6.9	<0.18	0
UA	APW05	60-67.1	Eurofins	2021	Step 4	Metal Hydroxides	3,000	17.5	350	57.1	0.950	3.9
UA	APW05	60-67.1	Eurofins	2021	Step 5	Organics	<54	0	5.40	0.9	14.0	57
UA	APW05	60-67.1	Eurofins	2021	Step 6	Acid/Sulfides	6,300	36.7	69.0	11.3	3.60	14.7
UA	APW05	60-67.1	Eurofins	2021	Step 7	Residual	3,400	19.8	59.0	9.6	6.00	24.4
UA	APW05	60-67.1	Eurofins	2021	Total	Total	14,000	NA	380	NA	9.60	NA
UA	APW05	60-67.1	Eurofins	2021	Sum	Sum	17,200	NA	613	NA	24.6	NA
UA	APW10	38.7-45.4	Eurofins	2021	Step 1	Exchangeable	<13	0	9.10	2.1	<0.69	0
UA	APW10	38.7-45.4	Eurofins	2021	Step 2	Carbonates	40.0	0.2	120	27.2	<0.52	0
UA	APW10	38.7-45.4	Eurofins	2021	Step 3	Non-Crystalline Materials	180	0.8	23.0	5.2	<0.17	0

Table 3-3. Sequential Extraction Procedure Results
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

							Iron		Manganese		Lithium	
HSU	**Location**	**Depth Range (ft bgs)**	**Analyst**	**Analysis Year**	**SEP Step**	**SEP Fraction**	*Concentration (mg/kg)*	*Percent of Sum (%)*	*Concentration (mg/kg)*	*Percent of Sum (%)*	*Concentration (mg/kg)*	*Percent of Sum (%)*
UA	APW10	38.7-45.4	Eurofins	2021	Step 4	Metal Hydroxides	5,600	23.7	100	22.7	1.10	5.2
UA	APW10	38.7-45.4	Eurofins	2021	Step 5	Organics	<51	0	3.40	0.8	8.00	37.9
UA	APW10	38.7-45.4	Eurofins	2021	Step 6	Acid/Sulfides	12,000	50.8	94.0	21.3	4.50	21.3
UA	APW10	38.7-45.4	Eurofins	2021	Step 7	Residual	5,800	24.6	91.0	20.7	7.50	35.5
UA	APW10	38.7-45.4	Eurofins	2021	Total	Total	15,000	NA	330	NA	10.0	NA
UA	APW10	38.7-45.4	Eurofins	2021	Sum	Sum	23,600	NA	440	NA	21.1	NA
UA	APW10	40-45	SGS	2023	Step 1	Water Soluble	11.3	0	0.108	0	0.155	1.1
UA	APW10	40-45	SGS	2023	Step 2	Exchangeable	13.7	0.1	11.6	2.2	0.251	1.8
UA	APW10	40-45	SGS	2023	Step 3	Carbonates	1,710	7.4	282	53.5	0.773	5.4
UA	APW10	40-45	SGS	2023	Step 4	Fe and Mn Oxides	2,300	10	49.0	9.3	1.94	13.6
UA	APW10	40-45	SGS	2023	Step 5	Organics	513	2.2	7.82	1.5	1.13	8
UA	APW10	40-45	SGS	2023	Step 6	Residual	18,400	80.2	177	33.5	9.98	70.1
UA	APW10	40-45	SGS	2023	Sum	Sum	23,000	NA	527	NA	14.2	NA
UA	APW14	44.2-52	Eurofins	2021	Step 1	Exchangeable	<13	0	10.0	1.5	<0.66	0
UA	APW14	44.2-52	Eurofins	2021	Step 2	Carbonates	160	1	130	19.5	<0.50	0
UA	APW14	44.2-52	Eurofins	2021	Step 3	Non-Crystalline Materials	1,700	10.5	61.0	9.1	<0.17	0
UA	APW14	44.2-52	Eurofins	2021	Step 4	Metal Hydroxides	2,200	13.6	300	45	1.60	6.7
UA	APW14	44.2-52	Eurofins	2021	Step 5	Organics	<49	0	4.20	0.6	8.20	34.2
UA	APW14	44.2-52	Eurofins	2021	Step 6	Acid/Sulfides	8,100	50.1	100	15	5.40	22.5
UA	APW14	44.2-52	Eurofins	2021	Step 7	Residual	4,000	24.8	62.0	9.3	8.80	36.7
UA	APW14	44.2-52	Eurofins	2021	Total	Total	19,000	NA	420	NA	15.0	NA
UA	APW14	44.2-52	Eurofins	2021	Sum	Sum	16,200	NA	667	NA	24.0	NA
UA	APW14	50-52	SGS	2023	Step 1	Water Soluble	64.2	0.3	0.856	0.1	0.240	1.3
UA	APW14	50-52	SGS	2023	Step 2	Exchangeable	10.3	0	15.2	2.6	0.326	1.8
UA	APW14	50-52	SGS	2023	Step 3	Carbonates	2,300	9.9	345	58.3	0.991	5.4
UA	APW14	50-52	SGS	2023	Step 4	Fe and Mn Oxides	4,500	19.3	84.4	14.3	2.31	12.6
UA	APW14	50-52	SGS	2023	Step 5	Organics	1,300	5.6	9.33	1.6	1.42	7.8
UA	APW14	50-52	SGS	2023	Step 6	Residual	15,200	65	137	23.2	13	71.1
UA	APW14	50-52	SGS	2023	Sum	Sum	23,300	NA	592	NA	18.3	NA
UA	APW17	65-71.5	Eurofins	2021	Step 1	Exchangeable	<13	0	3.50	0.9	<0.67	0
UA	APW17	65-71.5	Eurofins	2021	Step 2	Carbonates	270	2.4	68.0	17.7	<0.50	0
UA	APW17	65-71.5	Eurofins	2021	Step 3	Non-Crystalline Materials	3,100	27	54.0	14.1	<0.17	0
UA	APW17	65-71.5	Eurofins	2021	Step 4	Metal Hydroxides	2,200	19.2	150	39.1	0.960	4.1
UA	APW17	65-71.5	Eurofins	2021	Step 5	Organics	<49	0	14.0	3.7	7.60	32.8
UA	APW17	65-71.5	Eurofins	2021	Step 6	Acid/Sulfides	3,400	29.6	49.0	12.8	3.60	15.5
UA	APW17	65-71.5	Eurofins	2021	Step 7	Residual	2,500	21.8	45.0	11.7	11.0	47.5
UA	APW17	65-71.5	Eurofins	2021	Total	Total	14,000	NA	440	NA	7.60	NA
UA	APW17	65-71.5	Eurofins	2021	Sum	Sum	11,500	NA	384	NA	23.2	NA
UA	APW18	77.5-80	Eurofins	2021	Step 1	Exchangeable	<13	0	4.00	0.4	<0.66	0
UA	APW18	77.5-80	Eurofins	2021	Step 2	Carbonates	440	2.4	82.0	9.1	<0.49	0
UA	APW18	77.5-80	Eurofins	2021	Step 3	Non-Crystalline Materials	2,500	13.5	69.0	7.6	<0.16	0
UA	APW18	77.5-80	Eurofins	2021	Step 4	Metal Hydroxides	3,800	20.5	360	39.7	0.830	3.5
UA	APW18	77.5-80	Eurofins	2021	Step 5	Organics	<48	0	39.0	4.3	12.0	50.8

Table 3-3. Sequential Extraction Procedure Results
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Depth Range (ft bgs)	Analyst	Analysis Year	SEP Step	SEP Fraction	Iron		Manganese		Lithium	
							Concentration (mg/kg)	*Percent of Sum (%)*	*Concentration (mg/kg)*	*Percent of Sum (%)*	*Concentration (mg/kg)*	*Percent of Sum (%)*
UA	APW18	77.5-80	Eurofins	2021	Step 6	Acid/Sulfides	8,500	45.8	300	33.1	4.90	20.7
UA	APW18	77.5-80	Eurofins	2021	Step 7	Residual	3,300	17.8	52.0	5.7	5.90	25
UA	APW18	77.5-80	Eurofins	2021	Total	Total	13,000	NA	600	NA	10.0	NA
UA	APW18	77.5-80	Eurofins	2021	Sum	Sum	18,500	NA	906	NA	23.6	NA

Notes:
ft bgs = feet below ground surface
HSU = hydrostratigraphic unit
  CCR = coal combustion residual
  UA = uppermost aquifer
  UD = uppermost drift
mg/kg = milligrams per kilogram
NA = not applicable
SEP = sequential extraction procedure

Table 3-4. XRD Results
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Mineral	Formula	XPW01 (10-12.7 ft) - 2021	XPW04 (10-15 ft) - 2021	APW02 (12.5-20 ft) - 2021	APW02 (10-13 ft) - 2023	APW04 (12-18 ft) - 2021	APW04 (12-18 ft) - 2023	APW05S (18-20 ft) - 2021	APW05S (10-16.6 ft) - 2023	APW05 (60-67 ft) - 2021	APW10 (40-45 ft) - 2021	APW10 (40-45 ft) - 2023
Quartz	SiO_2	68.7	22.6	48.9	53.9	47.3	46.1	46.0	72.8	41.3	51.7	53.0
Albite	$NaAlSi_3O_8$	10.0	14.5	8.40	9.00	9.10	9.70	8.20	7.70	8.80	12.7	14.3
Microcline	$KAlSi_3O_8$	8.80	0	7.60	--	5.40	--	4.50	--	4.50	4.20	--
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$	8.50	0	8.70	10.4	10.5	16.0	5.00	0	1.60	3.10	8.70
Biotite	$K(Mg,Fe)_3(AlSi_3O_{10})(OH)_2$	2.50	0	3.50	1.60	2.40	2.00	1.80	0	1.80	2.10	0.800
Diopside	$CaMgSi_2O_6$	1.40	15.2	1.70		1.00	--	0.900	--	2.90	1.40	--
Calcite	$CaCO_3$	0.100	13.2	3.60	7.00	11.1	12.9	20.7	0	12.9	9.70	7.70
Dolomite	$CaMg(CO_3)_2$	0.100	0	12.7	11.9	5.00	7.00	9.50	0.900	18.5	6.00	9.90
Ankerite	$CaFe(CO_3)_2$	0	0	2.20	1.10	4.10	1.10	3.30	0	2.30	4.40	0
Actinolite	$Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$	0	0	0	0.500	0	0	0	0	2.90	2.30	0.800
Chlorite	$(Fe,(Mg,Mn)_5,Al)(Si_3Al)O_{10}(OH)_8$	0	0	2.80	1.50	4.20	2.90	0	0	2.60	2.30	2.50
Fluorapatite	$Ca_5(PO_4)_3F$	0	0	0	--	0	--	0	--	0	0	--
Perovskite	$CaTiO_3$	0	8.70	0	--	0	--	0	--	0	0	--
Periclase	MgO	0	1.60	0	--	0	--	0	--	0	0	--
Hematite	Fe_2O_3	0	3.40	0	--	0	--	0	--	0	0	--
Magnetite	Fe_3O_4	0	0.100	0	--	0	--	0	--	0	0	--
Gehlenite	$Ca_2(Mg_{0.25}Al_{0.75})(Si_{1.25}Al_{0.75}O_7)$	0	13.9	0	--	0	--	0	--	0	0	--
Mullite	$Al_6Si_3O_{15}$	0	3.70	0	--	0	--	0	--	0	0	--
Ganophyllite	$K_{2.16}Mn_{16}Si_{26.9}O_{67.8}(OH)_8$	0	3.10	0	--	0	--	0	--	0	0	--
Orthoclase	$KAlSi_3O_8$	--	--	--	3.10	--	2.30	--	6.60	--	--	2.40
Montmorillonite	$(Na,Ca)_{0.3}(Al,Mg)_2Si_4O_{10}(OH)_2 \cdot 10H_2O$	--	--	--	0	--	0	--	12.0	--	--	0

Table 3-4. XRD Results
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Mineral	Formula	APW14 (50-52 ft) - 2021	APW14 (50-52 ft) - 2023	APW17 (65-71.5 ft) - 2021	APW18 (77.5-80 ft) - 2021
Quartz	SiO_2	48.0	50.4	47.6	32.7
Albite	$NaAlSi_3O_8$	13.6	10.0	5.20	4.10
Microcline	$KAlSi_3O_8$	6.20	--	5.10	4.20
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$	5.50	11.1	1.00	1.20
Biotite	$K(Mg,Fe)_3(AlSi_3O_{10})(OH)_2$	1.80	0.300	1.50	0.800
Diopside	$CaMgSi_2O_6$	2.50	--	1.50	2.00
Calcite	$CaCO_3$	9.30	9.90	4.90	13.3
Dolomite	$CaMg(CO_3)_2$	6.80	12.1	26.1	27.3
Ankerite	$CaFe(CO_3)_2$	2.60	0	2.60	8.30
Actinolite	$Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$	0	0	0	2.10
Chlorite	$(Fe,(Mg,Mn)_5,Al)(Si_3Al)O_{10}(OH)_8$	3.80	3.70	2.70	1.90
Fluorapatite	$Ca_5(PO_4)_3F$	0	--	1.80	2.00
Perovskite	$CaTiO_3$	0	--	0	0
Periclase	MgO	0	--	0	0
Hematite	Fe_2O_3	0	--	0	0
Magnetite	Fe_3O_4	0	--	0	0
Gehlenite	$Ca_2(Mg_{0.25}Al_{0.75})(Si_{1.25}Al_{0.75}O_7)$	0	--	0	0
Mullite	$Al_6Si_3O_{15}$	0	--	0	0
Ganophyllite	$K_{2.16}Mn_{16}Si_{26.9}O_{67.8}(OH)_8$	0	--	0	0
Orthoclase	$KAlSi_3O_8$	--	2.60	--	--
Montmorillonite	$(Na,Ca)_{0.3}(Al,Mg)_2Si_4O_{10}(OH)_2 \cdot 10H_2O$	--	0	--	--

Table 4-1. Summary of Porewater and Groundwater Data
Nature and Extent Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Parameter	Unit	Sample Count	Non-Detect Results	Percent Non-Detect Results	First Sample	Last Sample	Minimum	Median	Mean	Maximum
CCR	XPW01	Porewater	pH (field)	SU	12	0	0	2021/02/17	2023/10/10	12.1	12	12	12.7
CCR	XPW01	Porewater	Oxidation Reduction Potential	mV	12	0	0	2021/02/17	2023/10/10	-379	-330	-330	-265
CCR	XPW01	Porewater	Eh	V	12	0	0	2021/02/17	2023/10/10	-0.19	-0.14	-0.13	-0.070
CCR	XPW01	Porewater	Alkalinity, bicarbonate	mg/L CaCO3	12	12	100	2021/02/17	2023/10/10	0	<10	8.3	<10
CCR	XPW01	Porewater	Alkalinity, carbonate	mg/L CaCO3	12	0	0	2021/02/17	2023/10/10	260	500	530	799
CCR	XPW01	Porewater	Barium, total	mg/L	7	0	0	2021/02/17	2023/10/10	0.0350	0.064	0.12	0.460
CCR	XPW01	Porewater	Calcium, total	mg/L	12	0	0	2021/02/17	2023/10/10	10.3	32	36	63.0
CCR	XPW01	Porewater	Chloride, total	mg/L	12	0	0	2021/02/17	2023/10/10	8.10	30	28	50.0
CCR	XPW01	Porewater	Ferrous Iron, dissolved	mg/L	2	0	0	2023/04/27	2023/07/24	0.510	0.54	0.54	0.571
CCR	XPW01	Porewater	Iron, dissolved	mg/L	2	0	0	2023/04/27	2023/07/24	0.0420	0.056	0.056	0.0699
CCR	XPW01	Porewater	Lithium, total	mg/L	7	0	0	2021/02/17	2023/10/10	0.0545	0.11	0.10	0.150
CCR	XPW01	Porewater	Magnesium, total	mg/L	12	0	0	2021/02/17	2023/10/10	0.160	0.90	2.0	8.70
CCR	XPW01	Porewater	Manganese, dissolved	mg/L	2	2	100	2023/04/27	2023/07/24	<0.00023	<0.00023	0.00052	<0.0008
CCR	XPW01	Porewater	Phosphate, dissolved	mg/L	1	0	0	2023/07/24	2023/07/24	0.301	0.301	0.30	0.301
CCR	XPW01	Porewater	Potassium, total	mg/L	12	0	0	2021/02/17	2023/10/10	42.4	85	91	160
CCR	XPW01	Porewater	Silicon, dissolved	mg/L	2	0	0	2023/04/27	2023/07/24	74.0	75	75	75.1
CCR	XPW01	Porewater	Sodium, total	mg/L	12	0	0	2021/02/17	2023/10/10	2,050	4400	4900	9,600
CCR	XPW01	Porewater	Sulfate, total	mg/L	12	0	0	2021/02/17	2023/10/10	2,530	7700	9100	19,000
CCR	XPW01	Porewater	Total Dissolved Solids	mg/L	12	0	0	2021/02/17	2023/10/10	3,400	12000	14000	27,000
CCR	XPW02	Porewater	pH (field)	SU	12	0	0	2021/02/17	2023/10/10	8.6	9.7	9.6	10.1
CCR	XPW02	Porewater	Oxidation Reduction Potential	mV	12	0	0	2021/02/17	2023/10/10	-266	-220	-190	-79.0
CCR	XPW02	Porewater	Eh	V	12	0	0	2021/02/17	2023/10/10	-0.073	-0.024	0.0037	0.12
CCR	XPW02	Porewater	Alkalinity, bicarbonate	mg/L CaCO3	12	2	17	2021/02/17	2023/10/10	2.00	14	16	42.0
CCR	XPW02	Porewater	Alkalinity, carbonate	mg/L CaCO3	12	0	0	2021/02/17	2023/10/10	20.0	28	31	45.0
CCR	XPW02	Porewater	Barium, total	mg/L	7	0	0	2021/02/17	2023/10/10	0.0138	0.025	0.036	0.0781
CCR	XPW02	Porewater	Calcium, total	mg/L	12	0	0	2021/02/17	2023/10/10	15.0	26	27	40.0
CCR	XPW02	Porewater	Chloride, total	mg/L	12	0	0	2021/02/17	2023/10/10	8.40	9.8	11	16.0
CCR	XPW02	Porewater	Ferrous Iron, dissolved	mg/L	2	1	50	2023/04/27	2023/07/24	<0.02	0.11	0.11	0.193
CCR	XPW02	Porewater	Iron, dissolved	mg/L	2	0	0	2023/04/27	2023/07/24	0.000910	0.018	0.018	0.0348
CCR	XPW02	Porewater	Lithium, total	mg/L	7	2	29	2021/02/17	2023/10/10	<0.0099	0.023	0.021	0.0308
CCR	XPW02	Porewater	Magnesium, total	mg/L	12	1	8	2021/02/17	2023/10/10	<0.011	0.35	0.51	1.40
CCR	XPW02	Porewater	Manganese, dissolved	mg/L	2	0	0	2023/04/27	2023/07/24	0.000520	0.0010	0.0010	0.00150
CCR	XPW02	Porewater	Phosphate, dissolved	mg/L	1	0	0	2023/07/24	2023/07/24	0.316	0.316	0.32	0.316
CCR	XPW02	Porewater	Potassium, total	mg/L	12	0	0	2021/02/17	2023/10/10	14.0	16	16	19.4
CCR	XPW02	Porewater	Silicon, dissolved	mg/L	2	0	0	2023/04/27	2023/07/24	3.90	4.2	4.2	4.40
CCR	XPW02	Porewater	Sodium, total	mg/L	12	0	0	2021/02/17	2023/10/10	61.0	70	70	77.0
CCR	XPW02	Porewater	Sulfate, total	mg/L	12	0	0	2021/02/17	2023/10/10	150	160	180	239
CCR	XPW02	Porewater	Total Dissolved Solids	mg/L	12	0	0	2021/02/17	2023/10/10	290	360	350	404
CCR	XPW03	Porewater	pH (field)	SU	12	0	0	2021/02/17	2023/10/10	10.2	11	11	11.8

Table 4-1. Summary of Porewater and Groundwater Data
Nature and Extent Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Parameter	Unit	Sample Count	Non-Detect Results	Percent Non-Detect Results	First Sample	Last Sample	Minimum	Median	Mean	Maximum
CCR	XPW03	Porewater	Oxidation Reduction Potential	mV	12	0	0	2021/02/17	2023/10/10	-273	-220	-210	-75.0
CCR	XPW03	Porewater	Eh	V	12	0	0	2021/02/17	2023/10/10	-0.079	-0.022	-0.012	0.12
CCR	XPW03	Porewater	Alkalinity, bicarbonate	mg/L CaCO3	12	12	100	2021/02/17	2023/10/10	0	<10	8.3	<10
CCR	XPW03	Porewater	Alkalinity, carbonate	mg/L CaCO3	12	0	0	2021/02/17	2023/10/10	50.0	80	110	200
CCR	XPW03	Porewater	Barium, total	mg/L	7	0	0	2021/02/17	2023/10/10	0.0603	0.088	0.17	0.440
CCR	XPW03	Porewater	Calcium, total	mg/L	12	0	0	2021/02/17	2023/10/10	22.8	36	39	72.0
CCR	XPW03	Porewater	Chloride, total	mg/L	12	0	0	2021/02/17	2023/10/10	9.20	11	13	21.0
CCR	XPW03	Porewater	Ferrous Iron, dissolved	mg/L	2	1	50	2023/04/27	2023/07/26	<0.02	1.6	1.6	3.24
CCR	XPW03	Porewater	Iron, dissolved	mg/L	2	0	0	2023/04/27	2023/07/26	0.00670	0.0094	0.0094	0.0120
CCR	XPW03	Porewater	Lithium, total	mg/L	7	0	0	2021/02/17	2023/10/10	0.0240	0.032	0.043	0.121
CCR	XPW03	Porewater	Magnesium, total	mg/L	12	2	17	2021/02/17	2023/10/10	<0.011	0.32	0.78	2.70
CCR	XPW03	Porewater	Manganese, dissolved	mg/L	2	2	100	2023/04/27	2023/07/26	<0.00023	<0.00023	0.00052	<0.0008
CCR	XPW03	Porewater	Phosphate, dissolved	mg/L	1	1	100	2023/07/26	2023/07/26	<0.005	<0.005	0.0050	<0.005
CCR	XPW03	Porewater	Potassium, total	mg/L	12	0	0	2021/02/17	2023/10/10	11.0	18	17	23.2
CCR	XPW03	Porewater	Silicon, dissolved	mg/L	2	0	0	2023/04/27	2023/07/26	10.8	12	12	14.0
CCR	XPW03	Porewater	Sodium, total	mg/L	12	0	0	2021/02/17	2023/10/10	38.0	100	120	230
CCR	XPW03	Porewater	Sulfate, total	mg/L	12	0	0	2021/02/17	2023/10/10	92.0	120	120	180
CCR	XPW03	Porewater	Total Dissolved Solids	mg/L	12	0	0	2021/02/17	2023/10/10	270	460	490	780
CCR	XPW04	Porewater	pH (field)	SU	12	0	0	2021/02/17	2023/10/10	9.1	11	11	12.5
CCR	XPW04	Porewater	Oxidation Reduction Potential	mV	12	0	0	2021/02/17	2023/10/10	-336	-300	-280	-165
CCR	XPW04	Porewater	Eh	V	12	0	0	2021/02/17	2023/10/10	-0.14	-0.10	-0.085	0.031
CCR	XPW04	Porewater	Alkalinity, bicarbonate	mg/L CaCO3	12	9	75	2021/02/17	2023/10/10	0	10	20	80.0
CCR	XPW04	Porewater	Alkalinity, carbonate	mg/L CaCO3	12	0	0	2021/02/17	2023/10/10	60.0	150	150	296
CCR	XPW04	Porewater	Barium, total	mg/L	7	0	0	2021/02/17	2023/10/10	0.0749	0.13	0.15	0.300
CCR	XPW04	Porewater	Calcium, total	mg/L	12	0	0	2021/02/17	2023/10/10	53.0	90	93	130
CCR	XPW04	Porewater	Chloride, total	mg/L	12	0	0	2021/02/17	2023/10/10	30.0	48	64	186
CCR	XPW04	Porewater	Ferrous Iron, dissolved	mg/L	2	0	0	2023/04/28	2023/07/24	0.127	0.25	0.25	0.370
CCR	XPW04	Porewater	Iron, dissolved	mg/L	2	2	100	2023/04/28	2023/07/24	<0.014	<0.014	0.027	<0.04
CCR	XPW04	Porewater	Lithium, total	mg/L	7	3	43	2021/02/17	2023/10/10	<0.0099	0.020	0.018	0.0324
CCR	XPW04	Porewater	Magnesium, total	mg/L	12	0	0	2021/02/17	2023/10/10	0.140	0.64	0.84	2.40
CCR	XPW04	Porewater	Manganese, dissolved	mg/L	2	1	50	2023/04/28	2023/07/24	0.00320	0.0039	0.0039	<0.0046
CCR	XPW04	Porewater	Phosphate, dissolved	mg/L	1	0	0	2023/07/24	2023/07/24	0.169	0.169	0.17	0.169
CCR	XPW04	Porewater	Potassium, total	mg/L	12	0	0	2021/02/17	2023/10/10	24.0	73	64	93.7
CCR	XPW04	Porewater	Silicon, dissolved	mg/L	2	0	0	2023/04/28	2023/07/24	24.0	31	31	37.7
CCR	XPW04	Porewater	Sodium, total	mg/L	12	0	0	2021/02/17	2023/10/10	260	2600	2500	4,700
CCR	XPW04	Porewater	Sulfate, total	mg/L	12	0	0	2021/02/17	2023/10/10	600	3900	4800	9,500
CCR	XPW04	Porewater	Total Dissolved Solids	mg/L	12	0	0	2021/02/17	2023/10/10	1,100	7800	7900	16,600
UA	APW05	B	pH (field)	SU	34	0	0	2015/12/15	2023/10/10	6.9	7.5	7.4	8.0
UA	APW05	B	Oxidation Reduction Potential	mV	33	0	0	2015/12/15	2023/10/10	-160	-88	-81	192

Table 4-1. Summary of Porewater and Groundwater Data
Nature and Extent Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Parameter	Unit	Sample Count	Non-Detect Results	Percent Non-Detect Results	First Sample	Last Sample	Minimum	Median	Mean	Maximum
UA	APW05	B	Eh	V	33	0	0	2015/12/15	2023/10/10	0.033	0.11	0.11	0.39
UA	APW05	B	Alkalinity, bicarbonate	mg/L CaCO3	21	0	0	2017/06/13	2023/10/10	390	460	460	520
UA	APW05	B	Alkalinity, carbonate	mg/L CaCO3	21	21	100	2017/06/13	2023/10/10	0	0	0	0
UA	APW05	B	Barium, total	mg/L	22	0	0	2015/12/15	2023/10/10	0.190	0.24	0.24	0.333
UA	APW05	B	Calcium, total	mg/L	33	0	0	2015/12/15	2023/10/10	44.0	51	52	71.0
UA	APW05	B	Chloride, total	mg/L	33	0	0	2015/12/15	2023/10/10	43.0	50	50	62.0
UA	APW05	B	Ferrous Iron, dissolved	mg/L	2	0	0	2023/04/27	2023/07/24	0.999	1.1	1.1	1.20
UA	APW05	B	Iron, dissolved	mg/L	2	0	0	2023/04/27	2023/07/24	1.10	1.2	1.2	1.31
UA	APW05	B	Lithium, total	mg/L	22	9	41	2015/12/15	2023/10/10	<0.005	0.0099	0.012	0.0230
UA	APW05	B	Magnesium, total	mg/L	21	0	0	2017/06/13	2023/10/10	23.0	28	28	33.0
UA	APW05	B	Manganese, dissolved	mg/L	2	0	0	2023/04/27	2023/07/24	0.0275	0.034	0.034	0.0400
UA	APW05	B	Phosphate, dissolved	mg/L	1	0	0	2023/07/24	2023/07/24	0.414	0.414	0.41	0.414
UA	APW05	B	Potassium, total	mg/L	21	0	0	2017/06/13	2023/10/10	1.40	1.6	1.7	2.80
UA	APW05	B	Silicon, dissolved	mg/L	2	0	0	2023/04/27	2023/07/24	5.63	5.9	5.9	6.20
UA	APW05	B	Sodium, total	mg/L	21	0	0	2017/06/13	2023/10/10	120	130	130	160
UA	APW05	B	Sulfate, total	mg/L	33	8	24	2015/12/15	2023/10/10	<0.12	1.3	3.0	15.0
UA	APW05	B	Total Dissolved Solids	mg/L	32	0	0	2015/12/15	2023/10/10	470	550	550	1,000
UA	APW06	B	pH (field)	SU	34	0	0	2015/12/15	2023/10/10	6.4	7.4	7.4	7.8
UA	APW06	B	Oxidation Reduction Potential	mV	33	0	0	2015/12/15	2023/10/10	-164	-94	-88	58.0
UA	APW06	B	Eh	V	33	0	0	2015/12/15	2023/10/10	0.029	0.100	0.11	0.26
UA	APW06	B	Alkalinity, bicarbonate	mg/L CaCO3	21	0	0	2017/06/13	2023/10/10	370	450	470	880
UA	APW06	B	Alkalinity, carbonate	mg/L CaCO3	21	21	100	2017/06/13	2023/10/10	0	0	0	0
UA	APW06	B	Barium, total	mg/L	22	0	0	2015/12/15	2023/10/10	0.160	0.22	0.23	0.304
UA	APW06	B	Calcium, total	mg/L	33	0	0	2015/12/15	2023/10/10	43.0	55	57	120
UA	APW06	B	Chloride, total	mg/L	33	0	0	2015/12/15	2023/10/10	21.0	25	26	50.0
UA	APW06	B	Ferrous Iron, dissolved	mg/L	2	0	0	2023/04/26	2023/07/25	0.678	0.79	0.79	0.900
UA	APW06	B	Iron, dissolved	mg/L	2	0	0	2023/04/26	2023/07/25	0.683	0.78	0.78	0.880
UA	APW06	B	Lithium, total	mg/L	22	8	36	2015/12/15	2023/10/10	<0.005	0.011	0.013	0.0300
UA	APW06	B	Magnesium, total	mg/L	21	0	0	2017/06/13	2023/10/10	24.0	27	28	47.0
UA	APW06	B	Manganese, dissolved	mg/L	2	0	0	2023/04/26	2023/07/25	0.0390	0.044	0.044	0.0486
UA	APW06	B	Phosphate, dissolved	mg/L	1	0	0	2023/07/25	2023/07/25	0.249	0.249	0.25	0.249
UA	APW06	B	Potassium, total	mg/L	21	0	0	2017/06/13	2023/10/10	1.30	1.5	1.7	2.90
UA	APW06	B	Silicon, dissolved	mg/L	2	0	0	2023/04/26	2023/07/25	6.67	7.1	7.1	7.50
UA	APW06	B	Sodium, total	mg/L	21	0	0	2017/06/13	2023/10/10	110	120	120	140
UA	APW06	B	Sulfate, total	mg/L	33	4	12	2015/12/15	2023/10/10	<0.062	6.1	5.4	17.0
UA	APW06	B	Total Dissolved Solids	mg/L	32	0	0	2015/12/15	2023/10/10	420	500	500	640
UA	APW07	C	pH (field)	SU	26	0	0	2015/12/15	2023/10/10	6.8	7.3	7.3	7.6
UA	APW07	C	Oxidation Reduction Potential	mV	26	0	0	2015/12/15	2023/10/10	-164	-92	-78	106
UA	APW07	C	Eh	V	26	0	0	2015/12/15	2023/10/10	0.031	0.10	0.12	0.31

Table 4-1. Summary of Porewater and Groundwater Data
Nature and Extent Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Parameter	Unit	Sample Count	Non-Detect Results	Percent Non-Detect Results	First Sample	Last Sample	Minimum	Median	Mean	Maximum
UA	APW07	C	Alkalinity, bicarbonate	mg/L CaCO3	13	0	0	2017/06/13	2023/10/10	300	490	450	512
UA	APW07	C	Alkalinity, carbonate	mg/L CaCO3	13	13	100	2017/06/13	2023/10/10	0	0	0	0
UA	APW07	C	Barium, total	mg/L	14	0	0	2015/12/15	2023/10/10	0.350	0.49	0.49	0.808
UA	APW07	C	Calcium, total	mg/L	25	0	0	2015/12/15	2023/10/10	45.0	93	88	110
UA	APW07	C	Chloride, total	mg/L	26	0	0	2015/12/15	2023/10/10	43.0	69	69	79.0
UA	APW07	C	Ferrous Iron, dissolved	mg/L	2	0	0	2023/04/27	2023/07/25	1.10	1.7	1.7	2.29
UA	APW07	C	Iron, dissolved	mg/L	2	0	0	2023/04/27	2023/07/25	2.30	2.3	2.3	2.36
UA	APW07	C	Lithium, total	mg/L	14	11	79	2015/12/15	2023/10/10	<0.0001	<0.0001	0.0020	0.00580
UA	APW07	C	Magnesium, total	mg/L	13	0	0	2017/06/13	2023/10/10	34.8	39	39	42.0
UA	APW07	C	Manganese, dissolved	mg/L	2	0	0	2023/04/27	2023/07/25	0.0210	0.022	0.022	0.0224
UA	APW07	C	Phosphate, dissolved	mg/L	1	0	0	2023/07/25	2023/07/25	1.11	1.11	1.1	1.11
UA	APW07	C	Potassium, total	mg/L	13	0	0	2017/06/13	2023/10/10	1.40	1.9	2.0	2.90
UA	APW07	C	Silicon, dissolved	mg/L	2	0	0	2023/04/27	2023/07/25	7.29	7.7	7.7	8.10
UA	APW07	C	Sodium, total	mg/L	13	0	0	2017/06/13	2023/10/10	84.0	97	96	110
UA	APW07	C	Sulfate, total	mg/L	25	4	16	2015/12/15	2023/10/10	<0.12	7.5	12	66.0
UA	APW07	C	Total Dissolved Solids	mg/L	24	0	0	2015/12/15	2023/10/10	340	540	530	640
UA	APW08	C	pH (field)	SU	27	0	0	2015/12/15	2023/10/10	7.1	7.3	7.3	7.5
UA	APW08	C	Oxidation Reduction Potential	mV	27	0	0	2015/12/15	2023/10/10	-139	-100	-91	94.0
UA	APW08	C	Eh	V	27	0	0	2015/12/15	2023/10/10	0.055	0.096	0.10	0.29
UA	APW08	C	Alkalinity, bicarbonate	mg/L CaCO3	13	0	0	2017/06/13	2023/10/10	340	490	470	532
UA	APW08	C	Alkalinity, carbonate	mg/L CaCO3	13	13	100	2017/06/13	2023/10/10	0	0	0	0
UA	APW08	C	Barium, total	mg/L	14	0	0	2015/12/15	2023/10/10	0.240	0.38	0.43	0.777
UA	APW08	C	Calcium, total	mg/L	25	0	0	2015/12/15	2023/10/10	80.0	100	99	120
UA	APW08	C	Chloride, total	mg/L	26	0	0	2015/12/15	2023/10/10	50.0	56	56	62.0
UA	APW08	C	Ferrous Iron, dissolved	mg/L	2	0	0	2023/04/26	2023/07/31	2.60	4.2	4.2	5.76
UA	APW08	C	Iron, dissolved	mg/L	2	0	0	2023/04/26	2023/07/31	2.20	2.7	2.7	3.24
UA	APW08	C	Lithium, total	mg/L	14	7	50	2015/12/15	2023/10/10	<0.0001	0.0050	0.0057	0.0170
UA	APW08	C	Magnesium, total	mg/L	13	0	0	2017/06/13	2023/10/10	41.1	45	45	52.0
UA	APW08	C	Manganese, dissolved	mg/L	2	0	0	2023/04/26	2023/07/31	0.0585	0.060	0.060	0.0610
UA	APW08	C	Phosphate, dissolved	mg/L	1	0	0	2023/07/31	2023/07/31	1.24	1.24	1.2	1.24
UA	APW08	C	Potassium, total	mg/L	13	0	0	2017/06/13	2023/10/10	1.60	2.0	2.2	3.50
UA	APW08	C	Silicon, dissolved	mg/L	2	0	0	2023/04/26	2023/07/31	6.06	7.2	7.2	8.30
UA	APW08	C	Sodium, total	mg/L	13	0	0	2017/06/13	2023/10/10	79.0	87	88	93.0
UA	APW08	C	Sulfate, total	mg/L	25	0	0	2015/12/15	2023/10/10	30.0	42	42	57.0
UA	APW08	C	Total Dissolved Solids	mg/L	24	0	0	2015/12/15	2023/10/10	490	600	590	700
UA	APW09	C	pH (field)	SU	26	0	0	2015/12/15	2023/10/10	6.7	7.5	7.4	7.7
UA	APW09	C	Oxidation Reduction Potential	mV	26	0	0	2015/12/15	2023/10/10	-161	-72	-58	103
UA	APW09	C	Eh	V	26	0	0	2015/12/15	2023/10/10	0.032	0.12	0.14	0.30
UA	APW09	C	Alkalinity, bicarbonate	mg/L CaCO3	13	0	0	2017/06/13	2023/10/10	240	580	530	617

Table 4-1. Summary of Porewater and Groundwater Data
Nature and Extent Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Parameter	Unit	Sample Count	Non-Detect Results	Percent Non-Detect Results	First Sample	Last Sample	Minimum	Median	Mean	Maximum
UA	APW09	C	Alkalinity, carbonate	mg/L CaCO3	13	13	100	2017/06/13	2023/10/10	0	0	0	0
UA	APW09	C	Barium, total	mg/L	14	0	0	2015/12/15	2023/10/10	0.110	0.42	0.38	0.564
UA	APW09	C	Calcium, total	mg/L	25	0	0	2015/12/15	2023/10/10	38.0	77	97	730
UA	APW09	C	Chloride, total	mg/L	26	0	0	2015/12/15	2023/10/10	44.0	130	110	140
UA	APW09	C	Ferrous Iron, dissolved	mg/L	2	0	0	2023/04/27	2023/07/31	2.30	4.3	4.3	6.37
UA	APW09	C	Iron, dissolved	mg/L	2	0	0	2023/04/27	2023/07/31	2.50	2.8	2.8	3.20
UA	APW09	C	Lithium, total	mg/L	14	9	64	2015/12/15	2023/10/10	<0.0001	<0.0001	0.0032	0.0100
UA	APW09	C	Magnesium, total	mg/L	13	0	0	2017/06/13	2023/10/10	22.0	41	50	180
UA	APW09	C	Manganese, dissolved	mg/L	2	0	0	2023/04/27	2023/07/31	0.0260	0.028	0.028	0.0294
UA	APW09	C	Phosphate, dissolved	mg/L	1	0	0	2023/07/31	2023/07/31	2.27	2.27	2.3	2.27
UA	APW09	C	Potassium, total	mg/L	13	0	0	2017/06/13	2023/10/10	1.70	1.9	2.5	7.10
UA	APW09	C	Silicon, dissolved	mg/L	2	0	0	2023/04/27	2023/07/31	5.95	7.0	7.0	8.00
UA	APW09	C	Sodium, total	mg/L	13	0	0	2017/06/13	2023/10/10	70.0	190	180	210
UA	APW09	C	Sulfate, total	mg/L	25	2	8	2015/12/15	2023/10/10	<0.12	9.7	77	1,500
UA	APW09	C	Total Dissolved Solids	mg/L	25	0	0	2015/12/15	2023/10/10	300	760	780	3,200
UA	APW10	C	pH (field)	SU	29	0	0	2015/12/16	2023/10/10	6.9	7.1	7.2	7.5
UA	APW10	C	Oxidation Reduction Potential	mV	28	0	0	2015/12/16	2023/10/10	-207	36	27	142
UA	APW10	C	Eh	V	28	0	0	2015/12/16	2023/10/10	-0.012	0.23	0.22	0.34
UA	APW10	C	Alkalinity, bicarbonate	mg/L CaCO3	15	0	0	2017/06/13	2023/10/10	300	400	400	452
UA	APW10	C	Alkalinity, carbonate	mg/L CaCO3	15	15	100	2017/06/13	2023/10/10	0	0	0	0
UA	APW10	C	Barium, total	mg/L	16	0	0	2015/12/16	2023/10/10	0.0260	0.036	0.035	0.0590
UA	APW10	C	Calcium, total	mg/L	27	0	0	2015/12/16	2023/10/10	110	140	140	160
UA	APW10	C	Chloride, total	mg/L	27	0	0	2015/12/16	2023/10/10	41.0	46	47	53.0
UA	APW10	C	Ferrous Iron, dissolved	mg/L	2	1	50	2023/04/27	2023/07/31	<0.02	1.8	1.8	3.61
UA	APW10	C	Iron, dissolved	mg/L	2	0	0	2023/04/27	2023/07/31	0.0780	0.086	0.086	0.0949
UA	APW10	C	Lithium, total	mg/L	16	0	0	2015/12/16	2023/10/10	0.0180	0.022	0.023	0.0300
UA	APW10	C	Magnesium, total	mg/L	15	0	0	2017/06/13	2023/10/10	64.0	70	69	73.0
UA	APW10	C	Manganese, dissolved	mg/L	2	0	0	2023/04/27	2023/07/31	0.290	0.32	0.32	0.350
UA	APW10	C	Phosphate, dissolved	mg/L	1	1	100	2023/07/31	2023/07/31	<0.005	<0.005	0.0050	<0.005
UA	APW10	C	Potassium, total	mg/L	15	0	0	2017/06/13	2023/10/10	1.30	1.5	1.7	2.90
UA	APW10	C	Silicon, dissolved	mg/L	2	0	0	2023/04/27	2023/07/31	7.41	8.6	8.6	9.70
UA	APW10	C	Sodium, total	mg/L	15	0	0	2017/06/13	2023/10/10	110	120	120	130
UA	APW10	C	Sulfate, total	mg/L	27	0	0	2015/12/16	2023/10/10	390	410	420	540
UA	APW10	C	Total Dissolved Solids	mg/L	28	0	0	2015/12/16	2023/10/10	840	1000	1000	1,200
UA	APW11	C	pH (field)	SU	12	0	0	2021/02/18	2023/10/10	6.1	7.2	7.1	7.5
UA	APW11	C	Oxidation Reduction Potential	mV	11	0	0	2021/02/18	2023/10/10	-117	-41	-32	125
UA	APW11	C	Eh	V	11	0	0	2021/02/18	2023/10/10	0.078	0.15	0.16	0.32
UA	APW11	C	Alkalinity, bicarbonate	mg/L CaCO3	12	0	0	2021/02/18	2023/10/10	320	420	440	820
UA	APW11	C	Alkalinity, carbonate	mg/L CaCO3	12	12	100	2021/02/18	2023/10/10	0	0	0	0

Table 4-1. Summary of Porewater and Groundwater Data
Nature and Extent Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Parameter	Unit	Sample Count	Non-Detect Results	Percent Non-Detect Results	First Sample	Last Sample	Minimum	Median	Mean	Maximum
UA	APW11	C	Barium, total	mg/L	12	0	0	2021/02/18	2023/10/10	0.0420	0.048	0.060	0.160
UA	APW11	C	Calcium, total	mg/L	12	0	0	2021/02/18	2023/10/10	96.0	120	120	130
UA	APW11	C	Chloride, total	mg/L	12	0	0	2021/02/18	2023/10/10	23.0	26	28	47.0
UA	APW11	C	Ferrous Iron, dissolved	mg/L	2	0	0	2023/04/26	2023/07/24	0.920	0.98	0.98	1.04
UA	APW11	C	Iron, dissolved	mg/L	2	0	0	2023/04/26	2023/07/24	0.940	1.0	1.0	1.08
UA	APW11	C	Lithium, total	mg/L	12	0	0	2021/02/18	2023/10/10	0.0190	0.022	0.024	0.0380
UA	APW11	C	Magnesium, total	mg/L	12	0	0	2021/02/18	2023/10/10	50.0	55	55	58.0
UA	APW11	C	Manganese, dissolved	mg/L	2	0	0	2023/04/26	2023/07/24	0.840	0.89	0.89	0.947
UA	APW11	C	Phosphate, dissolved	mg/L	1	0	0	2023/07/24	2023/07/24	0.0210	0.0210	0.021	0.0210
UA	APW11	C	Potassium, total	mg/L	12	0	0	2021/02/18	2023/10/10	1.40	1.8	2.0	4.10
UA	APW11	C	Silicon, dissolved	mg/L	2	0	0	2023/04/26	2023/07/24	9.54	9.8	9.8	10.0
UA	APW11	C	Sodium, total	mg/L	12	0	0	2021/02/18	2023/10/10	89.5	98	99	110
UA	APW11	C	Sulfate, total	mg/L	12	0	0	2021/02/18	2023/10/10	140	280	270	300
UA	APW11	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/18	2023/10/10	780	840	850	940
UA	APW13	C	pH (field)	SU	12	0	0	2021/02/22	2023/10/10	6.4	7.2	7.1	7.3
UA	APW13	C	Oxidation Reduction Potential	mV	11	0	0	2021/02/22	2023/10/10	-102	-79	-52	109
UA	APW13	C	Eh	V	11	0	0	2021/02/22	2023/10/10	0.095	0.12	0.14	0.30
UA	APW13	C	Alkalinity, bicarbonate	mg/L CaCO3	12	0	0	2021/02/22	2023/10/10	450	500	490	522
UA	APW13	C	Alkalinity, carbonate	mg/L CaCO3	12	12	100	2021/02/22	2023/10/10	0	0	0	0
UA	APW13	C	Barium, total	mg/L	12	0	0	2021/02/22	2023/10/10	0.0500	0.053	0.055	0.0720
UA	APW13	C	Calcium, total	mg/L	12	0	0	2021/02/22	2023/10/10	110	120	120	130
UA	APW13	C	Chloride, total	mg/L	12	0	0	2021/02/22	2023/10/10	45.0	52	53	71.0
UA	APW13	C	Ferrous Iron, dissolved	mg/L	2	0	0	2023/04/27	2023/07/31	1.30	3.1	3.1	4.84
UA	APW13	C	Iron, dissolved	mg/L	2	0	0	2023/04/27	2023/07/31	1.30	1.4	1.4	1.44
UA	APW13	C	Lithium, total	mg/L	12	0	0	2021/02/22	2023/10/10	0.0210	0.031	0.033	0.0540
UA	APW13	C	Magnesium, total	mg/L	12	0	0	2021/02/22	2023/10/10	56.0	61	61	68.0
UA	APW13	C	Manganese, dissolved	mg/L	2	0	0	2023/04/27	2023/07/31	0.580	0.59	0.59	0.598
UA	APW13	C	Phosphate, dissolved	mg/L	1	1	100	2023/07/31	2023/07/31	<0.005	<0.005	0.0050	<0.005
UA	APW13	C	Potassium, total	mg/L	12	0	0	2021/02/22	2023/10/10	1.70	1.9	1.9	2.20
UA	APW13	C	Silicon, dissolved	mg/L	2	0	0	2023/04/27	2023/07/31	8.15	9.6	9.6	11.0
UA	APW13	C	Sodium, total	mg/L	12	0	0	2021/02/22	2023/10/10	110	120	120	140
UA	APW13	C	Sulfate, total	mg/L	12	0	0	2021/02/22	2023/10/10	210	220	220	250
UA	APW13	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/22	2023/10/10	760	860	860	940
UA	APW14	C	pH (field)	SU	12	0	0	2021/02/22	2023/10/10	6.5	7.4	7.3	7.5
UA	APW14	C	Oxidation Reduction Potential	mV	11	0	0	2021/02/22	2023/10/10	-145	-100	-85	117
UA	APW14	C	Eh	V	11	0	0	2021/02/22	2023/10/10	0.047	0.092	0.11	0.31
UA	APW14	C	Alkalinity, bicarbonate	mg/L CaCO3	12	0	0	2021/02/22	2023/10/10	410	460	500	920
UA	APW14	C	Alkalinity, carbonate	mg/L CaCO3	12	12	100	2021/02/22	2023/10/10	0	0	0	0
UA	APW14	C	Barium, total	mg/L	12	0	0	2021/02/22	2023/10/10	0.0649	0.089	0.090	0.140

Table 4-1. Summary of Porewater and Groundwater Data
Nature and Extent Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Parameter	Unit	Sample Count	Non-Detect Results	Percent Non-Detect Results	First Sample	Last Sample	Minimum	Median	Mean	Maximum
UA	APW14	C	Calcium, total	mg/L	12	0	0	2021/02/22	2023/10/10	120	130	130	150
UA	APW14	C	Chloride, total	mg/L	12	0	0	2021/02/22	2023/10/10	39.0	46	47	65.0
UA	APW14	C	Ferrous Iron, dissolved	mg/L	2	1	50	2023/04/28	2023/07/31	<0.1	1.9	1.9	3.80
UA	APW14	C	Iron, dissolved	mg/L	2	0	0	2023/04/28	2023/07/31	3.13	3.4	3.4	3.60
UA	APW14	C	Lithium, total	mg/L	12	0	0	2021/02/22	2023/10/10	0.0160	0.030	0.031	0.0510
UA	APW14	C	Magnesium, total	mg/L	12	0	0	2021/02/22	2023/10/10	58.0	66	66	76.0
UA	APW14	C	Manganese, dissolved	mg/L	2	0	0	2023/04/28	2023/07/31	0.207	0.21	0.21	0.220
UA	APW14	C	Phosphate, dissolved	mg/L	1	1	100	2023/07/31	2023/07/31	<0.005	<0.005	0.0050	<0.005
UA	APW14	C	Potassium, total	mg/L	12	0	0	2021/02/22	2023/10/10	1.60	2.9	2.9	5.30
UA	APW14	C	Silicon, dissolved	mg/L	2	0	0	2023/04/28	2023/07/31	7.08	8.1	8.1	9.20
UA	APW14	C	Sodium, total	mg/L	12	0	0	2021/02/22	2023/10/10	126	130	130	150
UA	APW14	C	Sulfate, total	mg/L	12	0	0	2021/02/22	2023/10/10	310	330	340	380
UA	APW14	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/22	2023/10/10	830	970	950	1,000
UA	APW15	C	pH (field)	SU	12	0	0	2021/02/23	2023/10/10	6.5	7.2	7.1	7.3
UA	APW15	C	Oxidation Reduction Potential	mV	11	0	0	2021/02/23	2023/10/10	-142	-120	-110	-61.8
UA	APW15	C	Eh	V	11	0	0	2021/02/23	2023/10/10	0.050	0.073	0.084	0.13
UA	APW15	C	Alkalinity, bicarbonate	mg/L CaCO3	12	0	0	2021/02/23	2023/10/10	590	710	760	1,400
UA	APW15	C	Alkalinity, carbonate	mg/L CaCO3	12	12	100	2021/02/23	2023/10/10	0	0	0	0
UA	APW15	C	Barium, total	mg/L	12	0	0	2021/02/23	2023/10/10	0.530	0.60	0.60	0.708
UA	APW15	C	Calcium, total	mg/L	12	0	0	2021/02/23	2023/10/10	91.0	97	97	100
UA	APW15	C	Chloride, total	mg/L	12	0	0	2021/02/23	2023/10/10	130	230	230	270
UA	APW15	C	Ferrous Iron, dissolved	mg/L	2	1	50	2023/04/26	2023/08/01	<0.1	3.0	3.0	6.00
UA	APW15	C	Iron, dissolved	mg/L	2	0	0	2023/04/26	2023/08/01	9.00	9.8	9.8	10.5
UA	APW15	C	Lithium, total	mg/L	12	6	50	2021/02/23	2023/10/10	0.00610	0.0099	0.011	0.0220
UA	APW15	C	Magnesium, total	mg/L	12	0	0	2021/02/23	2023/10/10	37.0	41	41	46.0
UA	APW15	C	Manganese, dissolved	mg/L	2	0	0	2023/04/26	2023/08/01	0.0830	0.085	0.085	0.0865
UA	APW15	C	Phosphate, dissolved	mg/L	1	0	0	2023/08/01	2023/08/01	1.44	1.44	1.4	1.44
UA	APW15	C	Potassium, total	mg/L	12	0	0	2021/02/23	2023/10/10	2.80	3.2	3.2	3.67
UA	APW15	C	Silicon, dissolved	mg/L	2	0	0	2023/04/26	2023/08/01	7.02	7.4	7.4	7.80
UA	APW15	C	Sodium, total	mg/L	12	0	0	2021/02/23	2023/10/10	260	280	290	320
UA	APW15	C	Sulfate, total	mg/L	12	8	67	2021/02/23	2023/10/10	<0.18	<0.18	2.5	16.0
UA	APW15	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/23	2023/10/10	1,000	1100	1100	1,200
UA	APW16	C	pH (field)	SU	12	0	0	2021/02/23	2023/10/10	7.0	7.4	7.4	7.7
UA	APW16	C	Oxidation Reduction Potential	mV	11	0	0	2021/02/23	2023/10/10	-143	-120	-92	108
UA	APW16	C	Eh	V	11	0	0	2021/02/23	2023/10/10	0.049	0.075	0.10	0.30
UA	APW16	C	Alkalinity, bicarbonate	mg/L CaCO3	12	0	0	2021/02/23	2023/10/10	510	640	670	1,300
UA	APW16	C	Alkalinity, carbonate	mg/L CaCO3	12	12	100	2021/02/23	2023/10/10	0	0	0	0
UA	APW16	C	Barium, total	mg/L	12	0	0	2021/02/23	2023/10/10	0.520	0.60	0.60	0.660
UA	APW16	C	Calcium, total	mg/L	12	0	0	2021/02/23	2023/10/10	92.0	96	96	100

Table 4-1. Summary of Porewater and Groundwater Data
Nature and Extent Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Parameter	Unit	Sample Count	Non-Detect Results	Percent Non-Detect Results	First Sample	Last Sample	Minimum	Median	Mean	Maximum
UA	APW16	C	Chloride, total	mg/L	12	0	0	2021/02/23	2023/10/10	59.0	71	70	77.0
UA	APW16	C	Ferrous Iron, dissolved	mg/L	2	0	0	2023/04/25	2023/07/31	2.30	3.9	3.9	5.59
UA	APW16	C	Iron, dissolved	mg/L	2	0	0	2023/04/25	2023/07/31	2.00	2.4	2.4	2.89
UA	APW16	C	Lithium, total	mg/L	12	10	83	2021/02/23	2023/10/10	0.00250	0.0099	0.0079	<0.0099
UA	APW16	C	Magnesium, total	mg/L	12	0	0	2021/02/23	2023/10/10	39.6	44	44	48.0
UA	APW16	C	Manganese, dissolved	mg/L	2	0	0	2023/04/25	2023/07/31	0.0190	0.023	0.023	0.0270
UA	APW16	C	Phosphate, dissolved	mg/L	1	0	0	2023/07/31	2023/07/31	1.47	1.47	1.5	1.47
UA	APW16	C	Potassium, total	mg/L	12	0	0	2021/02/23	2023/10/10	1.80	2.0	2.0	2.50
UA	APW16	C	Silicon, dissolved	mg/L	2	0	0	2023/04/25	2023/07/31	5.21	6.0	6.0	6.70
UA	APW16	C	Sodium, total	mg/L	12	0	0	2021/02/23	2023/10/10	130	140	140	160
UA	APW16	C	Sulfate, total	mg/L	12	7	58	2021/02/23	2023/10/10	<0.18	1.90	2.2	14.0
UA	APW16	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/23	2023/10/10	610	750	780	1,300
UA	APW17	C	pH (field)	SU	12	0	0	2021/02/23	2023/10/10	6.9	7.4	7.4	7.7
UA	APW17	C	Oxidation Reduction Potential	mV	11	0	0	2021/02/23	2023/10/10	-138	-97	-61	197
UA	APW17	C	Eh	V	11	0	0	2021/02/23	2023/10/10	0.054	0.098	0.13	0.39
UA	APW17	C	Alkalinity, bicarbonate	mg/L CaCO3	12	0	0	2021/02/23	2023/10/10	450	540	570	1,000
UA	APW17	C	Alkalinity, carbonate	mg/L CaCO3	12	12	100	2021/02/23	2023/10/10	0	0	0	0
UA	APW17	C	Barium, total	mg/L	12	0	0	2021/02/23	2023/10/10	0.540	0.60	0.61	0.741
UA	APW17	C	Calcium, total	mg/L	12	0	0	2021/02/23	2023/10/10	100	110	110	120
UA	APW17	C	Chloride, total	mg/L	12	0	0	2021/02/23	2023/10/10	31.0	56	56	88.0
UA	APW17	C	Ferrous Iron, dissolved	mg/L	2	0	0	2023/04/25	2023/07/25	1.90	2.5	2.5	3.20
UA	APW17	C	Iron, dissolved	mg/L	2	0	0	2023/04/25	2023/07/25	1.90	2.0	2.0	2.18
UA	APW17	C	Lithium, total	mg/L	12	10	83	2021/02/23	2023/10/10	0.00240	0.0099	0.0078	<0.0099
UA	APW17	C	Magnesium, total	mg/L	12	0	0	2021/02/23	2023/10/10	42.0	48	47	53.0
UA	APW17	C	Manganese, dissolved	mg/L	2	0	0	2023/04/25	2023/07/25	0.0191	0.022	0.022	0.0250
UA	APW17	C	Phosphate, dissolved	mg/L	1	0	0	2023/07/25	2023/07/25	1.60	1.60	1.6	1.60
UA	APW17	C	Potassium, total	mg/L	12	0	0	2021/02/23	2023/10/10	1.60	1.8	1.9	2.20
UA	APW17	C	Silicon, dissolved	mg/L	2	0	0	2023/04/25	2023/07/25	6.71	7.2	7.2	7.70
UA	APW17	C	Sodium, total	mg/L	12	0	0	2021/02/23	2023/10/10	82.0	92	92	100
UA	APW17	C	Sulfate, total	mg/L	12	1	8	2021/02/23	2023/10/10	<4.6	40	40	64.0
UA	APW17	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/23	2023/10/10	620	660	660	700
UA	APW18	C	pH (field)	SU	12	0	0	2021/02/23	2023/10/10	7.2	7.6	7.6	8.1
UA	APW18	C	Oxidation Reduction Potential	mV	11	0	0	2021/02/23	2023/10/10	-182	-140	-100	120
UA	APW18	C	Eh	V	11	0	0	2021/02/23	2023/10/10	0.0089	0.055	0.091	0.31
UA	APW18	C	Alkalinity, bicarbonate	mg/L CaCO3	12	0	0	2021/02/23	2023/10/10	380	490	510	950
UA	APW18	C	Alkalinity, carbonate	mg/L CaCO3	12	12	100	2021/02/23	2023/10/10	0	0	0	0
UA	APW18	C	Barium, total	mg/L	12	0	0	2021/02/23	2023/10/10	0.180	0.35	0.35	0.443
UA	APW18	C	Calcium, total	mg/L	12	0	0	2021/02/23	2023/10/10	49.0	63	65	75.5
UA	APW18	C	Chloride, total	mg/L	12	0	0	2021/02/23	2023/10/10	23.0	30	35	79.0

Table 4-1. Summary of Porewater and Groundwater Data
Nature and Extent Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Parameter	Unit	Sample Count	Non-Detect Results	Percent Non-Detect Results	First Sample	Last Sample	Minimum	Median	Mean	Maximum
UA	APW18	C	Ferrous Iron, dissolved	mg/L	2	0	0	2023/04/25	2023/07/25	1.30	1.4	1.4	1.42
UA	APW18	C	Iron, dissolved	mg/L	2	0	0	2023/04/25	2023/07/25	1.40	1.40	1.4	1.40
UA	APW18	C	Lithium, total	mg/L	12	9	75	2021/02/23	2023/10/10	<0.005	0.0099	0.0083	<0.0099
UA	APW18	C	Magnesium, total	mg/L	12	0	0	2021/02/23	2023/10/10	25.0	37	36	44.0
UA	APW18	C	Manganese, dissolved	mg/L	2	0	0	2023/04/25	2023/07/25	0.0453	0.047	0.047	0.0480
UA	APW18	C	Phosphate, dissolved	mg/L	1	0	0	2023/07/25	2023/07/25	0.860	0.860	0.86	0.860
UA	APW18	C	Potassium, total	mg/L	12	0	0	2021/02/23	2023/10/10	2.34	8.4	7.6	14.0
UA	APW18	C	Silicon, dissolved	mg/L	2	0	0	2023/04/25	2023/07/25	6.08	6.4	6.4	6.70
UA	APW18	C	Sodium, total	mg/L	12	0	0	2021/02/23	2023/10/10	104	120	120	140
UA	APW18	C	Sulfate, total	mg/L	12	2	17	2021/02/23	2023/10/10	<0.18	11	21	52.0
UA	APW18	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/23	2023/10/10	450	570	570	660
UD/PMP	APW02	C	pH (field)	SU	36	0	0	2010/11/30	2023/10/10	5.4	6.8	6.8	7.1
UD/PMP	APW02	C	Oxidation Reduction Potential	mV	16	0	0	2021/02/17	2023/10/10	-5.10	72	66	164
UD/PMP	APW02	C	Eh	V	16	0	0	2021/02/17	2023/10/10	0.19	0.27	0.26	0.36
UD/PMP	APW02	C	Alkalinity, bicarbonate	mg/L CaCO3	12	0	0	2021/02/17	2023/10/10	450	640	670	1,300
UD/PMP	APW02	C	Alkalinity, carbonate	mg/L CaCO3	12	12	100	2021/02/17	2023/10/10	0	0	0	0
UD/PMP	APW02	C	Barium, total	mg/L	12	0	0	2021/02/17	2023/10/10	0.00750	0.014	0.017	0.0360
UD/PMP	APW02	C	Calcium, total	mg/L	12	0	0	2021/02/17	2023/10/10	430	490	490	540
UD/PMP	APW02	C	Chloride, total	mg/L	12	0	0	2021/02/17	2023/10/10	84.0	110	110	130
UD/PMP	APW02	C	Ferrous Iron, dissolved	mg/L	2	2	100	2023/04/27	2023/08/17	<0.02	<0.02	0.060	<0.1
UD/PMP	APW02	C	Iron, dissolved	mg/L	10	3	30	2010/11/30	2023/08/17	<0.01	0.020	0.061	0.140
UD/PMP	APW02	C	Lithium, total	mg/L	12	0	0	2021/02/17	2023/10/10	0.0790	0.11	0.14	0.300
UD/PMP	APW02	C	Magnesium, total	mg/L	12	0	0	2021/02/17	2023/10/10	380	450	450	490
UD/PMP	APW02	C	Manganese, dissolved	mg/L	47	0	0	2010/11/30	2023/10/10	0.00440	0.24	0.36	1.40
UD/PMP	APW02	C	Phosphate, dissolved	mg/L	1	1	100	2023/08/17	2023/08/17	<0.005	<0.005	0.0050	<0.005
UD/PMP	APW02	C	Potassium, total	mg/L	12	0	0	2021/02/17	2023/10/10	3.90	6.3	6.1	7.07
UD/PMP	APW02	C	Silicon, dissolved	mg/L	2	0	0	2023/04/27	2023/08/17	7.86	8.0	8.0	8.20
UD/PMP	APW02	C	Sodium, total	mg/L	12	0	0	2021/02/17	2023/10/10	350	380	380	441
UD/PMP	APW02	C	Sulfate, total	mg/L	12	0	0	2021/02/17	2023/10/10	1,500	3100	2900	3,200
UD/PMP	APW02	C	Total Dissolved Solids	mg/L	36	0	0	2010/11/30	2023/10/10	1,910	5100	5000	5,500
UD/PMP	APW03	C	pH (field)	SU	36	0	0	2010/11/30	2023/10/10	6.1	7.2	7.1	7.8
UD/PMP	APW03	C	Oxidation Reduction Potential	mV	16	0	0	2021/02/18	2023/10/10	-31.0	37	66	225
UD/PMP	APW03	C	Eh	V	16	0	0	2021/02/18	2023/10/10	0.15	0.23	0.26	0.43
UD/PMP	APW03	C	Alkalinity, bicarbonate	mg/L CaCO3	12	0	0	2021/02/18	2023/10/10	390	430	460	820
UD/PMP	APW03	C	Alkalinity, carbonate	mg/L CaCO3	12	12	100	2021/02/18	2023/10/10	0	0	0	0
UD/PMP	APW03	C	Barium, total	mg/L	12	0	0	2021/02/18	2023/10/10	0.0590	0.073	0.076	0.110
UD/PMP	APW03	C	Calcium, total	mg/L	12	0	0	2021/02/18	2023/10/10	92.5	110	110	120
UD/PMP	APW03	C	Chloride, total	mg/L	12	0	0	2021/02/18	2023/10/10	6.90	8.2	8.4	11.0
UD/PMP	APW03	C	Ferrous Iron, dissolved	mg/L	2	1	50	2023/04/25	2023/07/31	<0.02	1.9	1.9	3.80

Table 4-1. Summary of Porewater and Groundwater Data
Nature and Extent Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Parameter	Unit	Sample Count	Non-Detect Results	Percent Non-Detect Results	First Sample	Last Sample	Minimum	Median	Mean	Maximum
UD/PMP	APW03	C	Iron, dissolved	mg/L	10	6	60	2010/11/30	2023/07/31	0	0.010	0.017	0.0460
UD/PMP	APW03	C	Lithium, total	mg/L	12	2	17	2021/02/18	2023/10/10	0.00960	0.017	0.018	0.0350
UD/PMP	APW03	C	Magnesium, total	mg/L	12	0	0	2021/02/18	2023/10/10	52.7	62	61	65.0
UD/PMP	APW03	C	Manganese, dissolved	mg/L	47	0	0	2010/11/30	2023/10/10	0.00540	0.025	0.041	0.410
UD/PMP	APW03	C	Phosphate, dissolved	mg/L	1	0	0	2023/07/31	2023/07/31	0.157	0.157	0.16	0.157
UD/PMP	APW03	C	Potassium, total	mg/L	12	0	0	2021/02/18	2023/10/10	0.310	0.77	0.70	0.980
UD/PMP	APW03	C	Silicon, dissolved	mg/L	2	0	0	2023/04/25	2023/07/31	11.8	13	13	14.0
UD/PMP	APW03	C	Sodium, total	mg/L	12	0	0	2021/02/18	2023/10/10	49.0	54	55	67.0
UD/PMP	APW03	C	Sulfate, total	mg/L	12	0	0	2021/02/18	2023/10/10	110	170	150	190
UD/PMP	APW03	C	Total Dissolved Solids	mg/L	36	0	0	2010/11/30	2023/10/10	520	640	710	3,000
UD/PMP	APW04	C	pH (field)	SU	36	0	0	2010/11/30	2023/10/10	5.7	7.0	6.9	8.4
UD/PMP	APW04	C	Oxidation Reduction Potential	mV	16	0	0	2021/02/18	2023/10/10	19.0	110	110	224
UD/PMP	APW04	C	Eh	V	16	0	0	2021/02/18	2023/10/10	0.21	0.31	0.31	0.42
UD/PMP	APW04	C	Alkalinity, bicarbonate	mg/L CaCO3	12	0	0	2021/02/18	2023/10/10	440	470	510	920
UD/PMP	APW04	C	Alkalinity, carbonate	mg/L CaCO3	12	12	100	2021/02/18	2023/10/10	0	0	0	0
UD/PMP	APW04	C	Barium, total	mg/L	12	0	0	2021/02/18	2023/10/10	0.0130	0.023	0.024	0.0370
UD/PMP	APW04	C	Calcium, total	mg/L	12	0	0	2021/02/18	2023/10/10	206	220	220	240
UD/PMP	APW04	C	Chloride, total	mg/L	12	0	0	2021/02/18	2023/10/10	27.0	34	33	37.0
UD/PMP	APW04	C	Ferrous Iron, dissolved	mg/L	2	1	50	2023/04/25	2023/07/31	<0.02	1.8	1.8	3.54
UD/PMP	APW04	C	Iron, dissolved	mg/L	10	6	60	2010/11/30	2023/07/31	0	0.010	0.018	0.0610
UD/PMP	APW04	C	Lithium, total	mg/L	12	1	8	2021/02/18	2023/10/10	<0.0099	0.021	0.023	0.0450
UD/PMP	APW04	C	Magnesium, total	mg/L	12	0	0	2021/02/18	2023/10/10	167	170	180	200
UD/PMP	APW04	C	Manganese, dissolved	mg/L	47	0	0	2010/11/30	2023/10/10	0.0570	0.26	0.34	1.30
UD/PMP	APW04	C	Phosphate, dissolved	mg/L	1	0	0	2023/07/31	2023/07/31	0.0150	0.0150	0.015	0.0150
UD/PMP	APW04	C	Potassium, total	mg/L	12	0	0	2021/02/18	2023/10/10	1.20	1.5	1.5	1.80
UD/PMP	APW04	C	Silicon, dissolved	mg/L	2	0	0	2023/04/25	2023/07/31	7.61	8.3	8.3	8.90
UD/PMP	APW04	C	Sodium, total	mg/L	12	0	0	2021/02/18	2023/10/10	90.0	93	94	110
UD/PMP	APW04	C	Sulfate, total	mg/L	12	0	0	2021/02/18	2023/10/10	760	900	890	990
UD/PMP	APW04	C	Total Dissolved Solids	mg/L	36	0	0	2010/11/30	2023/10/10	1,600	1900	2000	3,100
UD/PMP	APW05S	C	pH (field)	SU	11	0	0	2021/02/17	2023/10/10	6.6	6.8	6.8	7.1
UD/PMP	APW05S	C	Oxidation Reduction Potential	mV	10	0	0	2021/02/17	2023/10/10	-37.0	3.8	28	202
UD/PMP	APW05S	C	Eh	V	10	0	0	2021/02/17	2023/10/10	0.15	0.20	0.22	0.40
UD/PMP	APW05S	C	Alkalinity, bicarbonate	mg/L CaCO3	11	0	0	2021/02/17	2023/10/10	490	540	580	1,100
UD/PMP	APW05S	C	Alkalinity, carbonate	mg/L CaCO3	11	11	100	2021/02/17	2023/10/10	0	0	0	0
UD/PMP	APW05S	C	Barium, total	mg/L	11	0	0	2021/02/17	2023/10/10	0.0328	0.050	0.051	0.0920
UD/PMP	APW05S	C	Calcium, total	mg/L	11	0	0	2021/02/17	2023/10/10	355	390	400	430
UD/PMP	APW05S	C	Chloride, total	mg/L	11	0	0	2021/02/17	2023/10/10	112	200	220	550
UD/PMP	APW05S	C	Ferrous Iron, dissolved	mg/L	2	0	0	2023/04/26	2023/07/25	0.164	0.21	0.21	0.260
UD/PMP	APW05S	C	Iron, dissolved	mg/L	2	0	0	2023/04/26	2023/07/25	0.0562	0.083	0.083	0.110

Table 4-1. Summary of Porewater and Groundwater Data
Nature and Extent Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Parameter	Unit	Sample Count	Non-Detect Results	Percent Non-Detect Results	First Sample	Last Sample	Minimum	Median	Mean	Maximum
UD/PMP	APW05S	C	Lithium, total	mg/L	11	0	0	2021/02/17	2023/10/10	0.0328	0.039	0.045	0.0910
UD/PMP	APW05S	C	Magnesium, total	mg/L	11	0	0	2021/02/17	2023/10/10	282	300	300	350
UD/PMP	APW05S	C	Manganese, dissolved	mg/L	2	0	0	2023/04/26	2023/07/25	0.418	0.45	0.45	0.480
UD/PMP	APW05S	C	Phosphate, dissolved	mg/L	1	0	0	2023/07/25	2023/07/25	0.0210	0.0210	0.021	0.0210
UD/PMP	APW05S	C	Potassium, total	mg/L	11	0	0	2021/02/17	2023/10/10	1.80	2.0	2.1	2.50
UD/PMP	APW05S	C	Silicon, dissolved	mg/L	2	0	0	2023/04/26	2023/07/25	10.3	11	11	11.0
UD/PMP	APW05S	C	Sodium, total	mg/L	11	0	0	2021/02/17	2023/10/10	240	250	260	310
UD/PMP	APW05S	C	Sulfate, total	mg/L	11	0	0	2021/02/17	2023/10/10	200	1900	1700	2,100
UD/PMP	APW05S	C	Total Dissolved Solids	mg/L	11	0	0	2021/02/17	2023/10/10	3,200	3600	3600	4,000
UD/PMP	APW12	C	pH (field)	SU	12	0	0	2021/02/17	2023/10/11	6.0	6.4	6.4	6.5
UD/PMP	APW12	C	Oxidation Reduction Potential	mV	11	0	0	2021/02/17	2023/10/11	6.00	46	51	117
UD/PMP	APW12	C	Eh	V	11	0	0	2021/02/17	2023/10/11	0.20	0.24	0.25	0.31
UD/PMP	APW12	C	Alkalinity, bicarbonate	mg/L CaCO3	12	0	0	2021/02/17	2023/10/11	520	670	650	700
UD/PMP	APW12	C	Alkalinity, carbonate	mg/L CaCO3	12	12	100	2021/02/17	2023/10/11	0	0	0	0
UD/PMP	APW12	C	Barium, total	mg/L	12	0	0	2021/02/17	2023/10/11	0.0280	0.038	0.040	0.0580
UD/PMP	APW12	C	Calcium, total	mg/L	12	0	0	2021/02/17	2023/10/11	190	220	220	275
UD/PMP	APW12	C	Chloride, total	mg/L	12	0	0	2021/02/17	2023/10/11	20.0	24	25	31.0
UD/PMP	APW12	C	Ferrous Iron, dissolved	mg/L	2	1	50	2023/04/26	2023/07/24	<0.02	0.19	0.19	0.362
UD/PMP	APW12	C	Iron, dissolved	mg/L	2	0	0	2023/04/26	2023/07/24	0.160	0.19	0.19	0.211
UD/PMP	APW12	C	Lithium, total	mg/L	12	0	0	2021/02/17	2023/10/11	0.0240	0.028	0.031	0.0460
UD/PMP	APW12	C	Magnesium, total	mg/L	12	0	0	2021/02/17	2023/10/11	84.0	96	100	127
UD/PMP	APW12	C	Manganese, dissolved	mg/L	2	0	0	2023/04/26	2023/07/24	1.30	1.4	1.4	1.40
UD/PMP	APW12	C	Phosphate, dissolved	mg/L	1	1	100	2023/07/24	2023/07/24	<0.005	<0.005	0.0050	<0.005
UD/PMP	APW12	C	Potassium, total	mg/L	12	0	0	2021/02/17	2023/10/11	0.940	1.1	1.8	6.00
UD/PMP	APW12	C	Silicon, dissolved	mg/L	2	0	0	2023/04/26	2023/07/24	15.8	17	17	18.0
UD/PMP	APW12	C	Sodium, total	mg/L	12	0	0	2021/02/17	2023/10/11	77.0	110	110	151
UD/PMP	APW12	C	Sulfate, total	mg/L	12	0	0	2021/02/17	2023/10/11	56.0	420	420	712
UD/PMP	APW12	C	Total Dissolved Solids	mg/L	12	0	0	2021/02/17	2023/10/11	990	1300	1400	1,740

Notes:
< = result is less than the detection limit
B = background well
C = compliance well
HSU = hydrostratigraphic unit
  CCR = coal combustion residual
  UA = uppermost aquifer
  UD = uppermost drift
mg/L = milligrams per liter
V = volts

FIGURES

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- MONITORING WELL
- PORE WATER WELL
- LEACHATE WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, LAKE
- GROUNDWATER ELEVATION CONTOUR (5-FT CONTOUR INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE

NOTES:

1.ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.

2. ELEVATIONS IN BRACKETS WERE OBTAINED OUTSIDE OF THE 24 HOUR PERIOD FROM INITIATION OF DEPTH TO GROUNDWATER MEASUREMENTS BUT WITHIN THE SAME SAMPLING EVENT.

3. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

0 400 800 Feet

FIGURE 2-1
POTENTIOMETRIC SURFACE MAP
OCTOBER 9, 2023

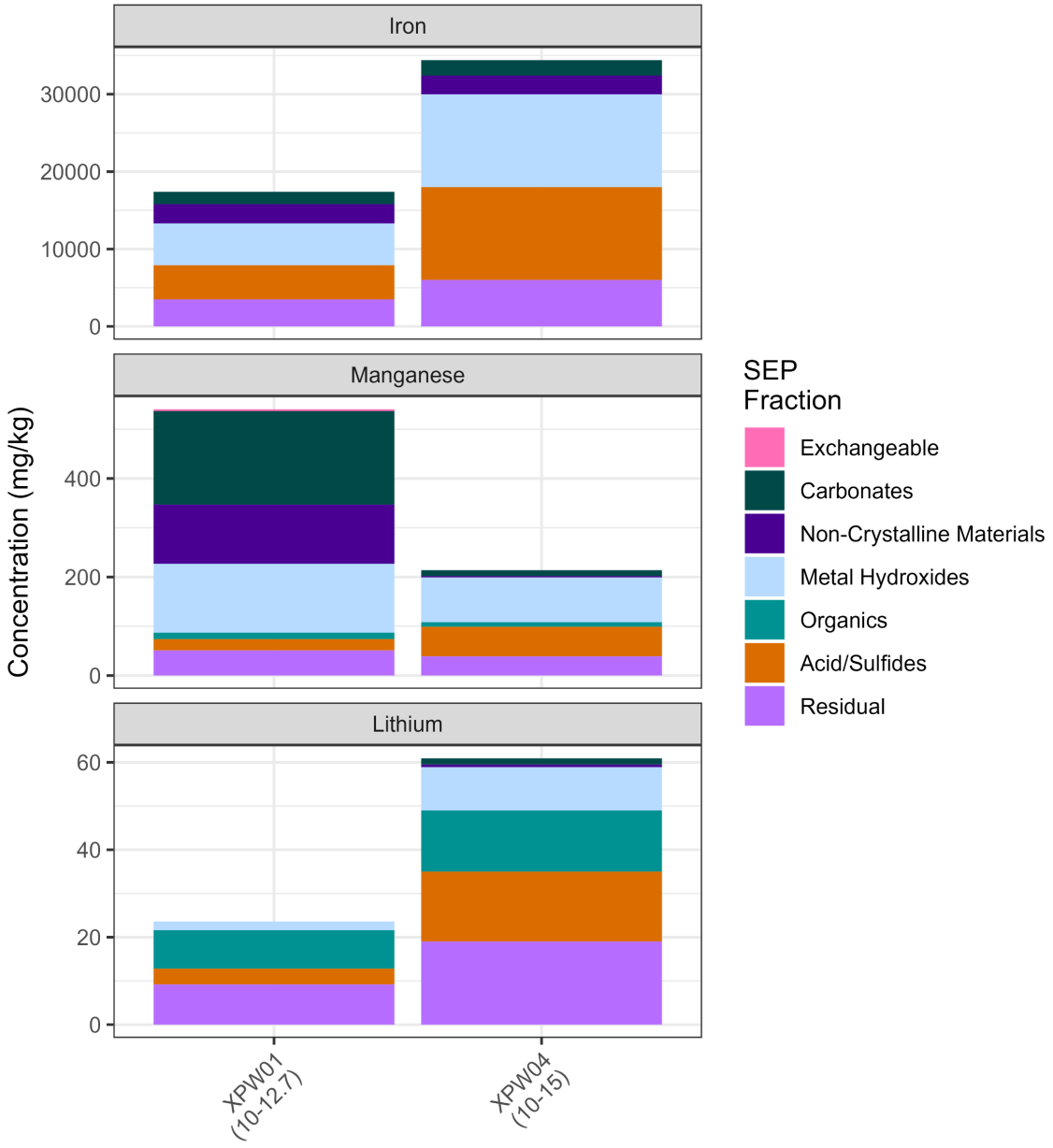
GEOCHEMICAL CONCEPTUATL SITE MODEL
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\22851\MXD\GW_Contours\Round_2023\Newton\PAP_501\NEW 501 PAP Pot Surface 20231009.mxd

PROJECT: 169000XXXX | DATED: 12/11/2023 | DESIGNER: GALARNMC



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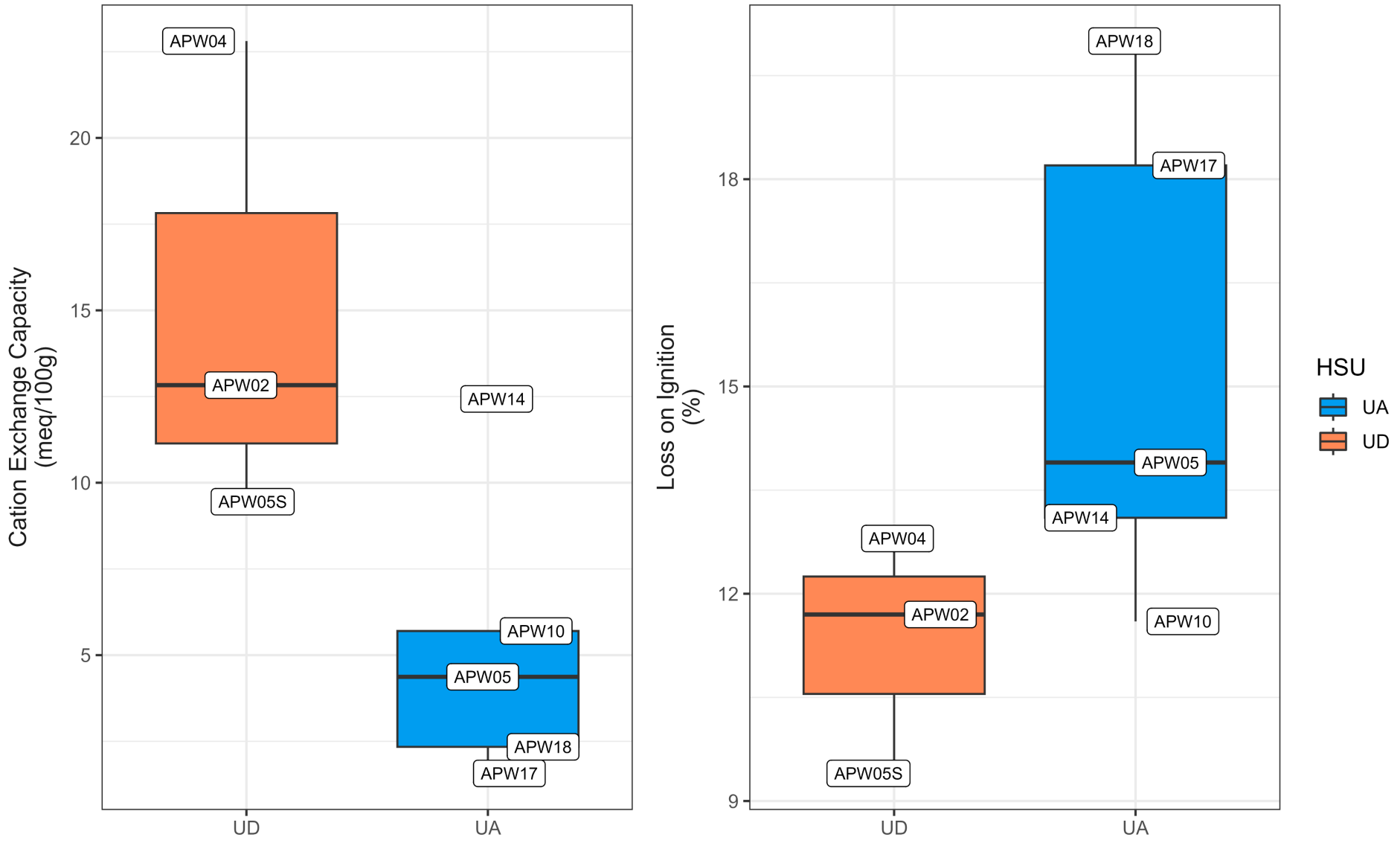
SEP Results From CCR Samples
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 3-1



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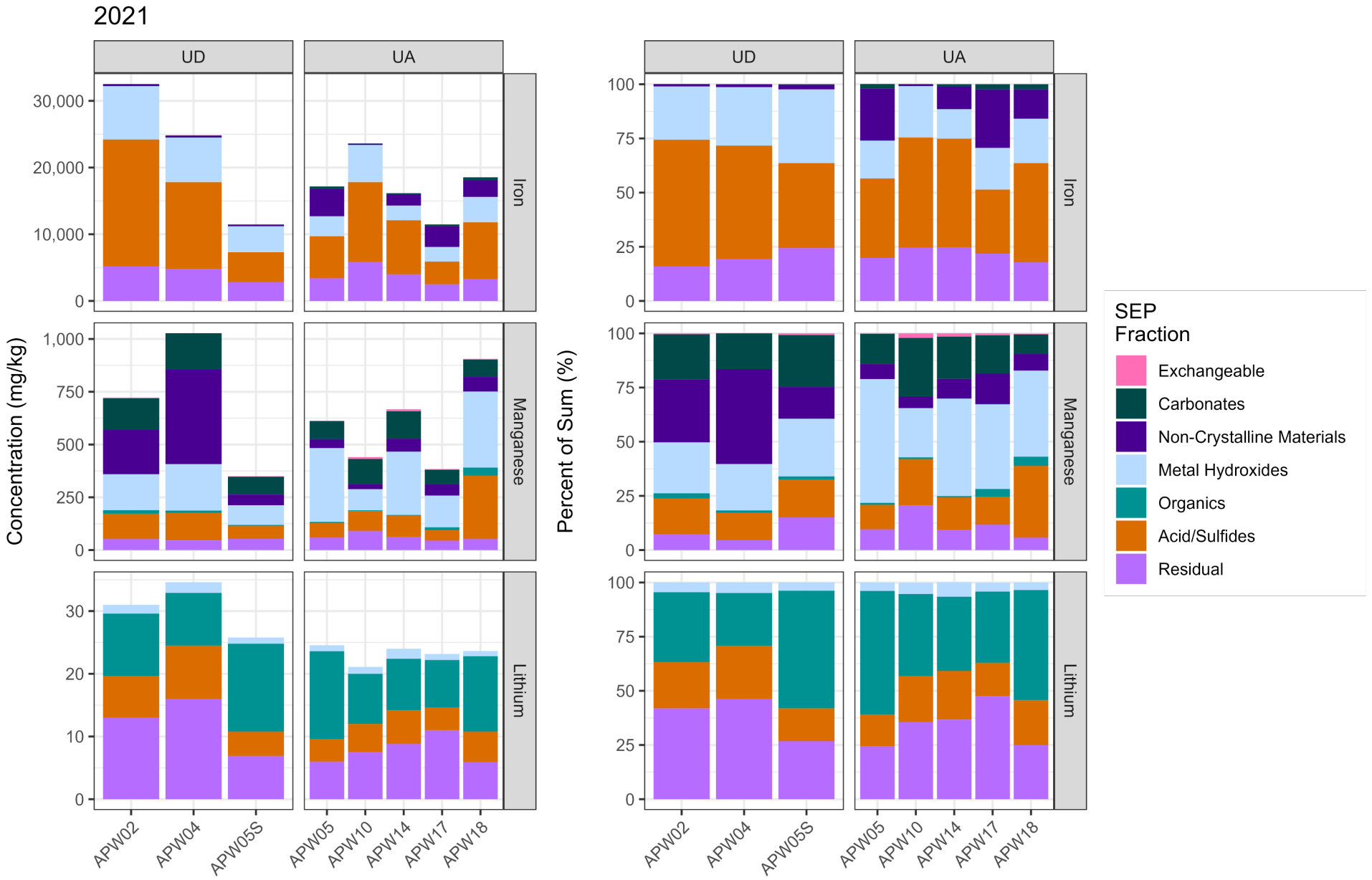
CEC and LOI Results from Aquifer Solids Samples
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 3-2



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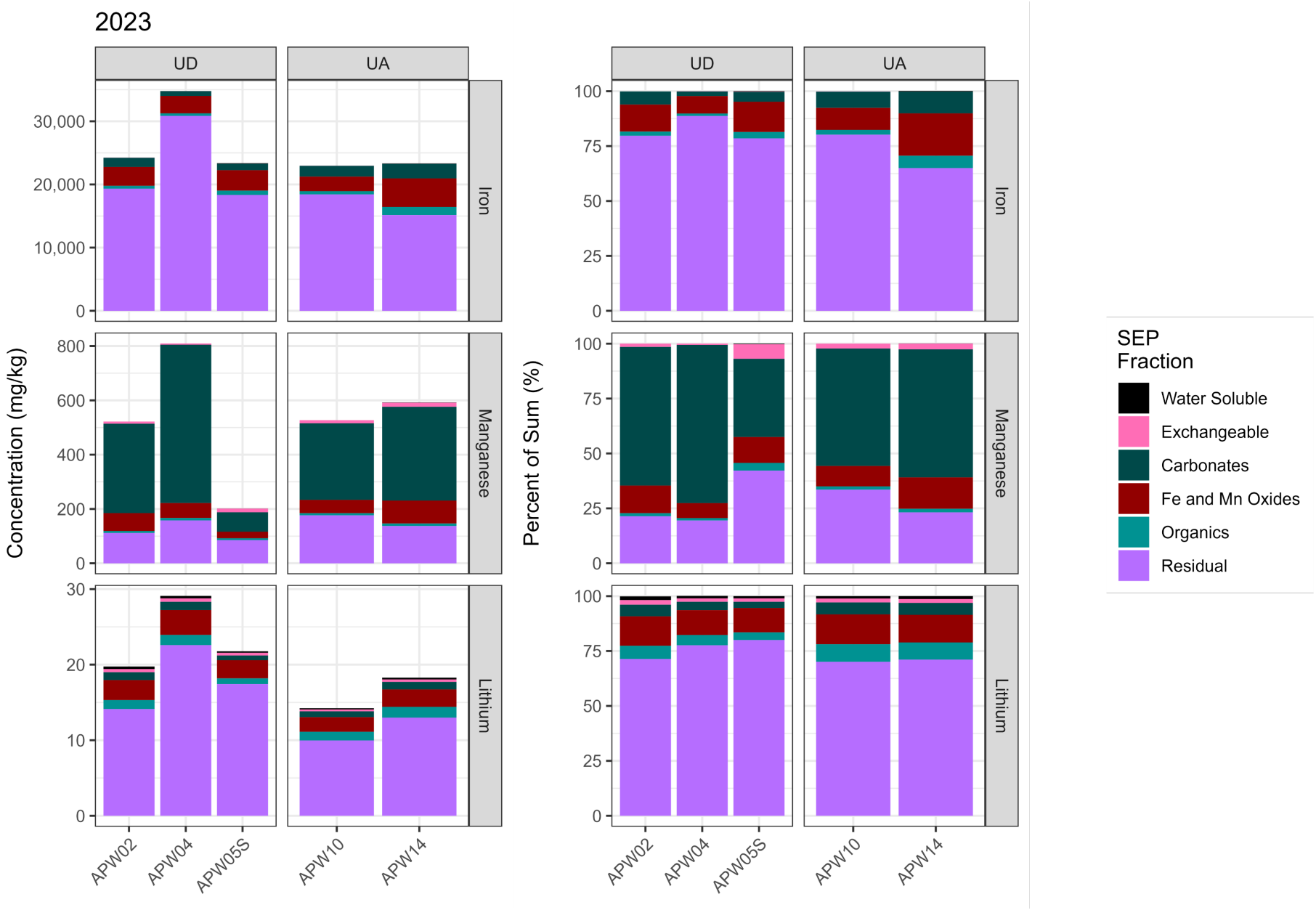
SEP Results from Aquifer Solids Samples
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 3-3a



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SEP Results from Aquifer Solids Samples
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 3-3b

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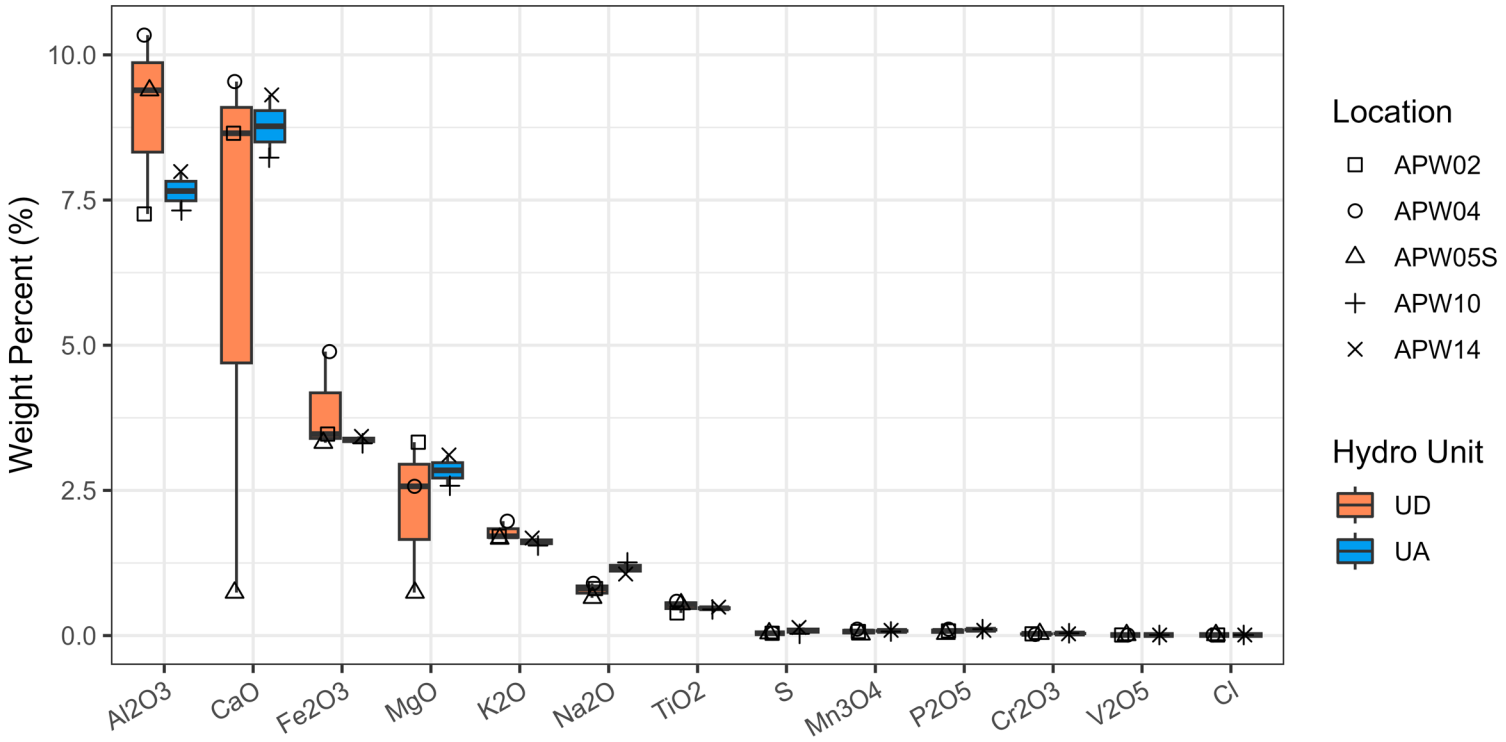

XRF Results from Aquifer Solids Samples
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 3-4

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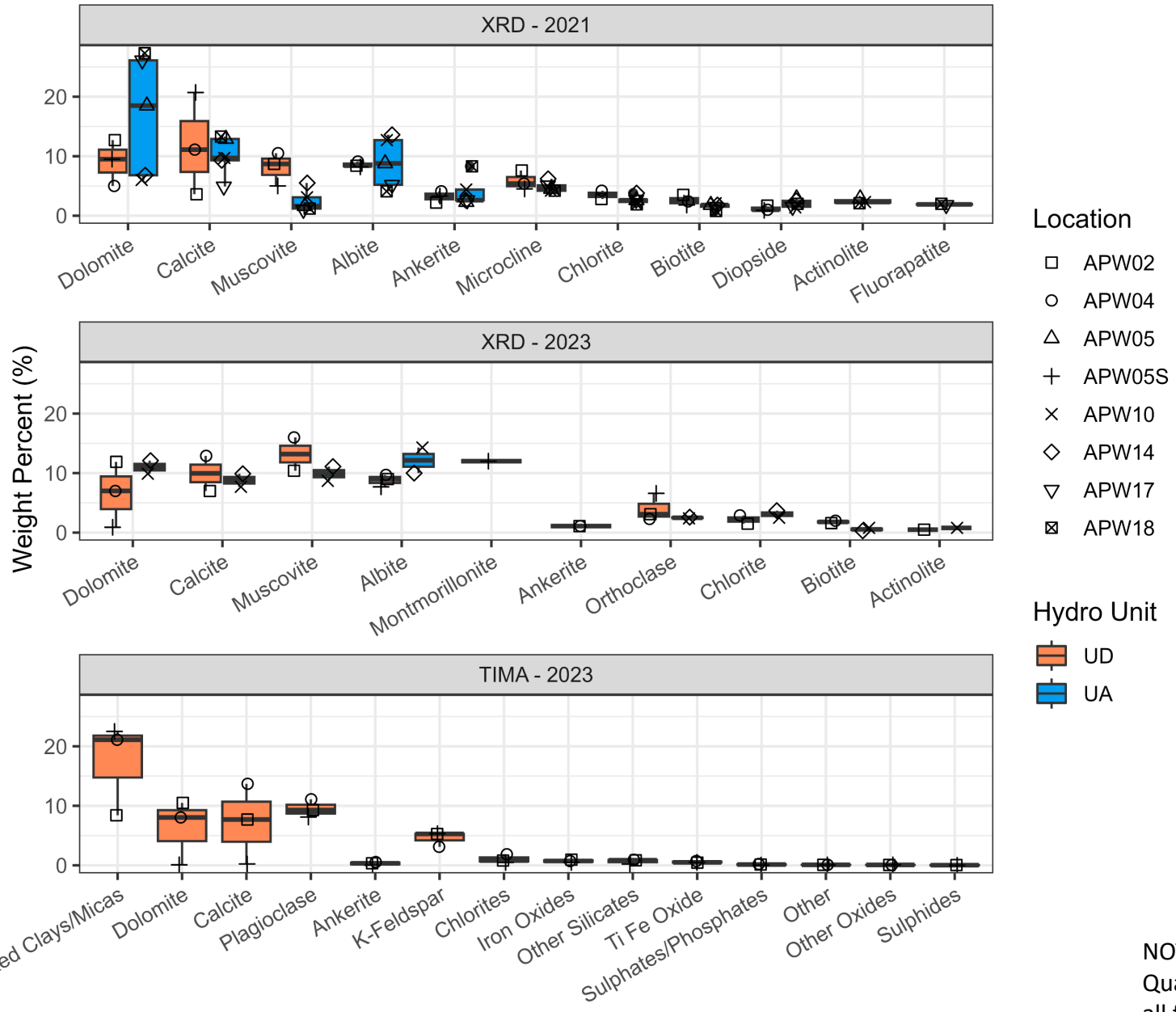

NOTES:
Quartz omitted from all figures due to scale.

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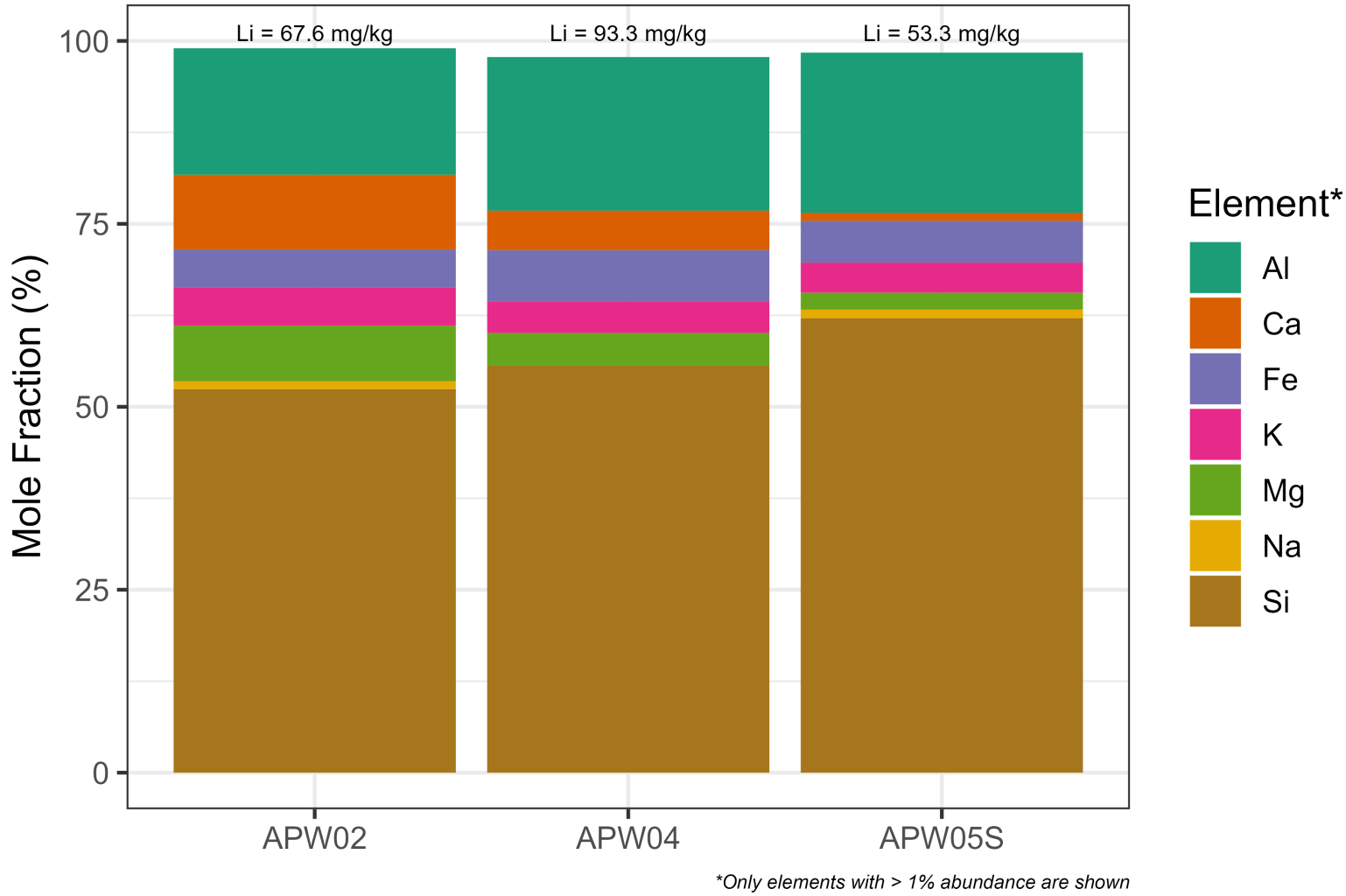
XRD and TIMA Results from Aquifer Solids Samples
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 3-5



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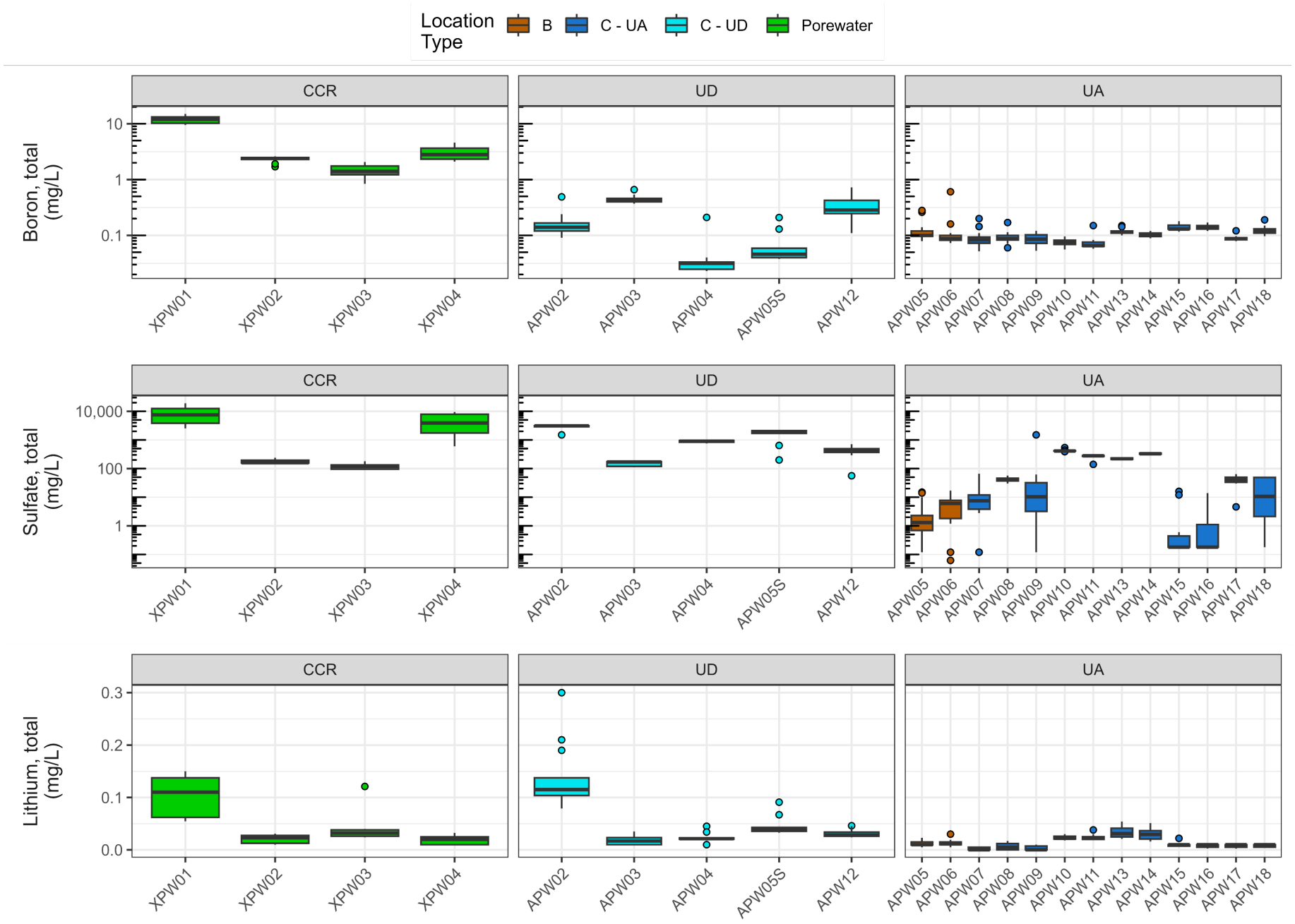
EMPA Results for Mixed Micas/Clays from Aquifer Solids Samples
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 3-6



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Summary of Boron, Sulfate, and Lithium Concentrations in Porewater and Groundwater
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 4-1

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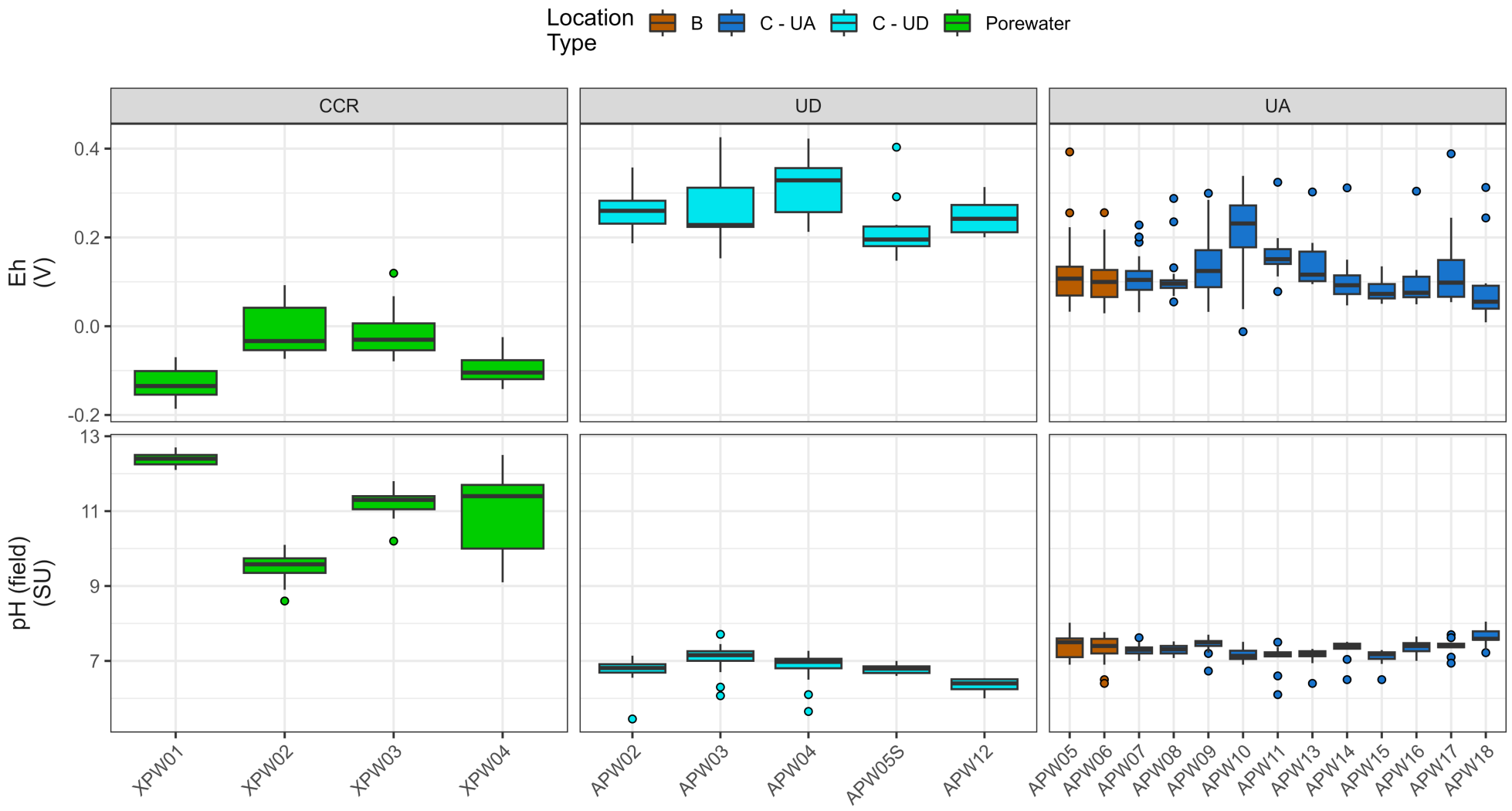

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Summary of Eh and pH in Porewater and Groundwater
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 4-2

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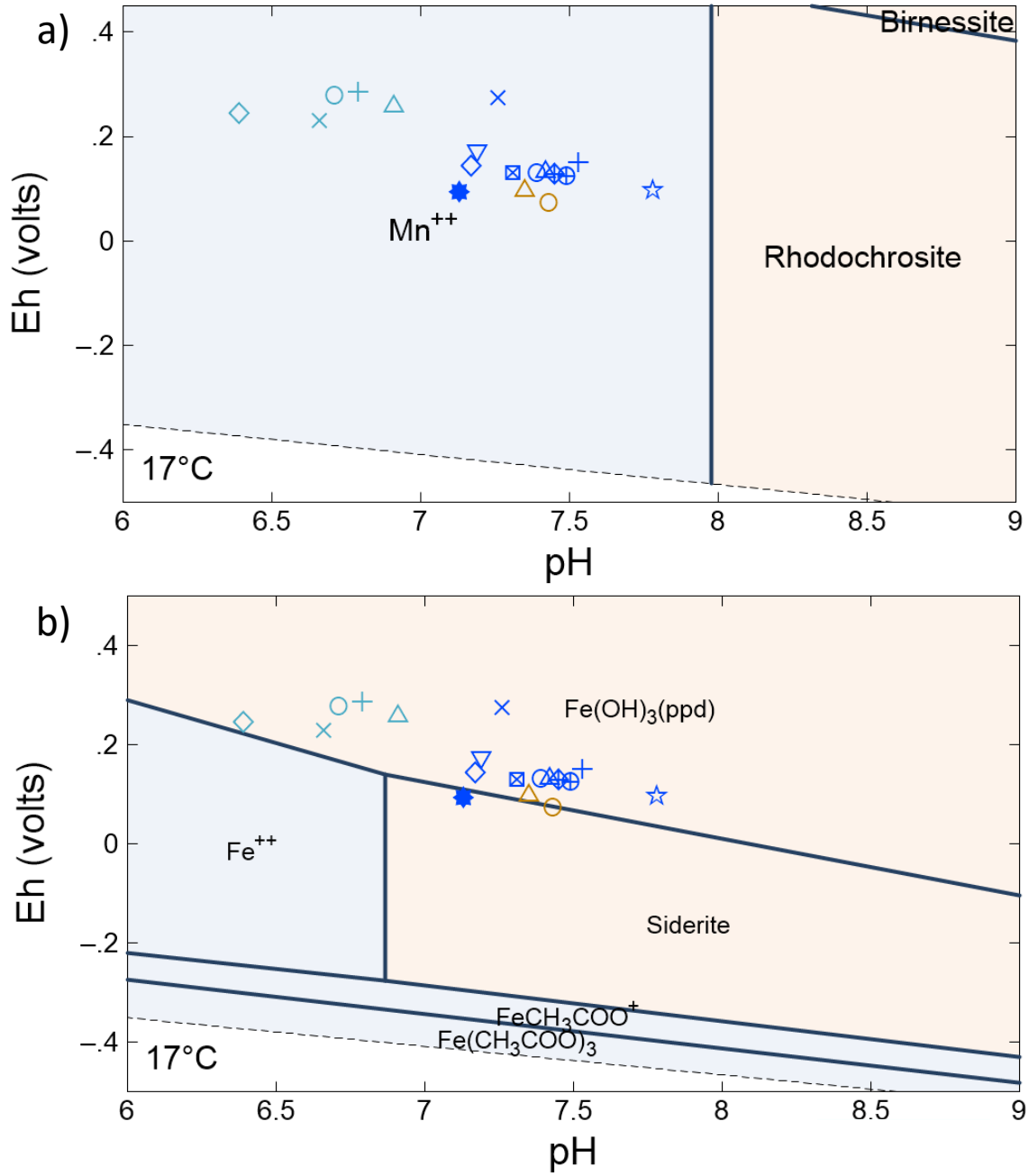

Phase

Mineral

Aqueous

Location Type

B

C - UA

C - UD

Location

APW02	APW09	APW17
APW03	APW10	APW18
APW04	APW11	
APW05	APW12	
APW05S	APW13	
APW06	APW14	
APW07	APW15	
APW08	APW16	

Abbreviations:
ppd = precipitated
c = crystalline

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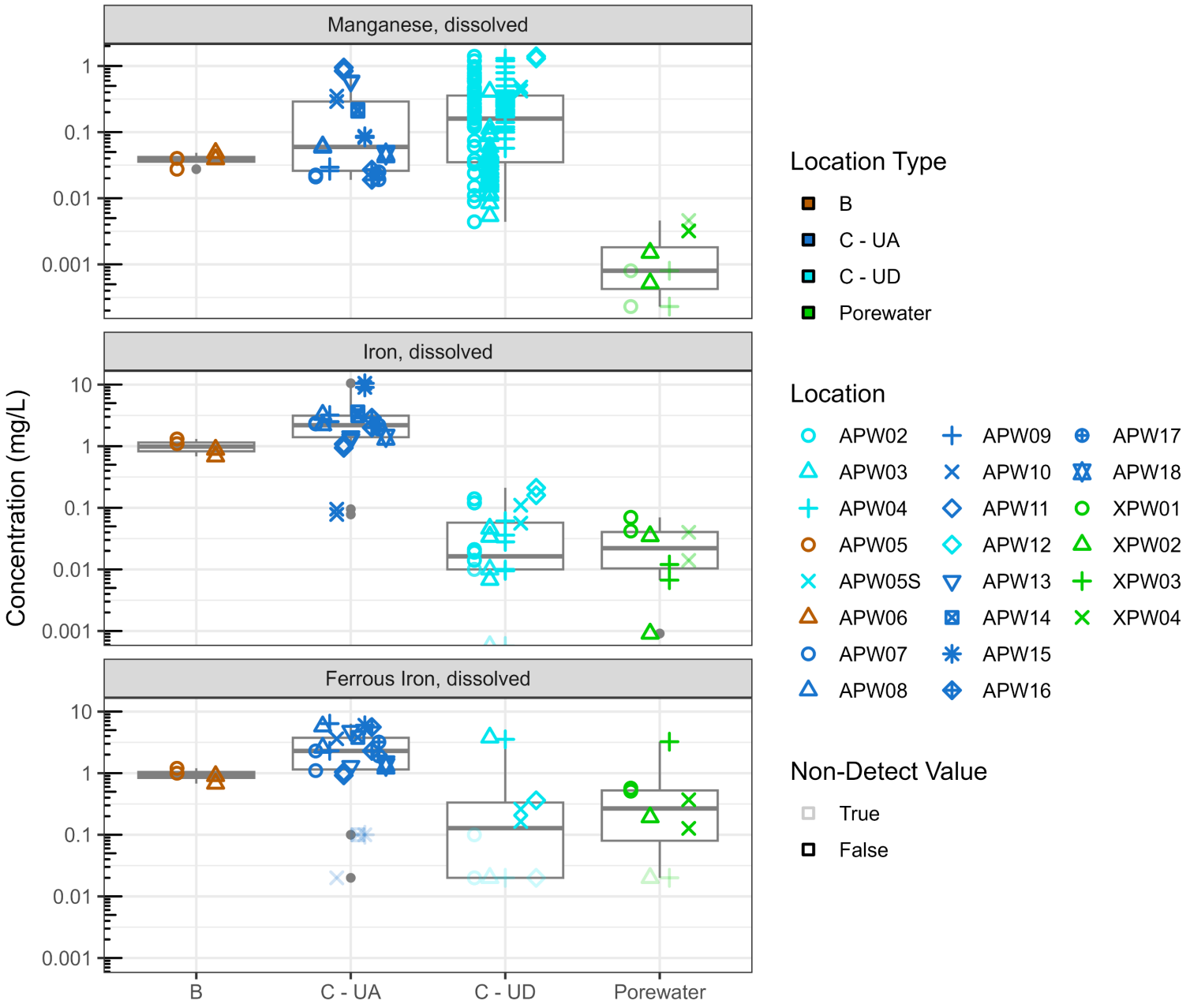
Pourbaix Diagrams for Manganese and Iron Species
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 4-3



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Summary of Manganese and Iron Species Concentrations in Porewater and Groundwater
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 4-4

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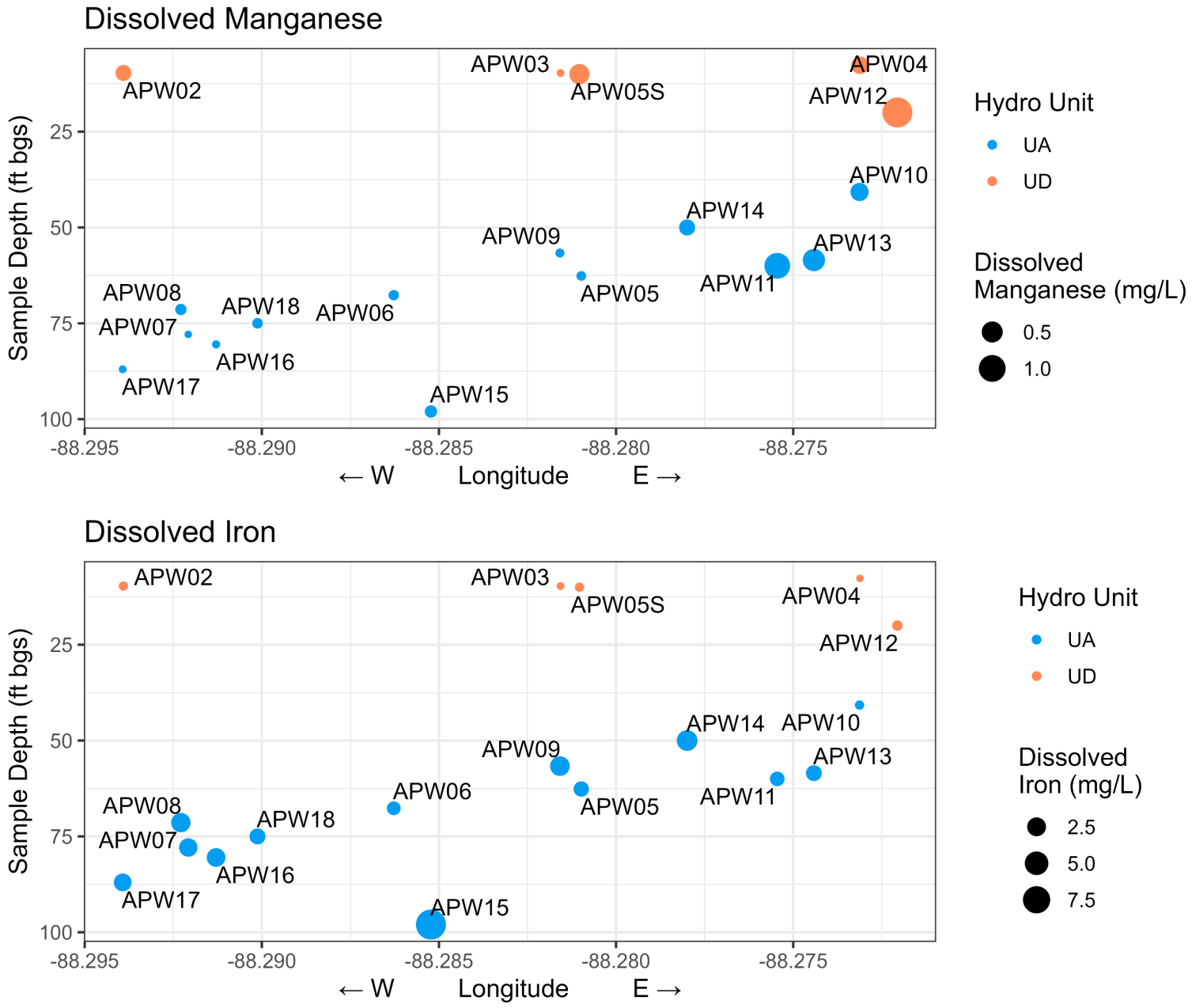

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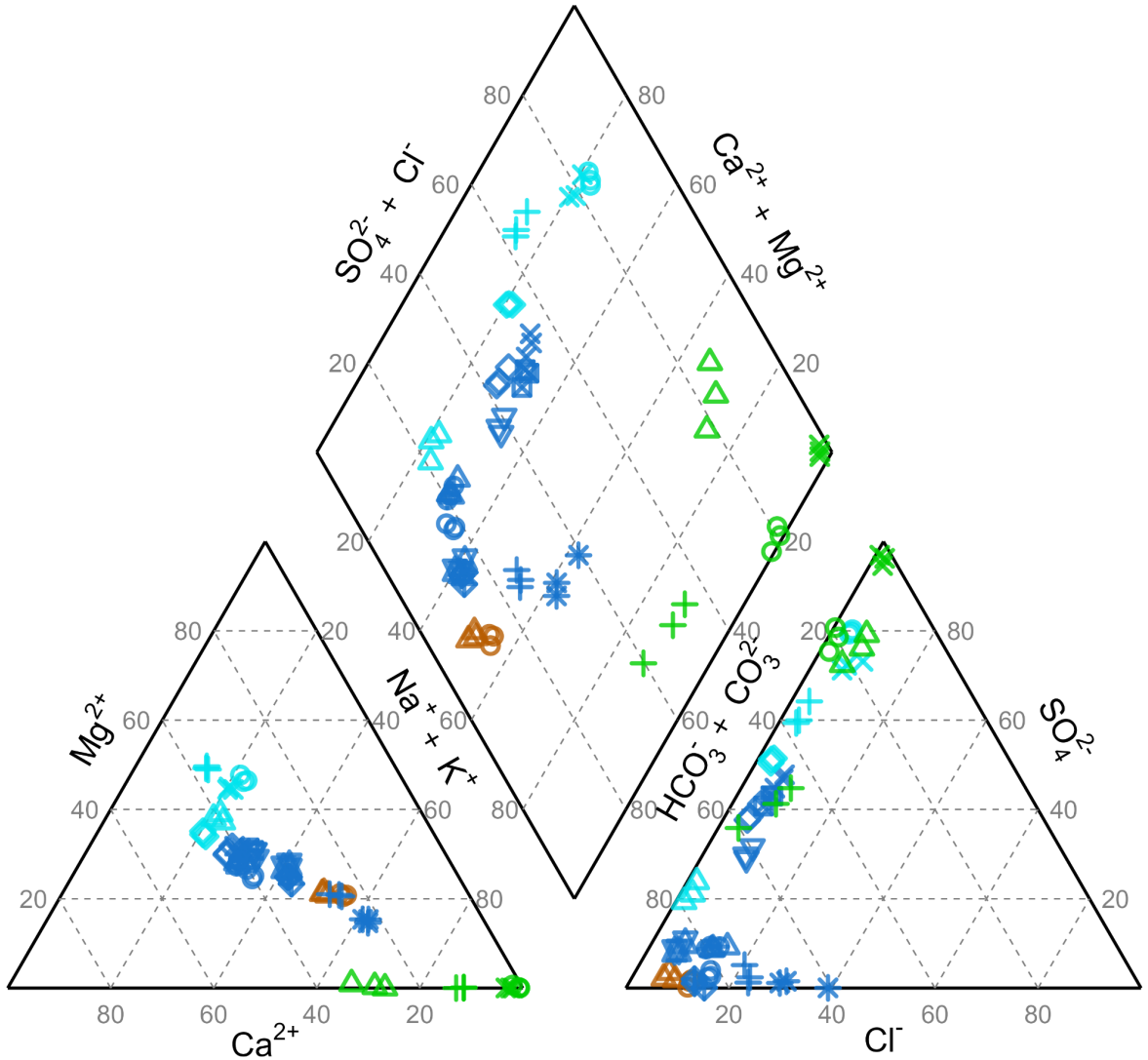
Median Manganese and Iron Concentrations With Depth, West to East
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 4-5



Location Type

- B
- C - UA
- C - UD
- Porewater

Location

APW02	APW12
APW03	APW13
APW04	APW14
APW05	APW15
APW05S	APW16
APW06	APW17
APW07	APW18
APW08	XPW01
APW09	XPW02
APW10	XPW03
APW11	XPW04

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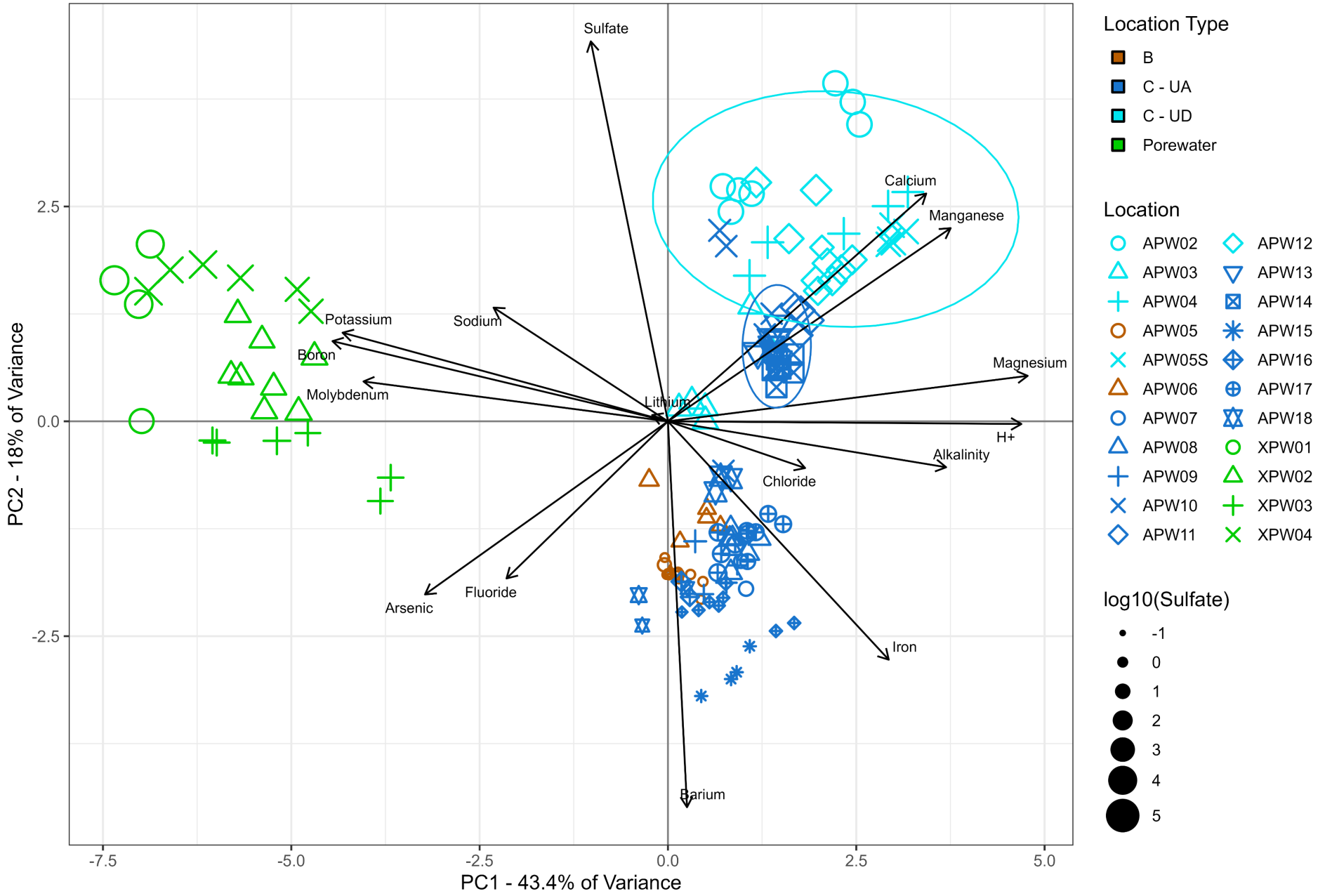
Piper Diagram of Three Most Recent Data Points
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 4-6



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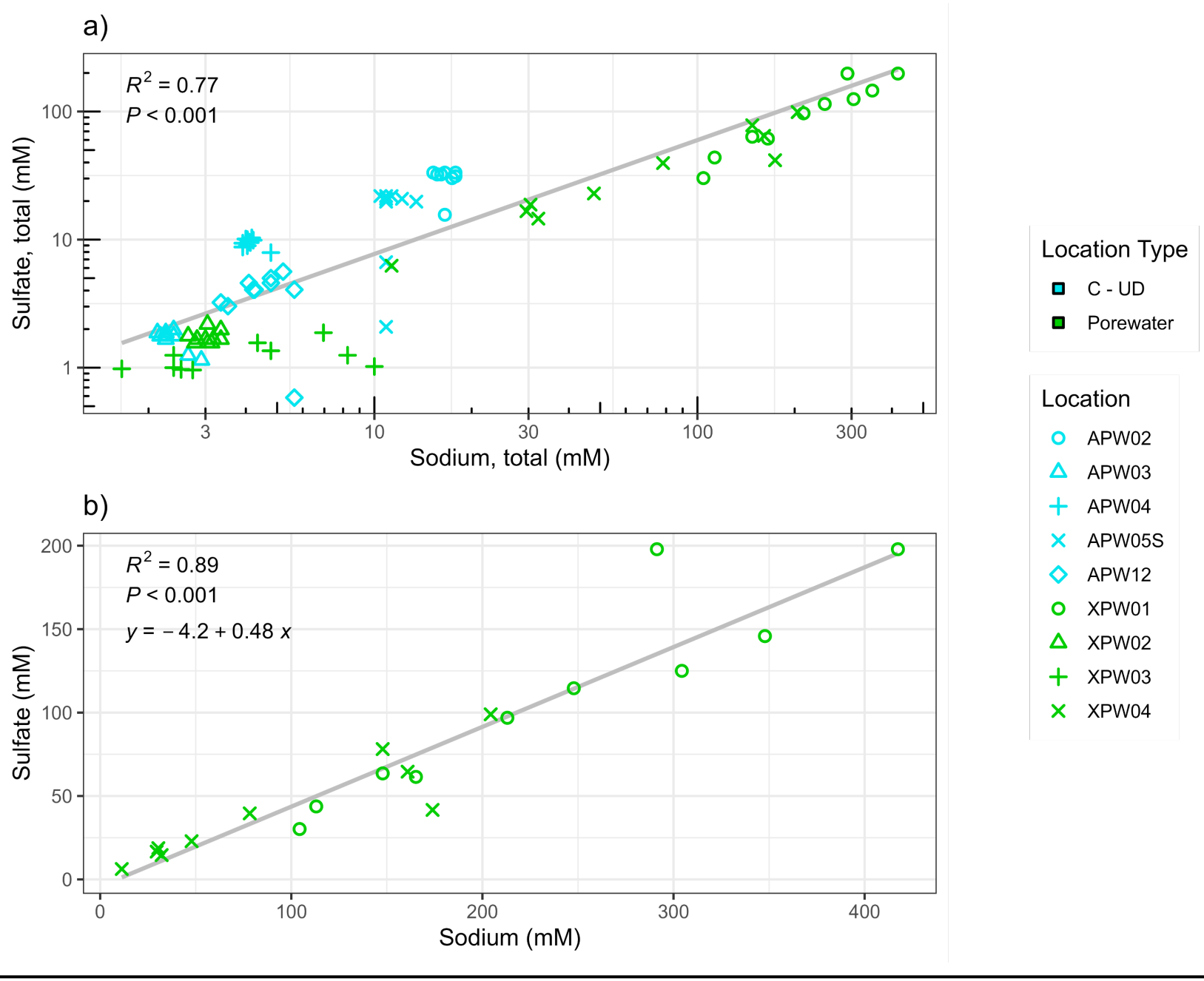
PCA Biplot
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 4-7



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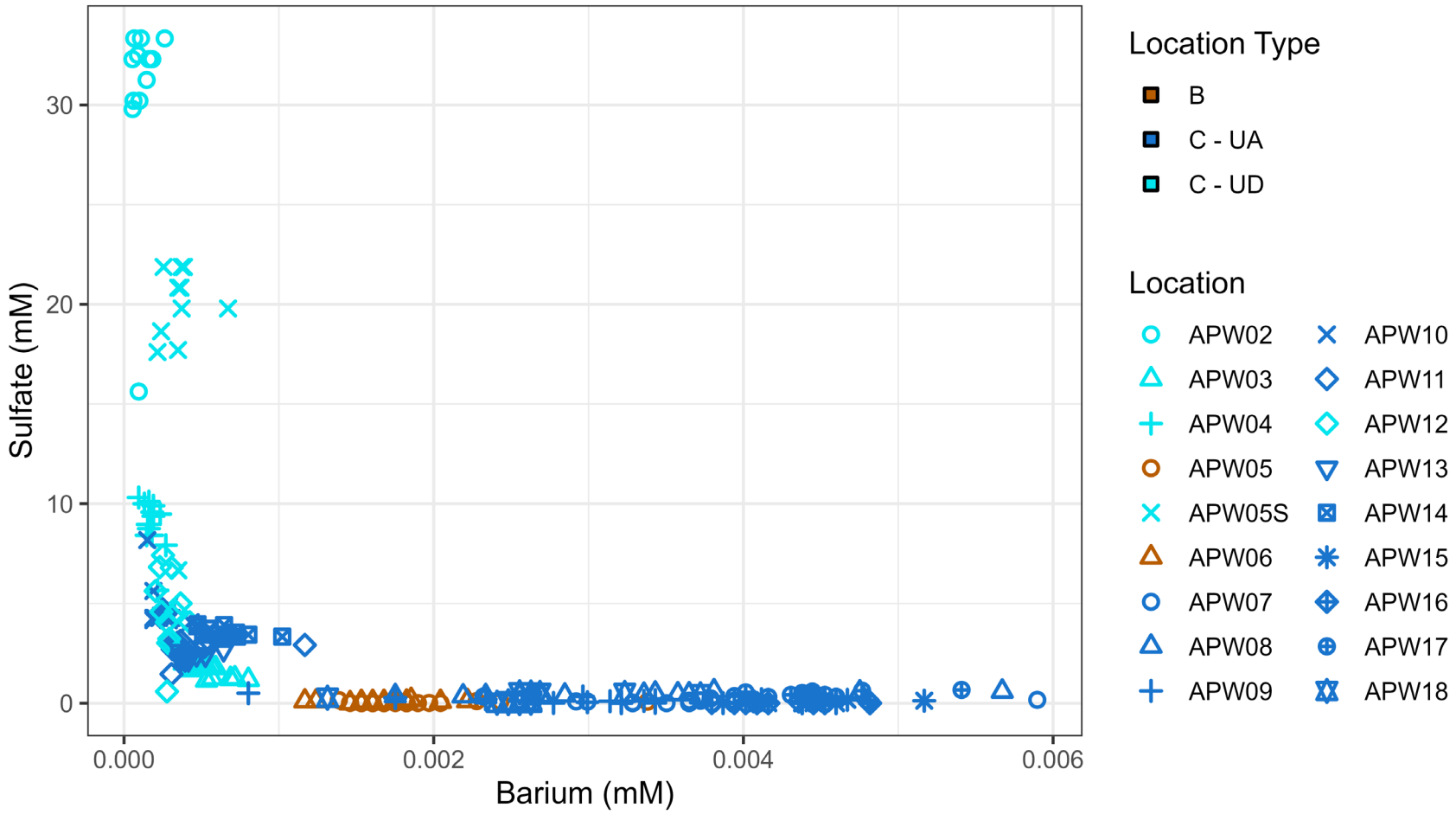
Sodium and Sulfate Correlations in Porewater and Upper Drift Groundwater
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 4-8



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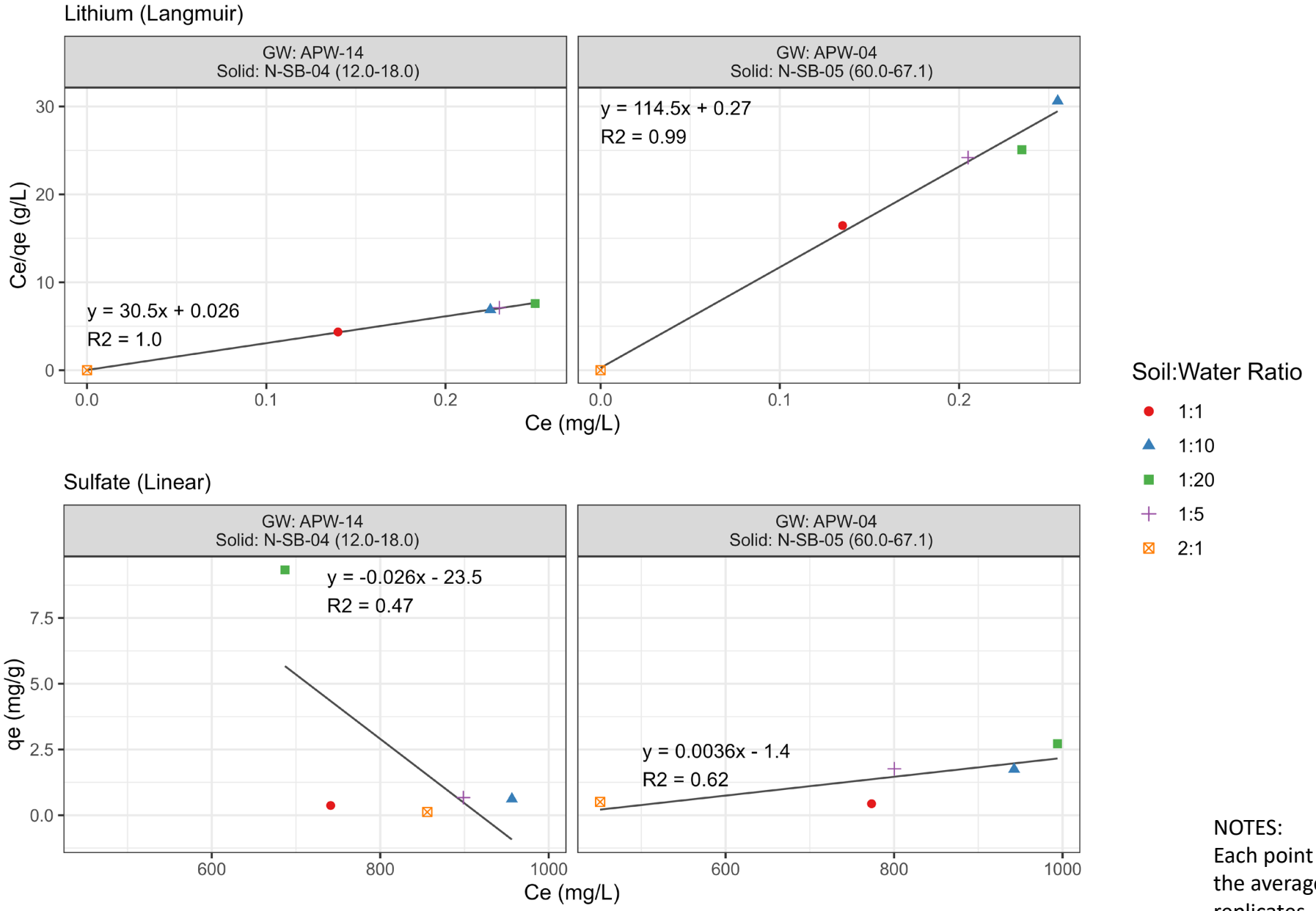
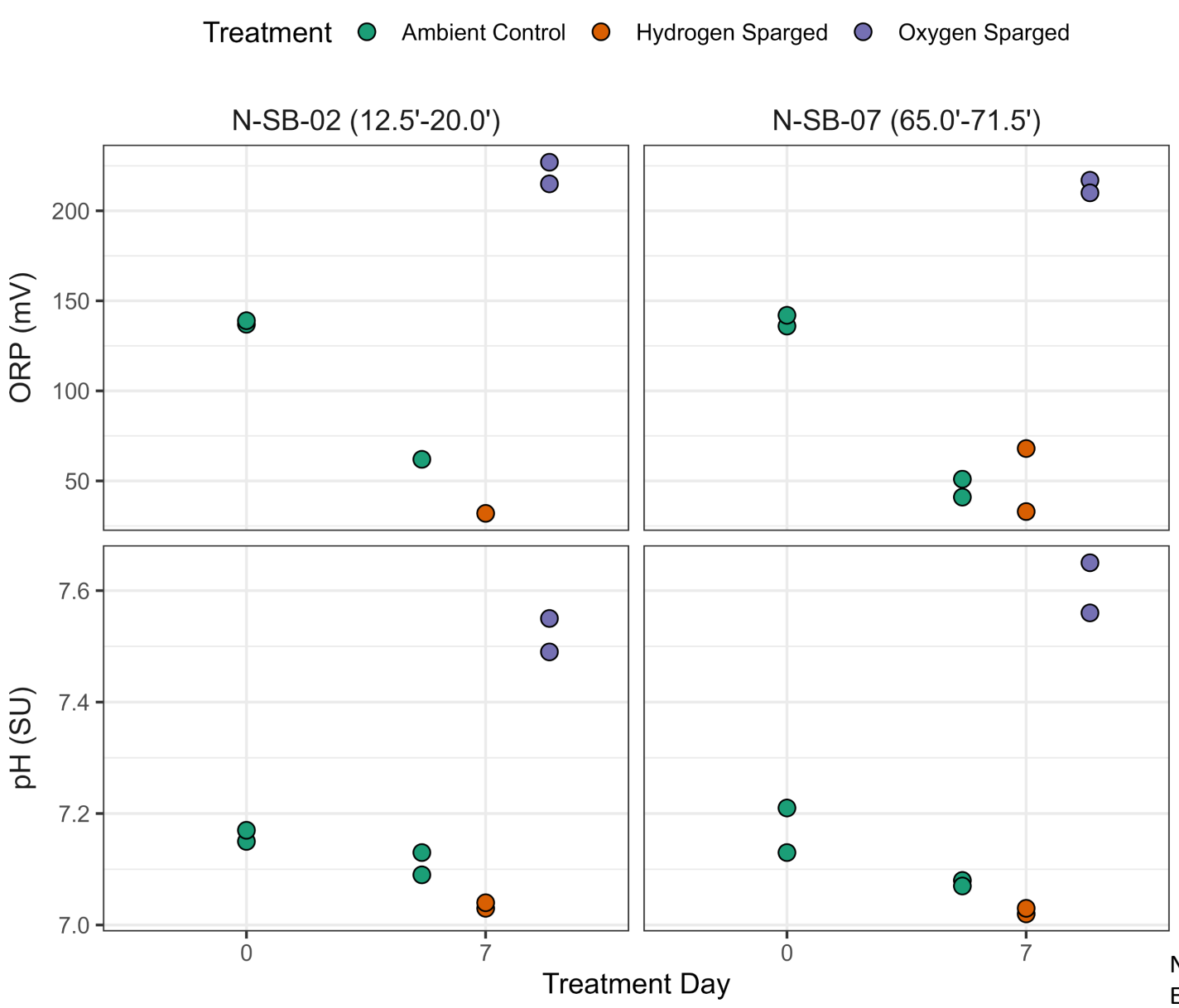
Barium and Sulfate Correlation in Groundwater
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 4-9



NOTES:
Each point represents the average of two replicates.

RAMBOLL	**Adsorption Test Results** Geochemical Conceptual Site Model Newton Primary Ash Pond Newton Power Plant Newton, IL		**Figure 5-1**
DRAFTED BY: AO	3/26/2024		



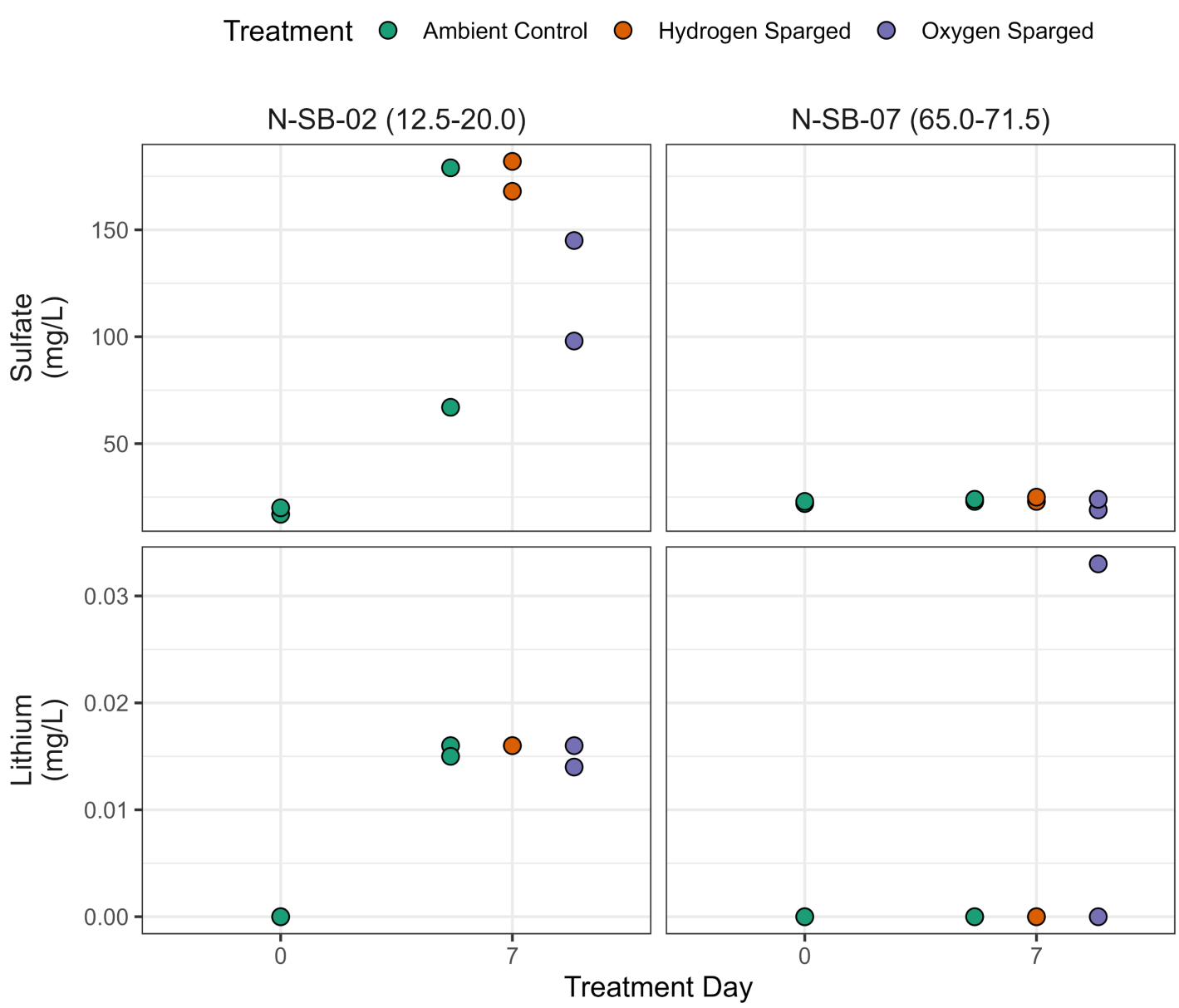
NOTES:
Each point represents a replicate sample.

RAMBOLL

Desorption Test Results: ORP and pH
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 5-2

DRAFTED BY: AO | 3/26/2024



NOTES:
Each point represents a replicate sample.

RAMBOLL

Desorption Test Results: Sulfate and Lithium
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 5-3

DRAFTED BY: AO | 3/26/2024

ATTACHMENTS

ATTACHMENT 1
GOLDER SAMPLING TECHNICAL MEMORANDUM

GOLDER
MEMBER OF WSP

TECHNICAL MEMORANDUM

DATE December 15, 2021 **Project No.** 21454831

TO David Mitchell, Stu Cravens, Vic Modeer
Illinois Power Generating Company (IPGC)

CC Brian Hennings - Ramboll

FROM Pat Behling, Jeffrey Ingram - Golder **EMAIL Jingram@golder.com**

MONITORED NATURAL ATTENUATION FIELD INVESTIGATION STATUS UPDATE, PRIMARY ASH POND (CCR UNIT 501) NEWTON POWER PLANT, JASPER COUNTY, ILLINOIS

1.0 INTRODUCTION AND BACKGROUND

The following Technical Memorandum summarizes the results received to date from the Monitored Natural Attenuation (MNA) Field Investigation completed by Golder Associates USA Inc. (Golder) for the Primary Ash Pond (PAP, CCR Unit 501) located at the Newton Power Plant (NPP or Site) operated by Illinois Power Generating Company (IPGC) in Jasper County, Illinois. Data collected as a part of this investigation will be an integral part of the MNA Feasibility Demonstration for the PAP and will be used for IPGC's Illinois Part 845 Coal Combustion Residual (CCR) compliance program. A Site plan showing the PAP, existing Part 845 monitoring wells, and the MNA boring locations is provided in **Figure 1**.

This memorandum only includes laboratory analytical data that has been received to date. Golder will update this memorandum when the remaining data has been received and reviewed.

2.0 PROJECT SCOPE OF WORK

As part of the MNA Feasibility Demonstration, and ongoing discussions with IPGC, Golder completed the following activities as part of this Field Investigation:

- Screened for potential underground utilities in the vicinity of the proposed borings prior to completing any drilling or ground disturbance activities.
- Advanced a total of seven (7) soil borings ranging in depth from 15 to 90 feet below ground surface (ft bgs).
- Collected ten (10) soil samples from seven (7) soil borings for laboratory analysis.
- Collected groundwater samples from five (5) existing monitoring wells for laboratory analysis.

3.0 FIELD INVESTIGAITON

3.1 Private Utility Locate

Prior to conducting any work onsite, Golder reviewed Site plans/drawings provided by IPGC and/or Site representatives and met with Site representatives to assist in identifying underground utility locations in the vicinity

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of the proposed borings. Golder also sub-contracted with GPRS to provide ground penetrating radar (GPR) and electromagnetic (EM) tracing services to screen the proposed boring locations in the field. All boring locations were cleared by GPRS personnel before drilling commenced.

3.2 Drilling and Aquifer Solids Sampling

Drilling was completed by Cascade Environmental Drilling (Cascade) using a roto-sonic drill rig under direct supervision of a Golder Geologist from August 17 – 21, 2021. Continuous soil core samples were obtained at each borehole location and were logged in the field by Golder personnel. Soils were classified according to the Unified Soil Classification System (USCS) and in accordance with the standard Golder Soil Logging Technical Procedure.

During the field investigation, seven (7) soil borings were advanced at the locations shown on **Figure 1**. Soil boring logs are provided in **Attachment A**. The following units were encountered during the field investigation (unit names are consistent with the Groundwater Monitoring Plan (Ramboll, 2021) in the Newton Part 845 Operating Permit):

- Shallow Saturated Zone – This zone is made up of the Upper Drift and the Upper Confining Units. The Upper Drift consists of low permeability silts and clays of the Peoria Silt and Sangamon Soil and the Hagarstown Member (Potential Migration Pathway) which consists of discontinuous sandier deposits. Below the Upper Drift is the Upper Confining unit, which consists of low permeability clay and silt of the Vandalia Till. The contact between the Upper Confining Unit and the underlying Uppermost aquifer ranges from approximately 467 feet above mean sea level (FT MSL) to 483 FT MSL in the borings completed for this investigation. Samples from the shallow saturated zone are shown in **Table 1**.
- Uppermost Aquifer – This zone consists of the Mulberry Grove Formation and is generally made up of fine to coarse, poorly to well graded sands, with occasional clayey sand layers and gravels. The formation is present between approximately 449 and 483 FT MSL. Samples collected from the uppermost aquifer are shown in **Table 1**.
- Lower Confining Unit – This unit consists of the Smithboro Till and is generally made up of compact glacial till consisting of low permeability silty clays and clayey silts with trace sand and gravel. The Till was present directly below the Uppermost Aquifer and the contact between these two units ranges from approximately 449 FT MSL to 474 FT MSL. Drilling was terminated in the Lower Confining Unit in most boreholes, therefore, evaluation of the full thickness of the unit was not completed as a part of this investigation. There were no samples collected from the lower confining unit.

Methane was encountered in soil boring SB-02, on August 18, 2021, while retrieving the soil from 60 to 80 feet below ground surface (FT BGS) within the bottom of the Shallow Saturated Zone and the top of the Uppermost Aquifer unit. Drilling was stopped until methane levels dropped below safe working levels and continued on August 19, 2021. Methane was only detected in this borehole during this investigation.

Ten (10) soil samples were collected for laboratory analysis from the soil borings (see **Figure 1** for sample location). Details regarding collected samples are included in **Table 1**.

Table 1: Laboratory Soil Sample Locations and Intervals Used for Laboratory Analysis

Borehole ID	Sample ID	Sample Depth (FT BGS)	Soil Type / Geologic Unit Sampled
N-SB-02	N-SB-02 (12.5 – 20.0)	12.5 - 20.0	Clayey Silt / Shallow Saturated Zone
	N-SB-02 (65.0 – 71.5)	65.0 – 71.5	Well Graded Sand /Uppermost Aquifer
N-SB-04	N-SB-04 (12.0 – 18.0)	12.0 – 18.0	Sandy Silty Clay / Shallow Saturated Zone
	N-SB-04 (38.8 – 45.4)	38.8 – 45.4	Clayey Sand / Uppermost Aquifer
N-SB-05	N-SB-05 (18.0 – 20.0)	18.0 – 20.0	Poorly Graded Sand / Shallow Saturated Zone
	N-SB-05 (60.0 – 67.1)	60.0 – 67.1	Poorly Graded Sand / Uppermost Aquifer
N-SB-14	N-SB-14 (44.2 – 52.0)	44.2 – 52.0	Sandy Clay / Uppermost Aquifer
N-SB-18	N-SB-18 (77.5 – 80.0)	77.5 – 80.0	Well Graded Sand / Uppermost Aquifer
N-SB-XPW01	N-SB-XPW01 (10.0 – 12.7)	10.0 – 12.7	CCR
N-SB-XPW04	N-SB-XPW04 (10.0 – 15.0)	10.0 – 15.0	CCR

Notes

1) FT BGS – Feet Below Ground Surface.

3.2.1 Soil Laboratory Analysis

Soil samples collected during the field investigation were placed in clean containers and properly labeled with sample location, depth, project name, sampler initials, analyses to be performed, date, and time of collection. Sample information was logged on a chain of custody (COC) and shipped to the following laboratories for analysis:

- Eurofins TestAmerica for 7-Step Sequential Extraction; and
- SiREM for the Batch Testing, Total Metals, Reitveld X-Ray Diffraction (XRD), leachability, Cation Exchange Capacity (CEC), and Total Organic Carbon (TOC) analyses.

The following laboratory analyses were conducted for each soil sample:

- 6010B for 7-step sequential extraction (Iron, Aluminum, Arsenic, Manganese, Lead, Lithium, Molybdenum, Cobalt, Calcium, Beryllium, Selenium, and Chromium);
- EPA 6010B for Total Metals (Iron, Aluminum, Arsenic, Manganese, Lead, Lithium, Molybdenum, Cobalt, Calcium, Beryllium, Selenium, and Chromium);
- Bulk Mineralogy by Reitveld XRD Analysis;
- Cation Exchange Capacity (CEC) Analysis;
- Total Organic Carbon Analysis; and,
- SPLP Method 1312 Leachability Test (for CCR source samples only).

Currently, only the results from Test America have been received, and are included in **Attachment B**. A separate Technical Memorandum will be provided when results from SiREM are completed.

3.2.2 Borehole Survey

On September 1, 2021, IngenAE completed a survey of the boring locations including the longitude/latitude of and elevation of each borehole location. Survey information is included in the boring logs in **Appendix A**.

3.3 Groundwater Sampling

Groundwater sampling was completed by Golder personnel on August 31, 2021. Five (5) existing monitoring wells were sampled, provided in **Figure 1**. Groundwater sample locations and adjacent borehole sample intervals for the MNA evaluation are included in **Table 2**.

Table 2: Groundwater Sample Locations

Well ID	Adjacent Borehole Sample
APW-02	N-SB-02 (12.5 – 20.0)
APW-04	N-SB-04 (12.0 – 18.0)
APW-05S (background)	N-SB-05 (18.0 – 20.0)
APW-05 (background)	N-SB-05 (60.0 – 67.1)
APW-14	N-SB-14 (44.2 – 52.0)

3.3.1 Groundwater Sample Laboratory Analysis

Groundwater samples collected during the field investigation were placed in clean containers and properly labeled with well ID, project name, sampler initials, analyses to be performed, date, and time of collection. Sample information was logged on a chain of custody (COC) and shipped to SiREM Laboratories to be included in batch testing analysis along with soil samples collected at adjacent boreholes. Results for the batch testing has not yet been completed and will be provided in a separate Technical Memorandum.

4.0 CLOSING

Golder appreciates the opportunity to serve as your consultant on this project. If you have any questions concerning this technical memorandum or need additional information, please contact the undersigned

Golder Associates Inc.

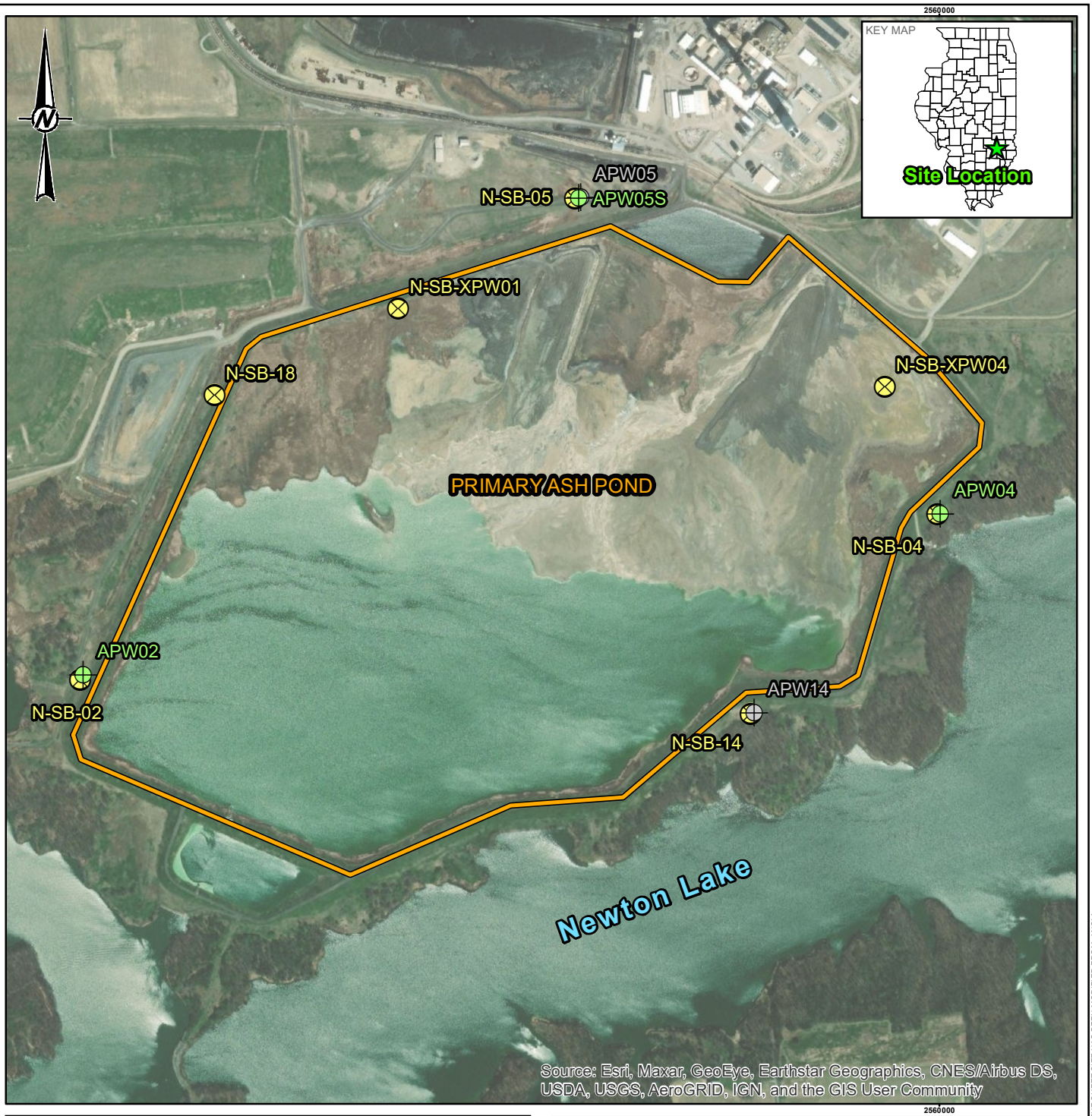
Jeffrey Ingram, R.G.
Senior Project Geologist

Pat Behlings, P.E.
Principal and Practice Leader

JSI/PJB

Attachments: Figure 1 – Newton Power Plant Monitored Natural Attenuation Boring and Groundwater Sample Locations
Appendix A – Soil Boring Logs
Appendix B – Eurofins TestAmerica Laboratory Data

Figures



LEGEND

- Primary Ash Pond - CCR Unit ID 501
- MNA Soil Boring Location
- Groundwater Sample Location - Part 845 Wells With No Potential Exceedances
- Groundwater Sample Location - Part 845 Wells With Potential Exceedances

0 3,000 Feet

NOTE(S)

1. SOIL BORING LOCATIONS SURVEYED BY INGENAE ON SEPTEMBER 1, 2021.

REFERENCE(S)

1. RAMBOLL 2021, TABLE 2 SUMMARY OF POTENTIAL EXCEEDANCES.
2. RAMBOLL 2021. GROUNDWATER MONITORING PLAN, PRIMARY ASH POND, NEWTON POWER PLANT, NEWTON ILLINOIS.

CLIENT
ILLINOIS POWER GENERATING COMPANY

PROJECT
NEWTON POWER PLANT MNA FEASABILITY STUDY

TITLE
MONITORED NATURAL ATTENUATION INVESTIGATION BORING AND GROUNDWATER SAMPLE LOCATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2021-11-23
DESIGNED	BTT
PREPARED	ETF
REVIEWED	EMS
APPROVED	PJB

PROJECT NO. 21454831 PHASE 0004 FIGURE 1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

1 in 0

PATH: C:\Users\ETVFornay\Golder Associates\21454831 Vistra IL MNA Part 845 Support - 5 Technical Work\Phase4 - Newton\4.11-Figures\MNA-Figures\Newton - Borehole Locations.mxd PRINTED ON: 2021-11-23 AT: 4:14:33 PM

APPENDIX A

Soil Boring Logs

RECORD OF BOREHOLE N-SB-02

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/18/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 822,655.44 E: 995,443.67

ELEVATION: 521.30
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
0	6" Sonic	(0.0-3.0) (CL) SILTY CLAY, low to medium plasticity fines, trace fine sub-rounded sand; dark yellowish orange (10YR 6/6); cohesive, w~PL, stiff.	CL		518.3				
		(3.0-10.0) (ML) CLAYEY SILT, non-plastic to low plasticity fines, some fine to course sub-rounded well graded- grained sand, trace sub-rounded gravel; moderate brown (5YR 4/4); cohesive, w<PL, hard.	ML		3.0	1	SO	10.0 / 10.0	
10					511.3				
	6" Sonic	(10.0-12.5) (ML) CLAYEY SILT, non-plastic to low plasticity fines, some fine sub-rounded poorly-graded sand; moderate yellowish brown (10YR 5/4); cohesive, w<PL, hard.	ML		10.0				
					508.8				
		(12.5-30.0) (ML) CLAYEY SILT, non-plastic to low plasticity fines, trace fine sub-rounded sand, trace coarse sub-rounded gravel; grayish orange (10YR 7/4) with dark yellowish orange (10YR 6/6) mottling; cohesive, w<PL, hard.			12.5				(12.5-20.0) Clayey Silt sample collected at 14:10 - 8/18/2021.
15						2	SO	10.0 / 10.0	
20					501.3				
		(20.0) Same As Above (SAA) except, light bluish gray (5B 7/1) with white (N9) mottling.	ML		20.0				
	6" Sonic					3	SO	10.0 / 10.0	
25									
30					491.3				

Log continued on next page

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-02

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant
DRILLING METHOD: Sonic
DRILLING DATE: 8/18/2021
DRILL RIG: Mini Sonic CC 150
DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 822,655.44 E: 995,443.67
ELEVATION: 521.30
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
30	6" Sonic	(30.0-32.5) (SW) SAND, fine to coarse sub-rounded well-graded sand, trace fine sub-rounded gravel, trace non-plastic fines; medium gray (N5); non-cohesive, moist, compact.	SW		30.0 / 488.8				
35	6" Sonic	(32.5-60.0) (CL) SILTY CLAY, low to medium plasticity fines, trace fine sub-rounded sand, trace fine to coarse sub-rounded gravel; medium gray (N5) with light bluish gray (5B 7/1) and white (N9) mottling; cohesive, w<PL, hard.	CL		32.5 / 481.3	4	SO	10.0 / 10.0	
40	6" Sonic	(40.0) SAA except, very stiff.	CL		40.0 / 471.3	5	SO	10.0 / 10.0	
45	6" Sonic		CL						
50	6" Sonic	(50.0) SAA except, with light olive brown (5Y 5/6) mottling.	CL		50.0 / 465.1	6	SO	10.0 / 10.0	
55	6" Sonic	(56.2) SAA except, with light brown (5YR 6/4) mottling.	CL		56.2 / 461.3				
60		Log continued on next page							

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-02

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/18/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 822,655.44 E: 995,443.67

ELEVATION: 521.30
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
60	6" Sonic	(60.0-71.5) (SW) SAND, fine to coarse sub-angular well-graded sand, some fine sub-rounded gravel, trace non-plastic fines, light gray (N7) to medium light gray (N6); non-cohesive, moist, compact.	SW		60.0	7	SO	10.0 / 20.0	(65.0-71.5) Sand sample collected at 12:00 - 8/19/2021.
65									
70									(60.0-80.0) Methane meter alarm is triggered with an LEL of 181 at 15:30 on August 18, 2021. Drilling stopped until methane dissipated. Drilling commenced on August 19, 2021 at 11:45. Following completion of drilling the hole was abandoned.
					449.8				
		(71.5-80.0) (SW&GW) SAND and GRAVEL, fine to coarse sub-angular to sub-rounded well-graded sand and gravel, trace non-plastic fines; medium dark gray (N4) to grayish brown (N2); non-cohesive, moist, compact.			71.5				
75			SW						
80					441.3				
		END OF BORING AT 80.0 FEET BELOW GROUND SURFACE.			80.0				
85									
90									

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-04

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/19/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 823,240.42 E: 1,001,362.51

ELEVATION: 521.91
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
0	6" Sonic	(0.0-10.0) (CL) CLAY, medium to high plasticity fines, trace fine sub-rounded sand, trace fine sub-rounded gravel; moderate yellowish brown (10YR 5/4); cohesive, w>PL, soft.	CH		511.9 / 10.0	1	SO	10.0 / 10.0	
10	6" Sonic	(10.0-20.0) (CL) sandy SILTY CLAY, low to medium plasticity fines, fine sub-rounded poorly graded sand, trace fine sub-rounded gravel; moderate yellowish brown (10YR 5/4); cohesive, w~PL, stiff.	CL		501.9 / 20.0	2	SO	10.0 / 10.0	(10.0) Drilling paused at 16:10 on August 20, 2021 due to drill rig breaking. Drilling resumed following repair of rig at 07:20 on August 21, 2021. (12.0-18.0) Silty clay sample collected at 07:35 - 8/21/2021.
20	6" Sonic	(20.0-38.7) (ML) CLAYEY SILT, non-plastic to low plasticity fines, some fine sub-rounded sand, trace fine sub-rounded gravel; dark yellowish brown (10YR 6/6) with light brown (5YR 6/4) and light bluish gray (5B 7/1) mottling; cohesive, w<PL, hard.	ML			3	SO	10.0 / 10.0	
30		Log continued on next page							

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-04

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/19/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 823,240.42 E: 1,001,362.51

ELEVATION: 521.91
INCLINATION: -90

DEPTH (feet)	BORING METHOD	DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	NUMBER	TYPE	REC / ATT	REMARKS
30	6" Sonic	(20.0-38.7) (ML) CLAYEY SILT, non-plastic to low plasticity fines, some fine sub-rounded sand, trace fine sub-rounded gravel; dark yellowish brown (10YR 6/6) with light brown (5YR 6/4) and light bluish gray (5B 7/1) mottling; cohesive, w<PL, hard. *(Continued)*	ML		483.2	4	SO	10.0 / 10.0	
		(38.7-41.0) (SP) SAND, fine sub-rounded poorly-graded sand, trace fine sub-rounded gravel, trace non-plastic fines; dark yellowish orange (10YR 6/6); non-cohesive, moist, compact.	SP		38.7 480.9				(38.7-45.4) Clayey sand sample collected at 08:10 - 8/21/2021.
40		(41.0-45.4) (SC) CLAYEY SAND, fine poorly-graded sub-rounded sand, low to medium plasticity fines, trace sub-rounded gravel; light brown (5YR 5/6); non-cohesive, moist, compact.	SC		41.0 476.5	5	SO	7.0 / 10.0	
45		(45.4-50.0) (CL) sandy SILTY CLAY, low to medium plasticity fines, fine sub-rounded poorly graded sand, trace sub-rounded gravel; dusky brown (5YR 2/2); cohesive, w~PL, very stiff.	CL		45.4 471.9				
50		(50.0-56.8) (ML) CLAYEY SILT, non-plastic to low plasticity fines, some fine sub-rounded poorly-graded sand, trace fine gravel; light gray (N6); cohesive, w~PL, very stiff.	ML		50.0 465.1	6	SO	10.0 / 10.0	
55		(56.8-60.0) (SC) CLAYEY SAND, fine sub-rounded poorly-graded sand, medium plasticity fines; light gray (N6); non-cohesive, moist, compact.	SC		56.8 461.9				
60		Log continued on next page							

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-04

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant
DRILLING METHOD: Sonic
DRILLING DATE: 8/19/2021
DRILL RIG: Mini Sonic CC 150
DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 823,240.42 E: 1,001,362.51
ELEVATION: 521.91
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
60		END OF BORING AT 60.0 FEET BELOW GROUND SURFACE.			60.0				
65									
70									
75									
80									
85									
90									

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon
LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-05

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/17/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 825,611.85 E: 997,833.22

ELEVATION: 529.39
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
0	6" Sonic	(0.0-1.5) FILL - (ML) gravelly SILT, non-plastic fines, fine to coarse sub-angular well-graded gravel, trace fine sub-rounded sand, trace organics (roots); dusky yellowish brown (10YR 5/4) TOPSOIL; non-cohesive, wet, loose,.	ML		527.9 1.5				
		(1.5-8.5) (ML) CLAYEY SILT, non-plastic fines, fine sub-rounded poorly-graded sand, trace fine sub-rounded gravel, trace low plasticity fines; dark yellowish brown (10YR 4/2); non-cohesive, dry, compact.	ML			1	SO	8.0 10.0	
		(8.5-9.5) (SP) SAND, fine to medium sub-rounded poorly-graded sand, trace non-plastic fines; dark yellowish orange (10YR 6/6); non-cohesive, dry, loose.	SP		520.9 8.5				
		(9.5-10.0) (CH) CLAY, high plasticity fines; medium dark gray (N4); cohesive, w<PL, very stiff.	CH		519.9 9.5				
		(10.0-18.0) (CL) SILTY CLAY, medium to high plasticity fines, trace fine sub-rounded sand, trace fine sub-rounded gravel; moderate yellowish brown (10YR 5/4); cohesive, w~PL, firm.	CL		519.4 10.0				
		(16.6) Same As Above (SAA) except, w<PL, some fine sand.			512.8 16.6	2	SO	10.0 10.0	
		(18.0-22.0) (SP) SAND, fine sub-rounded poorly-graded sand, trace non-plastic fines, trace native coal; moderate yellowish brown (10YR 5/4) with black (N1) coal pieces; non-cohesive, dry, loose.	SP		511.4 18.0				(18.0-20.0) Sand sample collected at 12:40 - 8/17/2021.
		(22.0-26.8) (CH) sandy CLAY, medium plasticity fines, fine sub-rounded poorly-graded sand; grayish orange (10YR 7/4); cohesive, w~PL, stiff.	CH		507.4 22.0	3	SO	10.0 10.0	(10.0-20.0) Over recovery due to expansion of clay material in sample bags (10.5 ft/10.0 ft).
		(26.8-59.3) (ML) CLAYEY SILT, non-plastic to low plasticity fines, trace fine sub-rounded sand; medium dark gray (N4); cohesive, w<PL, very stiff.	ML		502.6 26.8				

Log continued on next page

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-05

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant
DRILLING METHOD: Sonic
DRILLING DATE: 8/17/2021
DRILL RIG: Mini Sonic CC 150
DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 825,611.85 E: 997,833.22
ELEVATION: 529.39
INCLINATION: -90

DEPTH (feet)	BORING METHOD	DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	NUMBER	TYPE	REC / ATT	REMARKS
30	6" Sonic	(26.8-59.3) (ML) CLAYEY SILT, non-plastic to low plasticity fines, trace fine sub-rounded sand; medium dark gray (N4); cohesive, w<PL, very stiff. *(Continued)*							(20.0-30.0) Over recovery due to expansion of clay material in sample bags (12.0 ft/10.0 ft).
35		(34.9) SAA except, light gray (N6) to light bluish gray (5B 7/1) mottling.			494.5 34.9	4	SO	10.0 10.0	
40		(40.0) SAA except, trace sub-angular to sub-rounded fine gravel.			489.4 40.0				
45	6" Sonic		ML			5	SO	10.0 10.0	
50									
55	6" Sonic					6	SO	10.0 10.0	
60			SP		470.1 59.3				

Log continued on next page

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon
LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-05

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant
DRILLING METHOD: Sonic
DRILLING DATE: 8/17/2021
DRILL RIG: Mini Sonic CC 150
DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 825,611.85 E: 997,833.22
ELEVATION: 529.39
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
60	6" Sonic	(59.3-67.1) (SP) SAND, fine sub-rounded poorly-graded sand, trace angular gravel, trace non-plastic fines; dark gray (N3); non-cohesive, moist, compact. *(Continued)*	SP			7	SO	10.0 / 10.0	(60.0-67.1) Sand sample collected at 15:40 - 8/17/2021.
65					462.3 / 67.1				
		(67.1-70.0) (ML) SILT, non-plastic fines, trace coarse sub-rounded sand, trace fine sub-rounded gravel; dark yellowish brown (10YR 4/2); non-cohesive, moist, dense.	ML						
70		END OF BORING AT 70.0 FEET BELOW GROUND SURFACE.			459.4 / 70.0				
75									
80									
85									
90									

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-14

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/19/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 822,002.94 E: 999,969.76

ELEVATION: 540.51
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
0	6" Sonic	(0.0-8.5) (CH) sandy CLAY, high plasticity fines, some fine sub-rounded poorly-graded sand; moderate yellowish brown (10YR 5/4) with yellowish gray (5Y 7/2) mottling; cohesive, w>PL, stiff.	CH		532.0 / 8.5	1	SO	8.0 / 10.0	
		(8.5-10.0) (SM) SILTY SAND, fine sub-rounded poorly-graded sand, non-plastic fines; moderate yellowish brown (10YR 5/4); non-cohesive, dry, dense.	SP		530.5 / 10.0				
10	6" Sonic	(10.0-20.0) (CL) SILTY CLAY, non-plastic to low plasticity fines, trace fine sub-rounded sand, trace fine sub-rounded gravel, trace roots; dusky yellowish brown (10YR 2/2) with light brown (5YR 6/4) mottling; cohesive, w<PL, hard.	CL			2	SO	10.0 / 10.0	(18.7) Fine grained sand seam approximately 0.4' thick.
20	6" Sonic	(20.0-44.2) (CL) SILTY CLAY, low to medium plasticity fines, trace fine sub-rounded sand, trace fine sub-rounded gravel; dusky yellowish brown (10YR 2/2) with light brown (5YR 6/4) mottling; cohesive, w~PL, stiff. (21.1) Same As Above (SAA) except, moderate yellowish gray (5GY 7/4).	CL		520.5 / 20.0 519.4 / 21.1	3	SO	10.0 / 10.0	(20.4) Fine grained sand seam approximately 0.2' thick.
30		Log continued on next page							

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-14

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/19/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 822,002.94 E: 999,969.76

ELEVATION: 540.51
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
30	6" Sonic	(20.0-44.2) (CL) SILTY CLAY, low to medium plasticity fines, trace fine sub-rounded sand, trace fine sub-rounded gravel; dusky yellowish brown (10YR 2/2) with light brown (5YR 6/4) mottling; cohesive, w~PL, stiff. *(Continued)*	CL		509.9 30.6	4	SO	10.0 10.0	
		(30.6) SAA except, light gray (N7) mottling.							
40									(40.0-60.0) Driller pushed a 20 foot run due to material falling in on the run to 50 feet below ground surface.
					496.3				
		(44.2-52.0) (CL) sandy CLAY, medium to high plasticity fines, fine sub-rounded poorly-graded sand, trace fine sub-rounded gravel; dusky yellowish brown (10YR 4/2) with light brown (5YR 6/4) sand; cohesive w>PL, soft.	CH		44.2				(44.2-52.0) Sandy clay sample collected at 14:45 - 8/19/2021.
45									
		(48.1) SAA except, stiff.			492.4 48.1				
50	6" Sonic					5	SO	20.0 20.0	
					488.5				
		(52.0-60.0) (CL) CLAY, medium to high plasticity fines, trace fine sub-rounded sand, trace fine sub-rounded gravel; dark yellowish brown (10YR 4/2) with light gray (N7) to light blue (5B 7/6) mottling; cohesive, w~PL, hard.			52.0				
55			CH						
60					480.5				

Log continued on next page

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-14

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant
DRILLING METHOD: Sonic
DRILLING DATE: 8/19/2021
DRILL RIG: Mini Sonic CC 150
DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 822,002.94 E: 999,969.76
ELEVATION: 540.51
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
60		END OF BORING AT 60.0 FEET BELOW GROUND SURFACE.			60.0				
65									
70									
75									
80									
85									
90									

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-18

SHEET 1 of 4

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/18/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 824,503.66 E: 996,531.19

ELEVATION: 540.96
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
0	6" Sonic	(0.0-0.9) FILL - (CL) SILTY CLAY, low to medium plasticity fines, trace fine sub-rounded sand; dark yellowish orange (10YR 6/6) TOPSOIL; cohesive, w~PL, soft.	CL		540.1 / 0.9				
		(0.9-12.2) (CL-ML) SILTY CLAY, low to medium plasticity fines, some fine sub-rounded poorly-graded sand; dark yellowish orange (10YR 6/6) with light gray (N5) mottling; cohesive, w~PL, soft.	CL			1	SO	10.0 / 10.0	
10		(10.0) Same As Above (SAA) except, very stiff.			531.0 / 10.0				
	6" Sonic	(12.2-20.0) (ML) SILT, non-plastic fines, trace fine sub-rounded sand, trace coarse sub-rounded gravel; dusky yellowish brown (10YR 2/2) with light brown (5YR 5/6) mottling; non-cohesive, moist, compact.	ML		528.8 / 12.2	2	SO	10.0 / 10.0	
15		(18.1) SAA except, no mottling.			522.9 / 18.1				
20	6" Sonic	(20.0-23.1) (SW) SAND, fine to coarse sub-rounded well-graded sand, trace non-plastic fines; dark yellowish orange (10YR 6/6); non-cohesive, moist, compact.	SW		521.0 / 20.0	3	SO	10.0 / 10.0	
		(23.1-27.4) (ML) SILT, non-plastic fines, some sub-rounded poorly-graded sand; dusky yellowish brown (10YR 2/2) to dark yellowish brown (10YR 6/6); non-cohesive,moist, compact.	ML		517.9 / 23.1				
25		(27.4-30.0) (ML) CLAYEY SILT, non-plastic to low plasticity fines, trace fine sub-rounded sand; dark yellowish brown (10YR 4/2); cohesive, w~PL, stiff.	ML		513.6 / 27.4				
30					511.0				

Log continued on next page

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-18

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/18/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 824,503.66 E: 996,531.19

ELEVATION: 540.96
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
30	6" Sonic	(30.0-73.0) (ML) SILT, non-plastic fines, some fine to coarse sub-rounded well-graded sand, trace fine sub-rounded gravel; dark yellowish brown (10YR 4/2); non-cohesive, moist, dense.			30.0				
35						4	SO	10.0 / 10.0	
40		(40.0) SAA except, light gray (N7).			501.0 40.0				
45	6" Sonic		ML			5	SO	10.0 / 10.0	
50		(50.0) SAA except, trace coarse gravel; moderate reddish orange (10R 6/6) mottling; very stiff.	ML		491.0 50.0				
55	6" Sonic					6	SO	10.0 / 10.0	
60		Log continued on next page			481.0				

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

RECORD OF BOREHOLE N-SB-18

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant
DRILLING METHOD: Sonic
DRILLING DATE: 8/18/2021
DRILL RIG: Mini Sonic CC 150
DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 824,503.66 E: 996,531.19
ELEVATION: 540.96
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
60	6" Sonic	(30.0-73.0) (ML) SILT, non-plastic fines, some fine to coarse sub-rounded well-graded sand, trace fine sub-rounded gravel; dark yellowish brown (10YR 4/2); non-cohesive, moist, dense. *(Continued)* (60.0) SAA except, light gray (N7) to light bluish gray (5B 7/1).	ML		60.0	7	SO	9.0 / 10.0	(65.0) Approximately 1 foot of material fell on ground upon recovery.
65									
70					468.0				
75	6" Sonic	(73.0-77.5) (SC) CLAYEY SAND, fine sub-rounded poorly-graded sand, low to medium plasticity fines, trace fine sub-rounded gravel; light olive gray (5Y 5/2); non-cohesive, moist, compact.	SC		73.0	8	SO	10.0 / 10.0	
					463.5				
		(77.5-81.5) (SW) SAND, fine to coarse sub-rounded well-graded sand, trace fine sub-rounded gravel, trace non-plastic fines; yellowish gray (5Y 7/2); non-cohesive, moist, compact.	SW		77.5				(77.5-80.0) Sand sample collected at 10:00 - 8/18/2021.
80					459.5				
85	6" Sonic	(81.5-90.0) (CL) SILTY CLAY, medium to high plasticity fines, trace fine sub-rounded sand; light gray (N7) with dusky yellow green (5GY 5/2) mottling; cohesive, w<PL, very stiff.	CL		81.5	9	SO	10.0 / 10.0	
90					451.0				

Log continued on next page

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-18

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant
DRILLING METHOD: Sonic
DRILLING DATE: 8/18/2021
DRILL RIG: Mini Sonic CC 150
DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 824,503.66 E: 996,531.19
ELEVATION: 540.96
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
90		END OF BORING AT 90.0 FEET BELOW GROUND SURFACE.			90.0				
95									
100									
105									
110									
115									
120									

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-XPW01

SHEET 1 of 1

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/21/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 824,974.85 E: 997,833.22

ELEVATION: 548.42
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
0	6" Sonic	(0.0-10.0) CCR - (SM) gravelly SILTY SAND, fine sub-rounded poorly-graded sand, non-plastic fines, fine sub-rounded poorly-graded gravel; light brown (5YR 6/6) ASH; non-cohesive, dry, loose.	SM		538.4	1	SO	10.0 / 10.0	
10	6" Sonic	(10.0-12.7) CCR - (ML) CLAYEY SILT, non-plastic to low plasticity fines, trace fine sub-rounded sand; light gray (N7) to black (N1) ASH; cohesive, w<PL, very soft. (11.0) Same As Above (SAA) except, color change to medium light gray (N6) to black (N1).	ML		10.0 537.4 11.0 535.7				(10.0-12.7) CCR material sample collected at 10:10 - 8/21/2021.
15	6" Sonic	(12.7-20.0) (CH) CLAY, medium to high plasticity fines, trace fine sub-rounded sand, trace fine sub-rounded gravel; moderate yellowish brown (10YR 5/4) with light brown (5YR 5/6) and light gray (N7) mottling; cohesive, w~PL, firm. (17.8) SAA except, light gray (N7).	CH		12.7 530.6 17.8	2	SO	10.0 / 10.0	
20		END OF BORING AT 20.0 FEET BELOW GROUND SURFACE.			528.4 20.0				
25									
30									

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

RECORD OF BOREHOLE N-SB-XPW04

SHEET 1 of 1

PROJECT: Part 845 MNA Evaluation
PROJECT NUMBER: 21454831.0004
LOCATION: Newton Power Plant

DRILLING METHOD: Sonic
DRILLING DATE: 8/21/2021
DRILL RIG: Mini Sonic CC 150

DATUM: NAVD88
AZIMUTH: N/A
COORDINATES: N: 824,141.21 E: 1,001,087.48

ELEVATION: 551.70
INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC / ATT	REMARKS
0	6" Sonic	(0.0-11.0) CCR - (SW) gravelly SAND, fine to coarse sub-rounded well-graded sand, some fine sub-rounded gravel, trace non-plastic fines; dusky brown (5Y 2/2) ASH; non-cohesive, dry, loose.	SW			1	SO	10.0 / 10.0	(3.0) Clay seam 0.3' thick.
5									
		(8.0) Same As Above (SAA) except, gray (N6).			543.7 / 8.0				
10	6" Sonic	(11.0-15.0) CCR - (ML) sandy SILT, non-plastic fines, fine sub-rounded poorly-graded sand, trace sub-rounded gravel; medium light gray (N6) to black (N1) ASH; non-cohesive, wet, very loose.	ML		540.7 / 11.0	2	SO	5.0 / 5.0	(10.0-15.0) CCR material sample collected at 09:20 - 8/21/2021.
15		END OF BORING AT 15.0 FEET BELOW GROUND SURFACE.			536.7 / 15.0				
20									
25									
30									

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: Cascade Environmental
DRILLER: D. Gordon

LOGGED: BTT
CHECKED: EMS
REVIEWED: PJB

GOLDER

GOLDER STL RECORD OF BOREHOLE MWD NEWTON.GPJ GLDR_CO.GDT 11/29/21

APPENDIX B

Eurofins TestAmerica Laboratory Data

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-24350-1
Client Project/Site: Newton Power Station - Illinois

For:
Golder Associates Inc.
13515 Barrett Parkway Drive
Suite 260
Ballwin, Missouri 63021

Attn: Jeffrey Ingram

Ryan Henry

Authorized for release by:
11/2/2021 4:41:43 PM

Ryan Henry, Project Manager I
(865)291-3000
williamr.henry@eurofinset.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Method Summary 80
Chain of Custody 81

Definitions/Glossary

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Qualifiers

Metals

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
B	Compound was found in the blank and sample.
F3	Duplicate RPD exceeds the control limit
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL, and the absolute difference between results is < the upper reporting limits for both.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
L	A negative instrument reading had an absolute value greater than the reporting limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 140-24350-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-24350-1

Receipt
The samples were received on 8/24/2021 at 9:40am and arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.4º C.

Metals
7 Step Sequential Extraction Procedure

These soil samples were prepared and analyzed using Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0008, "7 Step Sequential Extraction Procedure". SW-846 Method 6010B as incorporated in Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analyses.

An aliquot of each sample was sequentially extracted using the steps listed below:

· Step 1 - Exchangeable Fraction: A 5 gram aliquot of sample was extracted with 25 mL of 1M magnesium sulfate (MgSO4), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 2 - Carbonate Fraction: The sample residue from step 1 was extracted with 25 mL of 1M sodium acetate/acetic acid (NaOAc/HOAc) at pH 5, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 3 - Non-crystalline Materials Fraction: The sample residue from step 2 was extracted with 25 mL of 0.2M ammonium oxalate (pH 3), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 4 - Metal Hydroxide Fraction: The sample residue from step 3 was extracted with 25 mL of 1M hydroxylamine hydrochloride solution in 25% v/v acetic acid, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 5 - Organic-bound Fraction: The sample residue from step 4 was extracted three times with 25 mL of 5% sodium hypochlorite (NaClO) at pH 9.5, centrifuged and filtered. The resulting leachates were combined and 5 mL were digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 6 - Acid/Sulfide Fraction: The sample residue from step 5 was extracted with 25 mL of a 3:1:2 v/v solution of HCl-HNO3-H2O, centrifuged and filtered. 5 mL of the resulting leachate was diluted to 50 mL with reagent water and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 7 - Residual Fraction: A 1.0 g aliquot of the sample residue from step 6 was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Results are reported in mg/kg on a dry weight basis.

In addition, a 1.0 g aliquot of the original sample was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Total metal results are reported in mg/kg on a dry weight basis.

Results were calculated using the following equation:

Result, µg/g or mg/Kg, dry weight = (C × V × V1 × D) / (W × S × V2)

Where:
C = Concentration from instrument readout, µg/mL
V = Final volume of digestate, mL
D = Instrument dilution factor
V1 = Total volume of leachate, mL
V2 = Volume of leachate digested, mL
W = Wet weight of sample, g
S = Percent solids/100

A method blank, laboratory control sample and laboratory control sample duplicate were prepared and analyzed with each SEP step in

Job ID: 140-24350-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

order to provide information about both the presence of elements of interest in the extraction solutions, and the recovery of elements of interest from the extraction solutions. Results outside of laboratory QC limits do not reflect out of control performance, but rather the effect of the extraction solution upon the analyte.

A laboratory sample duplicate was prepared and analyzed with each batch of samples in order to provide information regarding the reproducibility of the procedure.

SEP Report Notes:

The final report lists the results for each step, the result for the total digestion of the sample, and a sum of the results of steps 1 through 7 by element.

Magnesium was not reported for step 1 because the extraction solution for this step (magnesium sulfate) contains high levels of magnesium. Sodium was not reported for steps 2 and 5 since the extraction solutions for these steps contain high levels of sodium. The sum of steps 1 through 7 is much higher than the total result for sodium and magnesium due to the magnesium and sodium introduced by the extraction solutions.

The digestates for steps 1, 2 and 5 were analyzed at a dilution due to instrument problems caused by the high solids content of the digestates. The reporting limits were adjusted accordingly.

Method 6010B: The sample duplicate (DUP) precision for preparation batch 140-54251 and analytical batch 140-55243 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 6010B: The serial dilution performed for the following samples associated with batch 140-55243 was outside control limits: (140-24350-A-1-A SD ^5) and (140-24350-A-1-A SD ^50)

Method 6010B: The following samples were diluted due to the presence of titanium which interferes with Cobalt and Lead: N-SB-04 (12.0-18.0) (140-24350-7), N-SB-XPW 04 (10.0-15.0) (140-24350-9) and N-SB-XPW 01 (10.0-12.7) (140-24350-10). Elevated reporting limits (RLs) are provided.

Method 6010B: The following sample was diluted due to the presence of silicon which interferes with Arsenic, Lead and Selenium: N-SB-02 (65.0-71.5) (140-24350-5). Elevated reporting limits (RLs) are provided.

Method 6010B: The following sample was diluted due to the presence of iron which interferes with Arsenic and Selenium: N-SB-02 (12.5-20.0) (140-24350-4). Elevated reporting limits (RLs) are provided.

Method 6010B: The following samples were diluted due to the nature of the sample matrix: N-SB-05 (18.0-20.0) (140-24350-1), N-SB-05 (60.0-67.1) (140-24350-2), N-SB-18 (77.5-80.0) (140-24350-3), N-SB-02 (12.5-20.0) (140-24350-4), N-SB-02 (65.0-71.5) (140-24350-5), N-SB-14 (44.2-52.0) (140-24350-6), N-SB-04 (12.0-18.0) (140-24350-7), N-SB-04 (38.7-45.4) (140-24350-8), N-SB-XPW 04 (10.0-15.0) (140-24350-9) and N-SB-XPW 01 (10.0-12.7) (140-24350-10). Elevated reporting limits (RLs) are provided for aluminum and calcium.

Method 6010B SEP: The sample duplicate (DUP) precision for preparation batch 140-54371 and 140-54400 and analytical batch 140-55087 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 6010B SEP: The sample duplicate (DUP) precision for preparation batch 140-54401, 140-54485, 140-54486 and 140-54566 and analytical batch 140-55146 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 6010B SEP: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 140-54486 and 140-54566 and analytical batch 140-55146 recovered outside control limits for the following analyte: Lithium. This analyte was biased high in the LCS/LCSD and was detected in the associated samples as an estimated value; therefore, the data have been

Job ID: 140-24350-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

reported.

Method 6010B SEP: The following sample was diluted to bring the concentration of target analyte, calcium, within the calibration range: N-SB-05 (60.0-67.1) (140-24350-2). Elevated reporting limits (RLs) are provided.

Method 6010B SEP: The following samples were diluted due to the presence of silicon which interferes with Arsenic, Lead and Selenium: N-SB-18 (77.5-80.0) (140-24350-3), N-SB-02 (65.0-71.5) (140-24350-5), N-SB-04 (12.0-18.0) (140-24350-7), N-SB-04 (38.7-45.4) (140-24350-8), N-SB-XPW 04 (10.0-15.0) (140-24350-9) and N-SB-XPW 01 (10.0-12.7) (140-24350-10). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-24350-1	N-SB-05 (18.0-20.0)	Solid	08/17/21 12:40	08/24/21 09:40
140-24350-2	N-SB-05 (60.0-67.1)	Solid	08/17/21 15:40	08/24/21 09:40
140-24350-3	N-SB-18 (77.5-80.0)	Solid	08/18/21 10:00	08/24/21 09:40
140-24350-4	N-SB-02 (12.5-20.0)	Solid	08/18/21 14:10	08/24/21 09:40
140-24350-5	N-SB-02 (65.0-71.5)	Solid	08/19/21 12:00	08/24/21 09:40
140-24350-6	N-SB-14 (44.2-52.0)	Solid	08/19/21 14:45	08/24/21 09:40
140-24350-7	N-SB-04 (12.0-18.0)	Solid	08/21/21 07:35	08/24/21 09:40
140-24350-8	N-SB-04 (38.7-45.4)	Solid	08/21/21 08:30	08/24/21 09:40
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Solid	08/21/21 09:20	08/24/21 09:40
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Solid	08/21/21 10:10	08/24/21 09:40

Client Sample ID: N-SB-05 (18.0-20.0)
Date Collected: 08/17/21 12:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-1
Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		44	7.1	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Arsenic	ND		2.2	0.58	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Beryllium	ND		1.1	0.34	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Calcium	**880**	**J B**	1100	8.4	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Chromium	ND		2.2	0.31	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Cobalt	ND		11	0.20	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Iron	ND		22	13	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Lead	ND		2.2	0.49	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Lithium	ND		11	0.66	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Manganese	**2.8**	**J**	3.3	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Molybdenum	ND		8.9	0.36	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Selenium	ND		2.2	0.75	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**16**	**J**	33	5.3	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Arsenic	ND		1.7	0.43	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Beryllium	ND		0.83	0.053	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Calcium	**16000**		830	7.3	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Chromium	ND		1.7	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Cobalt	**0.57**	**J**	8.3	0.21	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Iron	**36**		17	9.6	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Lead	**0.77**	**J**	1.7	0.37	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Lithium	ND		8.3	0.50	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Manganese	**84**		2.5	0.93	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Molybdenum	ND		6.6	0.27	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Selenium	ND		1.7	0.56	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**52**		11	2.3	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Arsenic	**0.26**	**J**	0.55	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Beryllium	ND		0.28	0.017	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Calcium	**9.2**	**J**	280	1.7	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Chromium	**0.31**	**J**	0.55	0.078	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Cobalt	**0.62**	**J**	2.8	0.050	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Iron	**240**		5.5	3.2	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Lead	ND		0.55	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Lithium	ND		2.8	0.17	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Manganese	**51**	**B**	0.83	0.030	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Molybdenum	ND		2.2	0.091	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**370**		11	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Arsenic	**1.2**		0.55	0.24	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Beryllium	**0.077**	**J**	0.28	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Calcium	**16000**		280	2.4	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Chromium	**1.6**		0.55	0.078	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1

Client Sample ID: N-SB-05 (18.0-20.0)
Date Collected: 08/17/21 12:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-1
Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.2	J	2.8	0.059	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Iron	3900		5.5	3.2	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Lead	2.7		0.55	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Lithium	0.99	J	2.8	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Manganese	93		0.83	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Molybdenum	0.45	J	2.2	0.091	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Selenium	ND		0.55	0.52	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	210	B	170	26	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Arsenic	ND		8.3	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Beryllium	ND		4.2	0.35	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Calcium	11000		4200	12	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Chromium	2.1	J	8.3	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Cobalt	ND		42	0.66	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Iron	ND		83	49	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Lead	ND		8.3	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Lithium	14	J B *+	42	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Manganese	5.2	J	12	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Molybdenum	ND		33	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Selenium	ND		8.3	2.9	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	2300		11	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Arsenic	2.2		0.55	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Beryllium	0.095	J	0.28	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Calcium	4500		280	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Chromium	3.9		0.55	0.078	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Cobalt	1.6	J	2.8	0.051	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Iron	4500		5.5	3.2	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Lead	2.0		0.55	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Lithium	3.9		2.8	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Manganese	61		0.83	0.28	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Molybdenum	0.24	J	2.2	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	25000		110	18	mg/Kg	☼	10/08/21 08:00	10/26/21 11:43	10
Arsenic	0.70		0.55	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Beryllium	0.37		0.28	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Calcium	3100		2800	29	mg/Kg	☼	10/08/21 08:00	10/26/21 11:43	10
Chromium	9.3		0.55	0.078	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Cobalt	0.15	J	2.8	0.029	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Iron	2800		5.5	4.5	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Lead	4.3		0.55	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Lithium	6.9		2.8	0.17	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Manganese	53		0.83	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1

Client Sample ID: N-SB-05 (18.0-20.0)

Date Collected: 08/17/21 12:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-1

Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.2	0.091	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**28000**		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	**4.4**		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	**0.55**		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	**52000**		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	**17**		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	**4.1**		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	**11000**		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	**9.8**		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	**26**		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	**350**		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	**0.69**	**J**	2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**26000**		110	18	mg/Kg	☼	09/29/21 08:00	10/27/21 11:28	10
Arsenic	**5.3**		0.55	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Beryllium	**0.55**		0.28	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Calcium	**51000**		2800	29	mg/Kg	☼	09/29/21 08:00	10/27/21 11:28	10
Chromium	**17**		0.55	0.078	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Cobalt	**3.2**		2.8	0.029	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Iron	**10000**		5.5	4.5	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Lead	**8.4**		0.55	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Lithium	**12**		2.8	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Manganese	**280**		0.83	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Molybdenum	**0.78**	**J**	2.2	0.091	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Selenium	ND		0.55	0.19	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1

Client Sample ID: N-SB-05 (60.0-67.1)
Date Collected: 08/17/21 15:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-2
Matrix: Solid
Percent Solids: 81.3

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		49	7.9	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Arsenic	ND		2.5	0.64	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Beryllium	ND		1.2	0.38	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Calcium	**560**	**J B**	1200	9.4	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Chromium	ND		2.5	0.34	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Cobalt	ND		12	0.22	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Iron	ND		25	14	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Lead	ND		2.5	0.54	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Lithium	ND		12	0.74	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Manganese	**2.7**	**J**	3.7	0.15	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Molybdenum	ND		9.8	0.40	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Selenium	ND		2.5	0.84	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**33**	**J**	37	5.9	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Arsenic	ND		1.8	0.48	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Beryllium	ND		0.92	0.059	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Calcium	**25000**		920	8.1	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Chromium	ND		1.8	0.26	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Cobalt	ND		9.2	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Iron	**380**		18	11	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Lead	**1.2**	**J**	1.8	0.41	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Lithium	ND		9.2	0.55	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Manganese	**85**		2.8	1.0	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Molybdenum	ND		7.4	0.30	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Selenium	ND		1.8	0.63	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**340**		12	2.6	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Arsenic	**0.31**	**J**	0.62	0.16	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Beryllium	**0.054**	**J**	0.31	0.018	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Calcium	**6.9**	**J**	310	1.8	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Chromium	**0.77**		0.62	0.086	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Cobalt	**0.67**	**J**	3.1	0.055	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Iron	**4100**		6.2	3.6	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Lead	**0.15**	**J**	0.62	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Lithium	ND		3.1	0.18	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Manganese	**42**	**B**	0.92	0.033	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Molybdenum	ND		2.5	0.10	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Selenium	ND		0.62	0.21	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**120**		12	2.0	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Arsenic	ND		0.62	0.27	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Beryllium	**0.026**	**J**	0.31	0.020	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Calcium	**59000**		620	5.4	mg/Kg	☼	10/05/21 08:00	10/25/21 17:56	2
Chromium	**0.80**		0.62	0.086	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1

Client Sample ID: N-SB-05 (60.0-67.1)
Date Collected: 08/17/21 15:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-2
Matrix: Solid
Percent Solids: 81.3

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.70	J	3.1	0.065	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Iron	3000		6.2	3.6	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Lead	4.5		0.62	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Lithium	0.95	J	3.1	0.18	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Manganese	350		0.92	0.16	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Molybdenum	ND		2.5	0.10	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Selenium	ND		0.62	0.58	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	64	J B	180	29	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Arsenic	ND		9.2	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Beryllium	ND		4.6	0.39	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Calcium	8700		4600	14	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Chromium	1.5	J	9.2	1.3	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Cobalt	ND		46	0.74	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Iron	ND		92	54	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Lead	ND		9.2	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Lithium	14	J B *+	46	2.7	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Manganese	5.4	J	14	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Molybdenum	ND		37	1.5	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Selenium	ND		9.2	3.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1800		12	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Arsenic	2.3		0.62	0.18	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Beryllium	0.076	J	0.31	0.015	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Calcium	7000		310	2.6	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Chromium	4.0		0.62	0.086	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Cobalt	2.0	J	3.1	0.057	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Iron	6300		6.2	3.6	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Lead	2.1		0.62	0.14	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Lithium	3.6		3.1	0.18	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Manganese	69		0.92	0.31	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Molybdenum	0.29	J	2.5	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Selenium	ND		0.62	0.21	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	27000		120	20	mg/Kg	☼	10/08/21 08:00	10/26/21 11:52	10
Arsenic	0.61	J	0.62	0.16	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Beryllium	0.52		0.31	0.020	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Calcium	4800		3100	32	mg/Kg	☼	10/08/21 08:00	10/26/21 11:52	10
Chromium	10		0.62	0.086	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Cobalt	0.34	J	3.1	0.032	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Iron	3400		6.2	5.0	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Lead	4.4		0.62	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Lithium	6.0		3.1	0.18	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Manganese	59		0.92	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-05 (60.0-67.1)
Date Collected: 08/17/21 15:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-2
Matrix: Solid
Percent Solids: 81.3

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.5	0.10	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Selenium	ND		0.62	0.21	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**29000**		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	**3.2**		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	**0.67**		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	**110000**		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	**17**		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	**3.7**		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	**17000**		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	**12**		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	**24**		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	**610**		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	**0.29**	**J**	2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**22000**		120	20	mg/Kg	☼	09/29/21 08:00	10/27/21 11:52	10
Arsenic	**2.5**		0.62	0.16	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Beryllium	**0.54**		0.31	0.020	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Calcium	**84000**		3100	32	mg/Kg	☼	09/29/21 08:00	10/27/21 11:52	10
Chromium	**13**		0.62	0.086	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Cobalt	**3.2**		3.1	0.032	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Iron	**14000**		6.2	5.0	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Lead	**9.9**		0.62	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Lithium	**9.6**		3.1	0.18	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Manganese	**380**		0.92	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Molybdenum	**0.31**	**J**	2.5	0.10	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Selenium	ND		0.62	0.21	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1

Client Sample ID: N-SB-18 (77.5-80.0)
Date Collected: 08/18/21 10:00
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-3
Matrix: Solid
Percent Solids: 91.3

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		44	7.0	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Arsenic	ND		2.2	0.57	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Beryllium	ND		1.1	0.34	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Calcium	**500**	**J B**	1100	8.3	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Chromium	ND		2.2	0.31	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Cobalt	ND		11	0.20	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Iron	ND		22	13	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Lead	ND		2.2	0.48	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Lithium	ND		11	0.66	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Manganese	**4.0**		3.3	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Molybdenum	ND		8.8	0.36	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Selenium	ND		2.2	0.74	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**20**	**J**	33	5.3	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Arsenic	ND		1.6	0.43	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Beryllium	ND		0.82	0.053	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Calcium	**12000**		820	7.2	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Chromium	ND		1.6	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Cobalt	**0.91**	**J**	8.2	0.21	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Iron	**440**		16	9.5	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Lead	**1.7**		1.6	0.36	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Lithium	ND		8.2	0.49	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Manganese	**82**		2.5	0.92	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Molybdenum	ND		6.6	0.27	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Selenium	ND		1.6	0.56	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**82**		11	2.3	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Arsenic	**0.91**		0.55	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Beryllium	**0.035**	**J**	0.27	0.016	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Calcium	**6.5**	**J**	270	1.6	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Chromium	**0.62**		0.55	0.077	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Cobalt	**0.53**	**J**	2.7	0.049	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Iron	**2500**		5.5	3.2	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Lead	**0.12**	**J**	0.55	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Lithium	ND		2.7	0.16	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Manganese	**69**	**B**	0.82	0.030	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Molybdenum	**0.13**	**J**	2.2	0.090	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**77**		11	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Arsenic	ND		0.55	0.24	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Beryllium	**0.030**	**J**	0.27	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Calcium	**39000**		270	2.4	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Chromium	**0.87**		0.55	0.077	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1

Client Sample ID: N-SB-18 (77.5-80.0)

Date Collected: 08/18/21 10:00
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-3

Matrix: Solid
Percent Solids: 91.3

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.48	J	2.7	0.058	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Iron	3800		5.5	3.2	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Lead	2.4		0.55	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Lithium	0.83	J	2.7	0.16	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Manganese	360		0.82	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Molybdenum	0.11	J	2.2	0.090	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Selenium	ND		0.55	0.51	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	63	J B	160	26	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Arsenic	ND		8.2	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Beryllium	ND		4.1	0.35	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Calcium	7700		4100	12	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Chromium	1.4	J	8.2	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Cobalt	ND		41	0.66	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Iron	ND		82	48	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Lead	ND		8.2	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Lithium	12	J B *+	41	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Manganese	39		12	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Molybdenum	ND		33	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Selenium	ND		8.2	2.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1200		11	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Arsenic	2.2		0.55	0.16	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Beryllium	0.084	J	0.27	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Calcium	25000		270	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Chromium	2.9		0.55	0.077	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Cobalt	1.5	J	2.7	0.050	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Iron	8500		5.5	3.2	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Lead	2.0		0.55	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Lithium	4.9		2.7	0.16	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Manganese	300		0.82	0.27	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Molybdenum	0.28	J	2.2	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	21000		110	18	mg/Kg	☼	10/08/21 08:00	10/26/21 11:57	10
Arsenic	0.66	J	1.1	0.28	mg/Kg	☼	10/08/21 08:00	10/26/21 14:50	2
Beryllium	0.29		0.27	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Calcium	4200		2700	28	mg/Kg	☼	10/08/21 08:00	10/26/21 11:57	10
Chromium	9.7		0.55	0.077	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Cobalt	0.71	J	2.7	0.028	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Iron	3300		5.5	4.5	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Lead	2.8		1.1	0.24	mg/Kg	☼	10/08/21 08:00	10/26/21 14:50	2
Lithium	5.9		2.7	0.16	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Manganese	52		0.82	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-18 (77.5-80.0)
Date Collected: 08/18/21 10:00
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-3
Matrix: Solid
Percent Solids: 91.3

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.2	0.090	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Selenium	ND		1.1	0.37	mg/Kg	☼	10/08/21 08:00	10/26/21 14:50	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**22000**		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	**3.8**		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	**0.44**		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	**89000**		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	**16**		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	**4.1**		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	**19000**		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	**8.9**		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	**24**		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	**910**		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	**0.52**	**J**	2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**19000**		110	18	mg/Kg	☼	09/29/21 08:00	10/27/21 11:57	10
Arsenic	**5.8**		0.55	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Beryllium	**0.38**		0.27	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Calcium	**83000**		2700	28	mg/Kg	☼	09/29/21 08:00	10/27/21 11:57	10
Chromium	**17**		0.55	0.077	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Cobalt	**5.0**		2.7	0.028	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Iron	**13000**		5.5	4.5	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Lead	**9.0**		0.55	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Lithium	**10**		2.7	0.16	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Manganese	**600**		0.82	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Molybdenum	**1.0**	**J**	2.2	0.090	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Selenium	ND	L	0.55	0.19	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1

Client Sample ID: N-SB-02 (12.5-20.0)
Lab Sample ID: 140-24350-4

Date Collected: 08/18/21 14:10
Matrix: Solid

Date Received: 08/24/21 09:40
Percent Solids: 93.1

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		43	6.9	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Arsenic	ND		2.1	0.56	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Beryllium	ND		1.1	0.33	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Calcium	**1200**	**B**	1100	8.2	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Chromium	ND		2.1	0.30	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Cobalt	ND		11	0.19	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Iron	ND		21	12	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Lead	ND		2.1	0.47	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Lithium	ND		11	0.64	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Manganese	**3.1**	**J**	3.2	0.13	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Molybdenum	ND		8.6	0.35	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Selenium	ND		2.1	0.73	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**12**	**J**	32	5.2	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Arsenic	ND		1.6	0.42	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Beryllium	ND		0.81	0.052	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Calcium	**18000**		810	7.1	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Chromium	ND		1.6	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Cobalt	**0.31**	**J**	8.1	0.20	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Iron	**19**		16	9.3	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Lead	**0.61**	**J**	1.6	0.35	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Lithium	ND		8.1	0.48	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Manganese	**150**		2.4	0.90	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Molybdenum	ND		6.4	0.26	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Selenium	ND		1.6	0.55	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**58**		11	2.3	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Arsenic	**0.24**	**J**	0.54	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Beryllium	ND		0.27	0.016	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Calcium	**9.7**	**J**	270	1.6	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Chromium	**0.25**	**J**	0.54	0.075	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Cobalt	**2.3**	**J**	2.7	0.048	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Iron	**310**		5.4	3.1	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Lead	ND		0.54	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Lithium	ND		2.7	0.16	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Manganese	**210**	**B**	0.81	0.029	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Molybdenum	**0.13**	**J**	2.1	0.088	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Selenium	ND		0.54	0.18	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**510**		11	1.7	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Arsenic	ND		0.54	0.24	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Beryllium	**0.17**	**J**	0.27	0.017	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Calcium	**19000**		270	2.4	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Chromium	**1.6**		0.54	0.075	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1

Client Sample ID: N-SB-02 (12.5-20.0)
Date Collected: 08/18/21 14:10
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-4
Matrix: Solid
Percent Solids: 93.1

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.1	J	2.7	0.057	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Iron	8000		5.4	3.1	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Lead	3.7		0.54	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Lithium	1.4	J	2.7	0.16	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Manganese	170		0.81	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Molybdenum	0.75	J	2.1	0.088	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Selenium	ND		0.54	0.50	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	140	J B	160	25	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Arsenic	3.4	J	8.1	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Beryllium	ND		4.0	0.34	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Calcium	12000		4000	12	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Chromium	2.6	J	8.1	1.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Cobalt	ND		40	0.64	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Iron	ND		81	47	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Lead	ND		8.1	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Lithium	10	J B *+	40	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Manganese	17		12	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Molybdenum	ND		32	1.3	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Selenium	ND		8.1	2.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	4000		11	1.7	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Arsenic	31		0.54	0.16	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Beryllium	0.23	J	0.27	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Calcium	5000		270	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Chromium	6.9		0.54	0.075	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Cobalt	3.3		2.7	0.049	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Iron	19000		5.4	3.1	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Lead	4.2		0.54	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Lithium	6.6		2.7	0.16	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Manganese	120		0.81	0.27	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Molybdenum	2.8		2.1	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Selenium	ND		0.54	0.18	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	29000		110	17	mg/Kg	☼	10/08/21 08:00	10/26/21 12:02	10
Arsenic	4.1		0.54	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Beryllium	0.57		0.27	0.017	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Calcium	2300		270	2.8	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Chromium	17		0.54	0.075	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Cobalt	0.44	J	2.7	0.028	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Iron	5200		5.4	4.4	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Lead	4.2		0.54	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Lithium	13		2.7	0.16	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Manganese	52		0.81	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-02 (12.5-20.0)
Date Collected: 08/18/21 14:10
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-4
Matrix: Solid
Percent Solids: 93.1

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.31	J	2.1	0.088	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Selenium	ND		0.54	0.18	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	34000		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	38		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	0.97		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	57000		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	28		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	7.4		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	33000		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	13		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	31		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	720		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	4.0		2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	31000		110	17	mg/Kg	☼	09/29/21 08:00	10/27/21 12:02	10
Arsenic	51		1.1	0.28	mg/Kg	☼	09/29/21 08:00	10/27/21 16:12	2
Beryllium	0.76		0.27	0.017	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Calcium	54000		2700	28	mg/Kg	☼	09/29/21 08:00	10/27/21 12:02	10
Chromium	22		0.54	0.075	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Cobalt	6.2		2.7	0.028	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Iron	34000		11	8.8	mg/Kg	☼	09/29/21 08:00	10/27/21 16:12	2
Lead	11		0.54	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Lithium	19		2.7	0.16	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Manganese	590		0.81	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Molybdenum	5.5		2.1	0.088	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Selenium	ND		1.1	0.37	mg/Kg	☼	09/29/21 08:00	10/27/21 16:12	2

Client Sample ID: N-SB-02 (65.0-71.5)
Lab Sample ID: 140-24350-5
Date Collected: 08/19/21 12:00
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 89.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		45	7.2	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Arsenic	ND		2.2	0.58	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Beryllium	ND		1.1	0.35	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Calcium	**300**	**J B**	1100	8.5	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Chromium	ND		2.2	0.31	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Cobalt	ND		11	0.20	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Iron	ND		22	13	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Lead	ND		2.2	0.49	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Lithium	ND		11	0.67	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Manganese	**3.5**		3.4	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Molybdenum	ND		9.0	0.37	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Selenium	ND		2.2	0.76	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**11**	**J**	34	5.4	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Arsenic	ND		1.7	0.44	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Beryllium	ND		0.84	0.054	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Calcium	**11000**		840	7.4	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Chromium	ND		1.7	0.24	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Cobalt	**0.29**	**J**	8.4	0.21	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Iron	**270**		17	9.8	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Lead	**1.3**	**J**	1.7	0.37	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Lithium	ND		8.4	0.50	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Manganese	**68**		2.5	0.94	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Molybdenum	ND		6.7	0.28	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Selenium	ND		1.7	0.57	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**45**		11	2.4	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Arsenic	**0.62**		0.56	0.15	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Beryllium	**0.034**	**J**	0.28	0.017	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Calcium	**6.2**	**J**	280	1.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Chromium	**0.44**	**J**	0.56	0.078	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Cobalt	**0.36**	**J**	2.8	0.050	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Iron	**3100**		5.6	3.3	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Lead	**0.16**	**J**	0.56	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Lithium	ND		2.8	0.17	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Manganese	**54**	**B**	0.84	0.030	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Molybdenum	ND		2.2	0.092	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Selenium	ND		0.56	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**79**		11	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Arsenic	ND		0.56	0.25	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Beryllium	ND		0.28	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Calcium	**40000**		280	2.5	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Chromium	**0.87**		0.56	0.078	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1

Client Sample ID: N-SB-02 (65.0-71.5)
Date Collected: 08/19/21 12:00
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-5
Matrix: Solid
Percent Solids: 89.2

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.30	J	2.8	0.059	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Iron	2200		5.6	3.3	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Lead	1.7		0.56	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Lithium	0.96	J	2.8	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Manganese	150		0.84	0.15	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Molybdenum	ND		2.2	0.092	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Selenium	ND		0.56	0.53	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	46	J B	170	26	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Arsenic	ND		8.4	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Beryllium	ND		4.2	0.35	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Calcium	7200		4200	12	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Chromium	ND		8.4	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Cobalt	ND		42	0.67	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Iron	ND		84	49	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Lead	ND		8.4	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Lithium	7.6	J B *+	42	2.5	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Manganese	14		13	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Molybdenum	ND		34	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Selenium	ND		8.4	2.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1200		11	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Arsenic	2.0		0.56	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Beryllium	0.040	J	0.28	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Calcium	25000		280	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Chromium	4.3		0.56	0.078	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Cobalt	1.3	J	2.8	0.052	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Iron	3400		5.6	3.3	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Lead	1.2		0.56	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Lithium	3.6		2.8	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Manganese	49		0.84	0.28	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Molybdenum	ND		2.2	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Selenium	ND		0.56	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	18000		110	18	mg/Kg	☼	10/08/21 08:00	10/26/21 12:21	10
Arsenic	0.72	J	1.1	0.29	mg/Kg	☼	10/08/21 08:00	10/26/21 14:55	2
Beryllium	0.25	J	0.28	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Calcium	4100		2800	29	mg/Kg	☼	10/08/21 08:00	10/26/21 12:21	10
Chromium	7.4		0.56	0.078	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Cobalt	0.078	J	2.8	0.029	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Iron	2500		5.6	4.6	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Lead	3.7		1.1	0.25	mg/Kg	☼	10/08/21 08:00	10/26/21 14:55	2
Lithium	11		2.8	0.17	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Manganese	45		0.84	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1

Client Sample ID: N-SB-02 (65.0-71.5)

Date Collected: 08/19/21 12:00
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-5

Matrix: Solid
Percent Solids: 89.2

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.2	0.092	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Selenium	ND		1.1	0.38	mg/Kg	☼	10/08/21 08:00	10/26/21 14:55	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**20000**		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	**3.4**		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	**0.32**		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	**88000**		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	**13**		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	**2.3**	**J**	2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	**12000**		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	**8.1**		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	**23**		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	**390**		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	ND		2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**13000**		110	18	mg/Kg	☼	09/29/21 08:00	10/27/21 12:07	10
Arsenic	**3.0**		1.1	0.29	mg/Kg	☼	09/29/21 08:00	10/27/21 16:18	2
Beryllium	**0.26**	**J**	0.28	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Calcium	**95000**		2800	29	mg/Kg	☼	09/29/21 08:00	10/27/21 12:07	10
Chromium	**10**		0.56	0.078	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Cobalt	**2.6**	**J**	2.8	0.029	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Iron	**14000**		5.6	4.6	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Lead	**6.8**		1.1	0.25	mg/Kg	☼	09/29/21 08:00	10/27/21 16:18	2
Lithium	**7.6**		2.8	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Manganese	**440**		0.84	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Molybdenum	**0.26**	**J**	2.2	0.092	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Selenium	ND		1.1	0.38	mg/Kg	☼	09/29/21 08:00	10/27/21 16:18	2

Client Sample ID: N-SB-14 (44.2-52.0)
Date Collected: 08/19/21 14:45
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-6
Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		44	7.1	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Arsenic	ND		2.2	0.58	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Beryllium	ND		1.1	0.34	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Calcium	**1100**	**B**	1100	8.4	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Chromium	ND		2.2	0.31	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Cobalt	ND		11	0.20	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Iron	ND		22	13	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Lead	ND		2.2	0.49	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Lithium	ND		11	0.66	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Manganese	**10**		3.3	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Molybdenum	ND		8.9	0.36	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Selenium	ND		2.2	0.75	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**31**	**J**	33	5.3	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Arsenic	ND		1.7	0.43	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Beryllium	ND		0.83	0.053	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Calcium	**25000**		830	7.3	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Chromium	**0.41**	**J**	1.7	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Cobalt	ND		8.3	0.21	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Iron	**160**		17	9.6	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Lead	**1.3**	**J**	1.7	0.37	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Lithium	ND		8.3	0.50	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Manganese	**130**		2.5	0.93	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Molybdenum	ND		6.6	0.27	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Selenium	ND		1.7	0.56	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**200**		11	2.3	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Arsenic	**0.32**	**J**	0.55	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Beryllium	**0.028**	**J**	0.28	0.017	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Calcium	**8.5**	**J**	280	1.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Chromium	**1.7**		0.55	0.078	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Cobalt	**0.39**	**J**	2.8	0.050	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Iron	**1700**		5.5	3.2	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Lead	ND		0.55	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Lithium	ND		2.8	0.17	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Manganese	**61**	**B**	0.83	0.030	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Molybdenum	**0.29**	**J**	2.2	0.091	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**300**		11	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Arsenic	ND		0.55	0.24	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Beryllium	**0.064**	**J**	0.28	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Calcium	**46000**		280	2.4	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Chromium	**1.6**		0.55	0.078	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1

Client Sample ID: N-SB-14 (44.2-52.0)

Date Collected: 08/19/21 14:45
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-6

Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.3	J	2.8	0.059	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Iron	2200		5.5	3.2	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Lead	2.8		0.55	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Lithium	1.6	J	2.8	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Manganese	300		0.83	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Molybdenum	0.28	J	2.2	0.091	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Selenium	ND		0.55	0.52	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	130	J B	170	26	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Arsenic	ND		8.3	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Beryllium	ND		4.2	0.35	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Calcium	14000		4200	12	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Chromium	2.0	J	8.3	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Cobalt	ND		42	0.66	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Iron	ND		83	49	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Lead	ND		8.3	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Lithium	8.2	J B *+	42	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Manganese	4.2	J	12	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Molybdenum	ND		33	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Selenium	ND		8.3	2.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	3000		11	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Arsenic	2.4		0.55	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Beryllium	0.13	J	0.28	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Calcium	5900		280	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Chromium	5.5		0.55	0.078	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Cobalt	2.8		2.8	0.051	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Iron	8100		5.5	3.2	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Lead	2.7		0.55	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Lithium	5.4		2.8	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Manganese	100		0.83	0.28	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Molybdenum	0.38	J	2.2	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	30000		110	18	mg/Kg	☼	10/08/21 08:00	10/26/21 12:26	10
Arsenic	0.88		0.55	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Beryllium	0.49		0.28	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Calcium	3600		2800	29	mg/Kg	☼	10/08/21 08:00	10/26/21 12:26	10
Chromium	14		0.55	0.078	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Cobalt	0.22	J	2.8	0.029	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Iron	4000		5.5	4.5	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Lead	3.8		0.55	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Lithium	8.8		2.8	0.17	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Manganese	62		0.83	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-14 (44.2-52.0)
Date Collected: 08/19/21 14:45
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-6
Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.2	0.091	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**33000**		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	**3.6**		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	**0.71**		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	**96000**		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	**25**		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	**4.7**		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	**16000**		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	**11**		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	**24**		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	**670**		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	**0.94**	**J**	2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**30000**		110	18	mg/Kg	☼	09/29/21 08:00	10/27/21 12:12	10
Arsenic	**30**		0.55	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Beryllium	**0.61**		0.28	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Calcium	**81000**		2800	29	mg/Kg	☼	09/29/21 08:00	10/27/21 12:12	10
Chromium	**21**		0.55	0.078	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Cobalt	**7.9**		2.8	0.029	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Iron	**19000**		5.5	4.5	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Lead	**9.2**		0.55	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Lithium	**15**		2.8	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Manganese	**420**		0.83	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Molybdenum	**8.3**		2.2	0.091	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Selenium	ND	L	0.55	0.19	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1

Client Sample ID: N-SB-04 (12.0-18.0)
Lab Sample ID: 140-24350-7

Date Collected: 08/21/21 07:35
Matrix: Solid

Date Received: 08/24/21 09:40
Percent Solids: 89.7

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		45	7.1	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Arsenic	ND		2.2	0.58	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Beryllium	ND		1.1	0.34	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Calcium	**1400**	**B**	1100	8.5	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Chromium	ND		2.2	0.31	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Cobalt	ND		11	0.20	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Iron	ND		22	13	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Lead	ND		2.2	0.49	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Lithium	ND		11	0.67	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Manganese	**0.62**	**J**	3.3	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Molybdenum	ND		8.9	0.37	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Selenium	ND		2.2	0.76	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**10**	**J**	33	5.4	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Arsenic	ND		1.7	0.43	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Beryllium	ND		0.84	0.054	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Calcium	**31000**		840	7.4	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Chromium	**0.32**	**J**	1.7	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Cobalt	ND		8.4	0.21	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Iron	ND		17	9.7	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Lead	**0.82**	**J**	1.7	0.37	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Lithium	ND		8.4	0.50	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Manganese	**170**		2.5	0.94	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Molybdenum	ND		6.7	0.27	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Selenium	ND		1.7	0.57	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**120**		11	2.3	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Arsenic	**0.42**	**J**	0.56	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Beryllium	**0.039**	**J**	0.28	0.017	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Calcium	**7.8**	**J**	280	1.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Chromium	**0.50**	**J**	0.56	0.078	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Cobalt	**2.6**	**J**	2.8	0.050	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Iron	**330**		5.6	3.2	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Lead	**0.13**	**J**	0.56	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Lithium	ND		2.8	0.17	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Manganese	**450**	**B**	0.84	0.030	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Molybdenum	**0.31**	**J**	2.2	0.091	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Selenium	ND		0.56	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**600**		11	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Arsenic	ND		0.56	0.25	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Beryllium	**0.16**	**J**	0.28	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Calcium	**28000**		280	2.5	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Chromium	**2.4**		0.56	0.078	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1

Client Sample ID: N-SB-04 (12.0-18.0)
Date Collected: 08/21/21 07:35
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-7
Matrix: Solid
Percent Solids: 89.7

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.9	J	2.8	0.059	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Iron	6700		5.6	3.2	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Lead	5.1		0.56	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Lithium	1.7	J	2.8	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Manganese	220		0.84	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Molybdenum	0.60	J	2.2	0.091	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Selenium	0.52	J	0.56	0.52	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	200	B	170	26	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Arsenic	ND		8.4	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Beryllium	ND		4.2	0.35	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Calcium	13000		4200	12	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Chromium	2.5	J	8.4	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Cobalt	ND		42	0.67	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Iron	ND		84	49	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Lead	ND		8.4	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Lithium	8.4	J B *+	42	2.5	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Manganese	11	J	13	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Molybdenum	ND		33	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Selenium	ND		8.4	2.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	5400		11	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Arsenic	4.5		0.56	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Beryllium	0.24	J	0.28	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Calcium	5300		280	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Chromium	8.7		0.56	0.078	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Cobalt	4.0		2.8	0.051	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Iron	13000		5.6	3.2	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Lead	3.8		0.56	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Lithium	8.5		2.8	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Manganese	130		0.84	0.28	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Molybdenum	0.57	J	2.2	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Selenium	ND		0.56	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	34000		110	18	mg/Kg	☼	10/08/21 08:00	10/26/21 12:31	10
Arsenic	1.4		1.1	0.29	mg/Kg	☼	10/08/21 08:00	10/26/21 15:00	2
Beryllium	0.58		0.28	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Calcium	1700		280	2.9	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Chromium	21		0.56	0.078	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Cobalt	0.36	J	5.6	0.058	mg/Kg	☼	10/08/21 08:00	10/26/21 15:00	2
Iron	4800		5.6	4.6	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Lead	3.1		1.1	0.25	mg/Kg	☼	10/08/21 08:00	10/26/21 15:00	2
Lithium	16		2.8	0.17	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Manganese	46		0.84	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1

Client Sample ID: N-SB-04 (12.0-18.0)

Date Collected: 08/21/21 07:35
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-7

Matrix: Solid
Percent Solids: 89.7

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.13	J	2.2	0.091	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Selenium	ND		1.1	0.38	mg/Kg	☼	10/08/21 08:00	10/26/21 15:00	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	40000		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	6.4		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	1.0		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	80000		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	35		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	8.8		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	25000		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	13		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	35		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	1000		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	1.6	J	2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	0.52		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	48000		110	18	mg/Kg	☼	09/29/21 08:00	10/27/21 12:17	10
Arsenic	8.3		0.56	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Beryllium	0.98		0.28	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Calcium	67000		2800	29	mg/Kg	☼	09/29/21 08:00	10/27/21 12:17	10
Chromium	36		0.56	0.078	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Cobalt	10		5.6	0.058	mg/Kg	☼	09/29/21 08:00	10/27/21 16:23	2
Iron	23000		5.6	4.6	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Lead	13		1.1	0.25	mg/Kg	☼	09/29/21 08:00	10/27/21 16:23	2
Lithium	28		2.8	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Manganese	770		0.84	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Molybdenum	1.7	J	2.2	0.091	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Selenium	ND	L	0.56	0.19	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-04 (38.7-45.4)

Date Collected: 08/21/21 08:30
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-8

Matrix: Solid
Percent Solids: 86.5

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		46	7.4	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Arsenic	ND		2.3	0.60	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Beryllium	ND		1.2	0.36	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Calcium	**800**	**J B**	1200	8.8	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Chromium	ND		2.3	0.32	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Cobalt	ND		12	0.21	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Iron	ND		23	13	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Lead	ND		2.3	0.51	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Lithium	ND		12	0.69	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Manganese	**9.1**		3.5	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Molybdenum	ND		9.2	0.38	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Selenium	ND		2.3	0.79	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**13**	**J**	35	5.5	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Arsenic	ND		1.7	0.45	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Beryllium	ND		0.87	0.055	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Calcium	**19000**		870	7.6	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Chromium	ND		1.7	0.24	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Cobalt	ND		8.7	0.22	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Iron	**40**		17	10	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Lead	**0.97**	**J**	1.7	0.38	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Lithium	ND		8.7	0.52	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Manganese	**120**		2.6	0.97	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Molybdenum	ND		6.9	0.28	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Selenium	ND		1.7	0.59	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**52**		12	2.4	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Arsenic	ND		0.58	0.15	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Beryllium	**0.026**	**J**	0.29	0.017	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Calcium	**8.5**	**J**	290	1.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Chromium	**0.22**	**J**	0.58	0.081	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Cobalt	**0.069**	**J**	2.9	0.052	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Iron	**180**		5.8	3.4	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Lead	ND		0.58	0.13	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Lithium	ND		2.9	0.17	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Manganese	**23**	**B**	0.87	0.031	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Molybdenum	ND		2.3	0.095	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Selenium	ND		0.58	0.20	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**470**		12	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Arsenic	ND		0.58	0.25	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Beryllium	**0.10**	**J**	0.29	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Calcium	**15000**		290	2.5	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Chromium	**1.8**		0.58	0.081	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-04 (38.7-45.4)
Date Collected: 08/21/21 08:30
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-8
Matrix: Solid
Percent Solids: 86.5

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.3	J	2.9	0.061	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Iron	5600		5.8	3.4	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Lead	3.1		0.58	0.13	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Lithium	1.1	J	2.9	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Manganese	100		0.87	0.15	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Molybdenum	1.6	J	2.3	0.095	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Selenium	ND		0.58	0.54	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	160	J B	170	27	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Arsenic	ND		8.7	2.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Beryllium	ND		4.3	0.36	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Calcium	8800		4300	13	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Chromium	1.9	J	8.7	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Cobalt	ND		43	0.69	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Iron	ND		87	51	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Lead	ND		8.7	1.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Lithium	8.0	J B *+	43	2.5	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Manganese	3.4	J	13	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Molybdenum	ND		35	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Selenium	ND		8.7	3.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	2700		12	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Arsenic	4.0		0.58	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Beryllium	0.12	J	0.29	0.014	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Calcium	5300		290	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Chromium	5.2		0.58	0.081	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Cobalt	2.6	J	2.9	0.053	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Iron	12000		5.8	3.4	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Lead	3.1		0.58	0.13	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Lithium	4.5		2.9	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Manganese	94		0.87	0.29	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Molybdenum	3.5		2.3	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Selenium	ND		0.58	0.20	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	31000		120	18	mg/Kg	☼	10/08/21 08:00	10/26/21 12:36	10
Arsenic	1.2		1.2	0.30	mg/Kg	☼	10/08/21 08:00	10/26/21 15:05	2
Beryllium	0.54		0.29	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Calcium	5700		2900	30	mg/Kg	☼	10/08/21 08:00	10/26/21 12:36	10
Chromium	17		0.58	0.081	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Cobalt	0.96	J	2.9	0.030	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Iron	5800		5.8	4.7	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Lead	4.9		1.2	0.25	mg/Kg	☼	10/08/21 08:00	10/26/21 15:05	2
Lithium	7.5		2.9	0.17	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Manganese	91		0.87	0.13	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-04 (38.7-45.4)
Date Collected: 08/21/21 08:30
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-8
Matrix: Solid
Percent Solids: 86.5

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.28	J	2.3	0.095	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Selenium	ND		1.2	0.39	mg/Kg	☼	10/08/21 08:00	10/26/21 15:05	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	35000		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	5.2		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	0.79		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	54000		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	27		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	4.9		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	24000		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	12		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	21		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	440		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	5.4		2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	27000		120	18	mg/Kg	☼	09/29/21 08:00	10/27/21 12:21	10
Arsenic	4.1		0.58	0.15	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Beryllium	0.55		0.29	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Calcium	61000		2900	30	mg/Kg	☼	09/29/21 08:00	10/27/21 12:21	10
Chromium	15		0.58	0.081	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Cobalt	3.3		2.9	0.030	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Iron	15000		5.8	4.7	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Lead	8.5		0.58	0.13	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Lithium	10		2.9	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Manganese	330		0.87	0.13	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Molybdenum	2.6		2.3	0.095	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Selenium	ND		0.58	0.20	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1

Client Sample ID: N-SB-XPW 04 (10.0-15.0)
Date Collected: 08/21/21 09:20
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-9
Matrix: Solid
Percent Solids: 56.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		71	11	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Arsenic	ND		3.6	0.93	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Beryllium	ND		1.8	0.55	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Calcium	**3700**	**B**	1800	14	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Chromium	**0.52**	**J**	3.6	0.50	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Cobalt	ND		18	0.32	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Iron	ND		36	21	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Lead	ND		3.6	0.78	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Lithium	ND		18	1.1	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Manganese	ND		5.3	0.22	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Molybdenum	**1.8**	**J**	14	0.58	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Selenium	ND		3.6	1.2	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**9000**		53	8.5	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Arsenic	**3.5**		2.7	0.69	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Beryllium	**0.30**	**J**	1.3	0.085	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Calcium	**32000**		1300	12	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Chromium	**6.9**		2.7	0.37	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Cobalt	**0.49**	**J**	13	0.34	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Iron	**2000**		27	15	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Lead	**1.2**	**J**	2.7	0.59	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Lithium	**1.4**	**J**	13	0.80	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Manganese	**12**		4.0	1.5	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Molybdenum	**0.75**	**J**	11	0.44	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Selenium	**0.99**	**J**	2.7	0.91	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**6200**		18	3.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Arsenic	**0.87**	**J**	0.89	0.23	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Beryllium	**0.027**	**J**	0.44	0.027	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Calcium	**42**	**J**	440	2.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Chromium	**8.4**		0.89	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Cobalt	**0.91**	**J**	4.4	0.080	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Iron	**2400**		8.9	5.2	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Lead	ND		0.89	0.20	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Lithium	**0.61**	**J**	4.4	0.27	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Manganese	**2.7**	**B**	1.3	0.048	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Molybdenum	**1.2**	**J**	3.6	0.15	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Selenium	**0.98**		0.89	0.30	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**21000**		18	2.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Arsenic	**1.5**		0.89	0.39	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Beryllium	**1.7**		0.44	0.028	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Calcium	**42000**		440	3.9	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Chromium	**26**		0.89	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1

Client Sample ID: N-SB-XPW 04 (10.0-15.0)
Date Collected: 08/21/21 09:20
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-9
Matrix: Solid
Percent Solids: 56.2

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	8.0		4.4	0.094	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Iron	12000		8.9	5.2	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Lead	13		0.89	0.20	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Lithium	9.9		4.4	0.27	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Manganese	91		1.3	0.23	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Molybdenum	3.7		3.6	0.15	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Selenium	ND		0.89	0.84	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	330	B	270	42	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Arsenic	ND		13	3.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Beryllium	ND		6.7	0.56	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Calcium	26000		6700	20	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Chromium	11	J	13	1.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Cobalt	ND		67	1.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Iron	ND		130	78	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Lead	ND		13	2.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Lithium	14	J B *+	67	3.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Manganese	9.2	J	20	3.3	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Molybdenum	ND		53	2.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Selenium	6.4	J	13	4.6	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	27000		18	2.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Arsenic	10		0.89	0.27	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Beryllium	0.52		0.44	0.021	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Calcium	17000		440	3.7	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Chromium	8.4		0.89	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Cobalt	8.0	J	22	0.41	mg/Kg	☼	10/07/21 08:00	10/25/21 18:01	5
Iron	12000		8.9	5.2	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Lead	24		4.4	0.98	mg/Kg	☼	10/07/21 08:00	10/25/21 18:01	5
Lithium	16		4.4	0.27	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Manganese	60		1.3	0.44	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Molybdenum	0.65	J	3.6	0.18	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Selenium	ND		0.89	0.30	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	29000		180	28	mg/Kg	☼	10/08/21 08:00	10/26/21 12:40	10
Arsenic	1.8		1.8	0.46	mg/Kg	☼	10/08/21 08:00	10/26/21 15:09	2
Beryllium	0.25	J	0.44	0.028	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1
Calcium	10000		4400	46	mg/Kg	☼	10/08/21 08:00	10/26/21 12:40	10
Chromium	11		0.89	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1
Cobalt	3.3	J	8.9	0.093	mg/Kg	☼	10/08/21 08:00	10/26/21 15:09	2
Iron	6000		8.9	7.3	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1
Lead	12		1.8	0.39	mg/Kg	☼	10/08/21 08:00	10/26/21 15:09	2
Lithium	19		4.4	0.27	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1
Manganese	39		1.3	0.20	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-XPW 04 (10.0-15.0)
Date Collected: 08/21/21 09:20
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-9
Matrix: Solid
Percent Solids: 56.2

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.16	J	3.6	0.15	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1
Selenium	ND		1.8	0.61	mg/Kg	☼	10/08/21 08:00	10/26/21 15:09	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	93000		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	18		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	2.8		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	130000		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	72		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	21		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	35000		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	51		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	61		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	210		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	8.2		2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	8.3		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	73000		180	28	mg/Kg	☼	09/29/21 08:00	10/27/21 12:26	10
Arsenic	16		0.89	0.23	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Beryllium	1.9		0.44	0.028	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Calcium	130000		4400	46	mg/Kg	☼	09/29/21 08:00	10/27/21 12:26	10
Chromium	54		0.89	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Cobalt	20	J	22	0.23	mg/Kg	☼	09/29/21 08:00	10/27/21 16:28	5
Iron	27000		8.9	7.3	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Lead	43		4.4	0.98	mg/Kg	☼	09/29/21 08:00	10/27/21 16:28	5
Lithium	34		4.4	0.27	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Manganese	160		1.3	0.20	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Molybdenum	6.7		3.6	0.15	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Selenium	4.9		0.89	0.30	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-XPW 01 (10.0-12.7)

Date Collected: 08/21/21 10:10
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-10

Matrix: Solid
Percent Solids: 77.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		52	8.3	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Arsenic	ND		2.6	0.67	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Beryllium	ND		1.3	0.40	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Calcium	**520**	**J B**	1300	9.8	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Chromium	ND		2.6	0.36	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Cobalt	ND		13	0.23	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Iron	ND		26	15	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Lead	ND		2.6	0.57	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Lithium	ND		13	0.78	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Manganese	**3.5**	**J**	3.9	0.16	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Molybdenum	**0.86**	**J**	10	0.42	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Selenium	ND		2.6	0.88	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**210**		39	6.2	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Arsenic	ND		1.9	0.51	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Beryllium	**0.11**	**J**	0.97	0.062	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Calcium	**1700**		970	8.5	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Chromium	**0.52**	**J**	1.9	0.27	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Cobalt	**0.94**	**J**	9.7	0.24	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Iron	**1600**		19	11	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Lead	**2.5**		1.9	0.43	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Lithium	ND		9.7	0.58	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Manganese	**190**		2.9	1.1	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Molybdenum	ND		7.8	0.32	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Selenium	ND		1.9	0.66	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**810**		13	2.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Arsenic	**3.9**		0.65	0.17	mg/Kg	☼	10/04/21 08:00	10/25/21 11:49	1
Beryllium	**0.24**	**J**	0.32	0.019	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Calcium	**7.7**	**J**	320	1.9	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Chromium	**1.5**		0.65	0.091	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Cobalt	**0.94**	**J**	3.2	0.058	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Iron	**2500**		6.5	3.8	mg/Kg	☼	10/04/21 08:00	10/25/21 11:49	1
Lead	**1.3**		0.65	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Lithium	ND		3.2	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Manganese	**120**	**B**	0.97	0.035	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Molybdenum	**0.43**	**J**	2.6	0.11	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Selenium	ND		0.65	0.22	mg/Kg	☼	10/04/21 08:00	10/25/21 11:49	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2500**		13	2.1	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Arsenic	**3.2**		0.65	0.28	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Beryllium	**0.21**	**J**	0.32	0.021	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Calcium	**800**		320	2.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Chromium	**4.2**		0.65	0.091	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1

Client Sample ID: N-SB-XPW 01 (10.0-12.7)
Date Collected: 08/21/21 10:10
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-10
Matrix: Solid
Percent Solids: 77.2

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	2.2	J	3.2	0.069	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Iron	5400		6.5	3.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Lead	6.9		0.65	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Lithium	2.0	J	3.2	0.19	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Manganese	140		0.97	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Molybdenum	0.84	J	2.6	0.11	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Selenium	0.66		0.65	0.61	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	64	J B	190	30	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Arsenic	ND		9.7	2.5	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Beryllium	ND		4.9	0.41	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Calcium	110	J	4900	14	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Chromium	3.4	J	9.7	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Cobalt	ND		49	0.78	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Iron	ND		97	57	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Lead	ND		9.7	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Lithium	8.8	J B *+	49	2.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Manganese	13	J	15	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Molybdenum	ND		39	1.6	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Selenium	ND		9.7	3.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	5200		13	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Arsenic	2.2		0.65	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Beryllium	0.095	J	0.32	0.016	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Calcium	110	J	320	2.7	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Chromium	4.8		0.65	0.091	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Cobalt	0.83	J	3.2	0.060	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Iron	4400		6.5	3.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Lead	2.2		0.65	0.14	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Lithium	3.6		3.2	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Manganese	23		0.97	0.32	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Molybdenum	0.16	J	2.6	0.13	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Selenium	ND		0.65	0.22	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	28000		130	21	mg/Kg	☼	10/08/21 08:00	10/26/21 12:45	10
Arsenic	2.0		1.3	0.34	mg/Kg	☼	10/08/21 08:00	10/26/21 15:19	2
Beryllium	0.19	J	0.32	0.021	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Calcium	1700		320	3.4	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Chromium	14		0.65	0.091	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Cobalt	ND		6.5	0.067	mg/Kg	☼	10/08/21 08:00	10/26/21 15:19	2
Iron	3500		6.5	5.3	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Lead	5.0		1.3	0.28	mg/Kg	☼	10/08/21 08:00	10/26/21 15:19	2
Lithium	9.2		3.2	0.19	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Manganese	51		0.97	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-XPW 01 (10.0-12.7)

Date Collected: 08/21/21 10:10
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-10

Matrix: Solid
Percent Solids: 77.2

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.15	J	2.6	0.11	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Selenium	ND		1.3	0.44	mg/Kg	☼	10/08/21 08:00	10/26/21 15:19	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	37000		10	1.6	mg/Kg			11/02/21 16:02	1
Arsenic	11		0.50	0.13	mg/Kg			11/02/21 16:02	1
Beryllium	0.85		0.25	0.0075	mg/Kg			11/02/21 16:02	1
Calcium	4900		250	0.74	mg/Kg			11/02/21 16:02	1
Chromium	29		0.50	0.070	mg/Kg			11/02/21 16:02	1
Cobalt	4.9		2.5	0.023	mg/Kg			11/02/21 16:02	1
Iron	17000		5.0	4.1	mg/Kg			11/02/21 16:02	1
Lead	18		0.50	0.11	mg/Kg			11/02/21 16:02	1
Lithium	23		2.5	0.15	mg/Kg			11/02/21 16:02	1
Manganese	540		0.75	0.052	mg/Kg			11/02/21 16:02	1
Molybdenum	2.4		2.0	0.082	mg/Kg			11/02/21 16:02	1
Selenium	0.66		0.50	0.17	mg/Kg			11/02/21 16:02	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	36000		130	21	mg/Kg	☼	09/29/21 08:00	10/27/21 12:31	10
Arsenic	9.4		0.65	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Beryllium	0.74		0.32	0.021	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Calcium	5100		3200	34	mg/Kg	☼	09/29/21 08:00	10/27/21 12:31	10
Chromium	23		0.65	0.091	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Cobalt	4.6	J	6.5	0.067	mg/Kg	☼	09/29/21 08:00	10/27/21 16:33	2
Iron	15000		6.5	5.3	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Lead	15		1.3	0.28	mg/Kg	☼	09/29/21 08:00	10/27/21 16:33	2
Lithium	13		3.2	0.19	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Manganese	350		0.97	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Molybdenum	2.3	J	2.6	0.11	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Selenium	0.58	J	0.65	0.22	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Prep: 3010A

SEP: Exchangeable

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.077	mg/Kg
Calcium	250	1.9	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.031	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Prep: 3010A

SEP: Carbonate

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Calcium	250	2.2	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.063	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.28	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Prep: 3010A

SEP: Non-Crystalline

Analyte	RL	MDL	Units
Aluminum	10	2.1	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.015	mg/Kg
Calcium	250	1.5	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.027	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.22	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Calcium	250	2.2	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.053	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.13	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.47	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Prep: 3010A

SEP: Organic-Bound

Analyte	RL	MDL	Units
Aluminum	30	4.7	mg/Kg
Arsenic	1.5	0.38	mg/Kg
Beryllium	0.75	0.063	mg/Kg
Calcium	750	2.2	mg/Kg
Chromium	1.5	0.21	mg/Kg
Cobalt	7.5	0.12	mg/Kg
Iron	15	8.8	mg/Kg
Lead	1.5	0.33	mg/Kg
Lithium	7.5	0.44	mg/Kg
Manganese	2.3	0.37	mg/Kg
Molybdenum	6.0	0.25	mg/Kg
Selenium	1.5	0.52	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 6

SEP: Acid/Sulfide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.15	mg/Kg
Beryllium	0.25	0.012	mg/Kg
Calcium	250	2.1	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.046	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.25	mg/Kg
Molybdenum	2.0	0.099	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Prep: Residual

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Prep: Residual

Analyte	RL	MDL	Units
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Calcium	250	2.6	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.026	mg/Kg
Iron	5.0	4.1	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.11	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Calcium	250	0.74	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.023	mg/Kg
Iron	5.0	4.1	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Prep: Total

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Calcium	250	2.6	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.026	mg/Kg
Iron	5.0	4.1	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.11	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Lab Sample ID: MB 140-54251/17-A
Matrix: Solid
Analysis Batch: 55243

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 54251

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Arsenic	ND		0.50	0.13	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Beryllium	ND		0.25	0.016	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Calcium	ND		250	2.6	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Chromium	ND		0.50	0.070	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Cobalt	ND		2.5	0.026	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Iron	ND		5.0	4.1	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Lead	ND		0.50	0.11	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Lithium	ND		2.5	0.15	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Manganese	ND		0.75	0.11	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Molybdenum	ND		2.0	0.082	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Selenium	ND		0.50	0.17	mg/Kg		09/29/21 08:00	10/27/21 10:49	1

Lab Sample ID: LCS 140-54251/18-A
Matrix: Solid
Analysis Batch: 55243

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 54251

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	99.3		mg/Kg		99	80 - 120
Arsenic	5.00	5.06		mg/Kg		101	80 - 120
Beryllium	2.50	2.57		mg/Kg		103	80 - 120
Calcium	2500	2560		mg/Kg		102	80 - 120
Chromium	10.0	10.6		mg/Kg		106	80 - 120
Cobalt	5.00	5.19		mg/Kg		104	80 - 125
Iron	50.0	52.2		mg/Kg		104	80 - 120
Lead	5.00	5.20		mg/Kg		104	80 - 120
Lithium	5.00	4.90		mg/Kg		98	80 - 120
Manganese	5.00	5.26		mg/Kg		105	80 - 120
Molybdenum	25.0	26.0		mg/Kg		104	80 - 125
Selenium	7.50	7.30		mg/Kg		97	80 - 120

Lab Sample ID: LCSD 140-54251/19-A
Matrix: Solid
Analysis Batch: 55243

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 54251

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	98.5		mg/Kg		98	80 - 120	1	30
Arsenic	5.00	4.94		mg/Kg		99	80 - 120	2	30
Beryllium	2.50	2.50		mg/Kg		100	80 - 120	3	30
Calcium	2500	2510		mg/Kg		100	80 - 120	2	30
Chromium	10.0	10.3		mg/Kg		103	80 - 120	3	30
Cobalt	5.00	5.05		mg/Kg		101	80 - 125	3	30
Iron	50.0	51.4		mg/Kg		103	80 - 120	2	30
Lead	5.00	5.14		mg/Kg		103	80 - 120	1	30
Lithium	5.00	4.86		mg/Kg		97	80 - 120	1	30
Manganese	5.00	5.13		mg/Kg		103	80 - 120	2	30
Molybdenum	25.0	25.4		mg/Kg		102	80 - 125	3	30
Selenium	7.50	7.21		mg/Kg		96	80 - 120	1	30

Method: 6010B - SEP Metals (ICP) - Total (Continued)

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55243

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Total/NA
Prep Batch: 54251

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	26000		28800		mg/Kg	☼	8	30
Calcium	51000		45400		mg/Kg	☼	12	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55243

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Total/NA
Prep Batch: 54251

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	5.3		5.81		mg/Kg	☼	8	30
Beryllium	0.55		0.571		mg/Kg	☼	4	30
Chromium	17		19.8		mg/Kg	☼	18	30
Cobalt	3.2		3.84		mg/Kg	☼	18	30
Iron	10000		11200		mg/Kg	☼	9	30
Lead	8.4		9.71		mg/Kg	☼	15	30
Lithium	12		13.0		mg/Kg	☼	9	30
Manganese	280		276		mg/Kg	☼	3	30
Molybdenum	0.78	J	1.31	J F5	mg/Kg	☼	51	30
Selenium	ND		ND		mg/Kg	☼	NC	30

Method: 6010B SEP - SEP Metals (ICP)

Lab Sample ID: MB 140-54252/17-B ^4
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Method Blank
Prep Type: Step 1
Prep Batch: 54333

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Arsenic	ND		2.0	0.52	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Beryllium	ND		1.0	0.31	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Calcium	20.3	J	1000	7.6	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Chromium	ND		2.0	0.28	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Cobalt	ND		10	0.18	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Iron	ND		20	12	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Lead	0.558	J	2.0	0.44	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Lithium	ND		10	0.60	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Manganese	ND		3.0	0.12	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Molybdenum	ND		8.0	0.33	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Selenium	ND		2.0	0.68	mg/Kg		09/30/21 08:00	10/22/21 11:17	4

Lab Sample ID: LCS 140-54252/18-B ^5
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 54333

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	103		mg/Kg		103	80 - 120
Arsenic	5.00	5.07		mg/Kg		101	80 - 120
Beryllium	2.50	2.68		mg/Kg		107	80 - 120
Calcium	2500	2560		mg/Kg		102	80 - 120
Chromium	10.0	10.2		mg/Kg		102	80 - 120

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-54252/18-B ^5
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 54333

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cobalt			5.00	4.98	J	mg/Kg		100	80 - 120		
Iron			50.0	52.2		mg/Kg		104	80 - 120		
Lead			5.00	4.96		mg/Kg		99	80 - 120		
Lithium			5.00	5.04	J	mg/Kg		101	80 - 120		
Manganese			5.00	5.28		mg/Kg		106	80 - 120		
Molybdenum			25.0	25.2		mg/Kg		101	80 - 120		
Selenium			7.50	7.34		mg/Kg		98	80 - 120		

Lab Sample ID: LCSD 140-54252/19-B ^5
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 1
Prep Batch: 54333

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	96.7		mg/Kg		97	80 - 120	7	30
Arsenic			5.00	4.84		mg/Kg		97	80 - 120	4	30
Beryllium			2.50	2.52		mg/Kg		101	80 - 120	6	30
Calcium			2500	2430		mg/Kg		97	80 - 120	5	30
Chromium			10.0	9.69		mg/Kg		97	80 - 120	5	30
Cobalt			5.00	4.92	J	mg/Kg		98	80 - 120	1	30
Iron			50.0	48.9		mg/Kg		98	80 - 120	6	30
Lead			5.00	5.13		mg/Kg		103	80 - 120	3	30
Lithium			5.00	4.54	J	mg/Kg		91	80 - 120	10	30
Manganese			5.00	4.96		mg/Kg		99	80 - 120	6	30
Molybdenum			25.0	25.0		mg/Kg		100	80 - 120	1	30
Selenium			7.50	7.48		mg/Kg		100	80 - 120	2	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 1
Prep Batch: 54333

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	ND			ND		mg/Kg	☼			NC	30
Arsenic	ND			ND		mg/Kg	☼			NC	30
Beryllium	ND			ND		mg/Kg	☼			NC	30
Calcium	880	J B		843	J	mg/Kg	☼			5	30
Chromium	ND			ND		mg/Kg	☼			NC	30
Cobalt	ND			ND		mg/Kg	☼			NC	30
Iron	ND			ND		mg/Kg	☼			NC	30
Lead	ND			ND		mg/Kg	☼			NC	30
Lithium	ND			ND		mg/Kg	☼			NC	30
Manganese	2.8	J		3.09	J	mg/Kg	☼			8	30
Molybdenum	ND			ND		mg/Kg	☼			NC	30
Selenium	ND			ND		mg/Kg	☼			NC	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-54334/17-B ^3
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Method Blank
Prep Type: Step 2
Prep Batch: 54370

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		30	4.8	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Arsenic	ND		1.5	0.39	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Beryllium	ND		0.75	0.048	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Calcium	ND		750	6.6	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Chromium	ND		1.5	0.21	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Cobalt	ND		7.5	0.19	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Iron	ND		15	8.7	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Lead	ND		1.5	0.33	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Lithium	ND		7.5	0.45	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Manganese	ND		2.3	0.84	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Molybdenum	ND		6.0	0.25	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Selenium	ND		1.5	0.51	mg/Kg		10/01/21 08:00	10/22/21 13:24	3

Lab Sample ID: LCS 140-54334/18-B ^5
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample
Prep Type: Step 2
Prep Batch: 54370

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	ND		mg/Kg		3	
Arsenic	5.00	3.62		mg/Kg		72	60 - 120
Beryllium	2.50	1.31		mg/Kg		52	40 - 70
Calcium	2500	641	J	mg/Kg		26	10 - 40
Chromium	10.0	7.44		mg/Kg		74	60 - 120
Cobalt	5.00	4.63	J	mg/Kg		93	80 - 120
Iron	50.0	ND		mg/Kg		4	
Lead	5.00	4.76		mg/Kg		95	70 - 120
Lithium	5.00	4.40	J	mg/Kg		88	80 - 120
Manganese	5.00	4.89		mg/Kg		98	80 - 120
Molybdenum	25.0	20.4		mg/Kg		82	70 - 120
Selenium	7.50	5.79		mg/Kg		77	70 - 120

Lab Sample ID: LCSD 140-54334/19-B ^5
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 2
Prep Batch: 54370

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	ND		mg/Kg		1		109	
Arsenic	5.00	3.80		mg/Kg		76	60 - 120	5	30
Beryllium	2.50	1.35		mg/Kg		54	40 - 70	3	30
Calcium	2500	648	J	mg/Kg		26	10 - 40	1	30
Chromium	10.0	7.61		mg/Kg		76	60 - 120	2	30
Cobalt	5.00	4.60	J	mg/Kg		92	80 - 120	1	30
Iron	50.0	ND		mg/Kg		2		52	
Lead	5.00	4.60		mg/Kg		92	70 - 120	3	30
Lithium	5.00	4.50	J	mg/Kg		90	80 - 120	2	30
Manganese	5.00	4.90		mg/Kg		98	80 - 120	0	30
Molybdenum	25.0	20.3		mg/Kg		81	70 - 120	0	30
Selenium	7.50	6.07		mg/Kg		81	70 - 120	5	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 2
Prep Batch: 54370

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	16	J	15.7	J	mg/Kg	☼	3	
Arsenic	ND		ND		mg/Kg	☼	NC	30
Beryllium	ND		ND		mg/Kg	☼	NC	30
Calcium	16000		15200		mg/Kg	☼	6	30
Chromium	ND		ND		mg/Kg	☼	NC	30
Cobalt	0.57	J	0.447	J	mg/Kg	☼	24	30
Iron	36		35.3		mg/Kg	☼	0.5	
Lead	0.77	J	1.01	J	mg/Kg	☼	26	30
Lithium	ND		ND		mg/Kg	☼	NC	30
Manganese	84		75.4		mg/Kg	☼	11	30
Molybdenum	ND		ND		mg/Kg	☼	NC	30
Selenium	ND		ND		mg/Kg	☼	NC	30

Lab Sample ID: MB 140-54371/17-B
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Method Blank
Prep Type: Step 3
Prep Batch: 54400

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	2.1	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Arsenic	ND		0.50	0.13	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Beryllium	ND		0.25	0.015	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Calcium	ND		250	1.5	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Chromium	ND		0.50	0.070	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Cobalt	ND		2.5	0.045	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Iron	ND		5.0	2.9	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Lead	ND		0.50	0.11	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Lithium	ND		2.5	0.15	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Manganese	0.0835	J	0.75	0.027	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Molybdenum	ND		2.0	0.082	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Selenium	ND		0.50	0.17	mg/Kg		10/04/21 08:00	10/22/21 15:23	1

Lab Sample ID: LCS 140-54371/18-B
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample
Prep Type: Step 3
Prep Batch: 54400

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	93.2		mg/Kg		93	80 - 120
Arsenic	5.00	4.81		mg/Kg		96	80 - 120
Beryllium	2.50	2.62		mg/Kg		105	80 - 120
Calcium	2500	38.3	J	mg/Kg		2	
Chromium	10.0	10.1		mg/Kg		101	80 - 120
Cobalt	5.00	5.01		mg/Kg		100	80 - 120
Iron	50.0	48.5		mg/Kg		97	80 - 120
Lead	5.00	0.139	J	mg/Kg		3	
Lithium	5.00	4.75		mg/Kg		95	80 - 120
Manganese	5.00	5.18		mg/Kg		104	80 - 120
Molybdenum	25.0	24.5		mg/Kg		98	80 - 120
Selenium	7.50	7.34		mg/Kg		98	80 - 120

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-54371/19-B
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 3
Prep Batch: 54400

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	95.6		mg/Kg		96	80 - 120	3	30
Arsenic			5.00	4.76		mg/Kg		95	80 - 120	1	30
Beryllium			2.50	2.60		mg/Kg		104	80 - 120	1	30
Calcium			2500	39.4	J	mg/Kg		2		3	
Chromium			10.0	10.0		mg/Kg		100	80 - 120	1	30
Cobalt			5.00	4.97		mg/Kg		99	80 - 120	1	30
Iron			50.0	50.8		mg/Kg		102	80 - 120	5	30
Lead			5.00	0.122	J	mg/Kg		2		13	
Lithium			5.00	4.95		mg/Kg		99	80 - 120	4	30
Manganese			5.00	5.15		mg/Kg		103	80 - 120	1	30
Molybdenum			25.0	24.2		mg/Kg		97	80 - 120	1	30
Selenium			7.50	7.31		mg/Kg		97	80 - 120	0	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 3
Prep Batch: 54400

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	52			55.7		mg/Kg	☼			8	30
Arsenic	0.26	J		0.285	J	mg/Kg	☼			10	30
Beryllium	ND			ND		mg/Kg	☼			NC	30
Calcium	9.2	J		9.35	J	mg/Kg	☼			1	
Chromium	0.31	J		0.452	J F5	mg/Kg	☼			38	30
Cobalt	0.62	J		0.294	J F5	mg/Kg	☼			72	30
Iron	240			258		mg/Kg	☼			6	30
Lead	ND			ND		mg/Kg	☼			NC	
Lithium	ND			ND		mg/Kg	☼			NC	30
Manganese	51	B		31.3	F3	mg/Kg	☼			48	30
Molybdenum	ND			ND		mg/Kg	☼			NC	30
Selenium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: MB 140-54401/17-B
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Method Blank
Prep Type: Step 4
Prep Batch: 54485

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Arsenic	ND		0.50	0.22	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Beryllium	ND		0.25	0.016	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Calcium	ND		250	2.2	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Chromium	ND		0.50	0.070	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Cobalt	ND		2.5	0.053	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Iron	ND		5.0	2.9	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Lead	ND		0.50	0.11	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Lithium	ND		2.5	0.15	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Manganese	ND		0.75	0.13	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Molybdenum	ND		2.0	0.082	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Selenium	ND		0.50	0.47	mg/Kg		10/05/21 08:00	10/25/21 11:34	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-54401/18-B
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample
Prep Type: Step 4
Prep Batch: 54485

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aluminum			100	99.5		mg/Kg		100	80 - 120		
Arsenic			5.00	4.99		mg/Kg		100	80 - 130		
Beryllium			2.50	2.68		mg/Kg		107	80 - 120		
Calcium			2500	2520		mg/Kg		101	80 - 120		
Chromium			10.0	10.3		mg/Kg		103	80 - 120		
Cobalt			5.00	5.10		mg/Kg		102	80 - 120		
Iron			50.0	51.2		mg/Kg		102	80 - 120		
Lead			5.00	5.11		mg/Kg		102	80 - 120		
Lithium			5.00	5.03		mg/Kg		101	80 - 120		
Manganese			5.00	5.14		mg/Kg		103	80 - 120		
Molybdenum			25.0	25.9		mg/Kg		104	80 - 120		
Selenium			7.50	0.568		mg/Kg		8			

Lab Sample ID: LCSD 140-54401/19-B
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 4
Prep Batch: 54485

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	101		mg/Kg		101	80 - 120	1	30
Arsenic			5.00	4.96		mg/Kg		99	80 - 130	1	30
Beryllium			2.50	2.67		mg/Kg		107	80 - 120	1	30
Calcium			2500	2520		mg/Kg		101	80 - 120	0	30
Chromium			10.0	10.2		mg/Kg		102	80 - 120	0	30
Cobalt			5.00	5.07		mg/Kg		101	80 - 120	1	30
Iron			50.0	51.0		mg/Kg		102	80 - 120	0	30
Lead			5.00	5.10		mg/Kg		102	80 - 120	0	30
Lithium			5.00	5.02		mg/Kg		100	80 - 120	0	30
Manganese			5.00	5.13		mg/Kg		103	80 - 120	0	30
Molybdenum			25.0	25.7		mg/Kg		103	80 - 120	1	30
Selenium			7.50	ND		mg/Kg		5		45	

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 4
Prep Batch: 54485

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	370			492		mg/Kg	☼			29	30
Arsenic	1.2			1.80	F3	mg/Kg	☼			41	30
Beryllium	0.077	J		0.0858	J	mg/Kg	☼			11	30
Calcium	16000			10800	F3	mg/Kg	☼			36	30
Chromium	1.6			1.84		mg/Kg	☼			13	30
Cobalt	1.2	J		1.32	J	mg/Kg	☼			10	30
Iron	3900			4250		mg/Kg	☼			9	30
Lead	2.7			2.62		mg/Kg	☼			4	30
Lithium	0.99	J		1.08	J	mg/Kg	☼			9	30
Manganese	93			86.5		mg/Kg	☼			8	30
Molybdenum	0.45	J		0.463	J	mg/Kg	☼			3	30
Selenium	ND			ND		mg/Kg	☼			NC	

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-54486/17-B ^5
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Method Blank
Prep Type: Step 5
Prep Batch: 54566

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	32.1	J	150	24	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Arsenic	ND		7.5	1.9	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Beryllium	ND		3.8	0.32	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Calcium	ND		3800	11	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Chromium	ND		7.5	1.1	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Cobalt	ND		38	0.60	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Iron	ND		75	44	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Lead	ND		7.5	1.7	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Lithium	8.44	J	38	2.2	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Manganese	ND		11	1.9	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Molybdenum	ND		30	1.3	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Selenium	ND		7.5	2.6	mg/Kg		10/07/21 08:00	10/25/21 13:37	5

Lab Sample ID: LCS 140-54486/18-B ^5
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample
Prep Type: Step 5
Prep Batch: 54566

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	300	ND		mg/Kg		6	
Arsenic	15.0	9.89		mg/Kg		66	60 - 100
Beryllium	7.50	3.89		mg/Kg		52	40 - 70
Calcium	7500	2030	J	mg/Kg		27	20 - 50
Chromium	30.0	30.5		mg/Kg		102	80 - 130
Cobalt	15.0	0.863	J	mg/Kg		6	1 - 60
Iron	150	ND		mg/Kg		-2	
Lead	15.0	9.28		mg/Kg		62	40 - 80
Lithium	15.0	23.8	J *+	mg/Kg		159	80 - 150
Manganese	15.0	2.78	J	mg/Kg		19	1 - 60
Molybdenum	75.0	53.6		mg/Kg		72	60 - 100
Selenium	22.5	22.8		mg/Kg		101	80 - 140

Lab Sample ID: LCSD 140-54486/19-B ^5
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 5
Prep Batch: 54566

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	300	28.1	J	mg/Kg		9		47	
Arsenic	15.0	10.3		mg/Kg		68	60 - 100	4	30
Beryllium	7.50	3.83		mg/Kg		51	40 - 70	2	30
Calcium	7500	2000	J	mg/Kg		27	20 - 50	2	30
Chromium	30.0	30.3		mg/Kg		101	80 - 130	1	30
Cobalt	15.0	0.840	J	mg/Kg		6	1 - 60	3	30
Iron	150	ND		mg/Kg		-1		53	
Lead	15.0	9.87		mg/Kg		66	40 - 80	6	30
Lithium	15.0	23.9	J *+	mg/Kg		159	80 - 150	0	30
Manganese	15.0	2.73	J	mg/Kg		18	1 - 60	2	30
Molybdenum	75.0	53.4		mg/Kg		71	60 - 100	0	30
Selenium	22.5	22.4		mg/Kg		100	80 - 140	2	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 5
Prep Batch: 54566

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	210	B	205		mg/Kg	☼	3	
Arsenic	ND		ND		mg/Kg	☼	NC	30
Beryllium	ND		ND		mg/Kg	☼	NC	30
Calcium	11000		10900		mg/Kg	☼	3	30
Chromium	2.1	J	1.68	J	mg/Kg	☼	20	30
Cobalt	ND		ND		mg/Kg	☼	NC	30
Iron	ND		ND		mg/Kg	☼	NC	
Lead	ND		ND		mg/Kg	☼	NC	30
Lithium	14	J B *+	13.4	J *+	mg/Kg	☼	3	30
Manganese	5.2	J	2.76	J F5	mg/Kg	☼	62	30
Molybdenum	ND		ND		mg/Kg	☼	NC	30
Selenium	ND		ND		mg/Kg	☼	NC	30

Lab Sample ID: MB 140-54567/17-A
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Method Blank
Prep Type: Step 6
Prep Batch: 54567

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Arsenic	ND		0.50	0.15	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Beryllium	ND		0.25	0.012	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Calcium	ND		250	2.1	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Chromium	ND		0.50	0.070	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Cobalt	ND		2.5	0.046	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Iron	ND		5.0	2.9	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Lead	ND		0.50	0.11	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Lithium	ND		2.5	0.15	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Manganese	ND		0.75	0.25	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Molybdenum	ND		2.0	0.099	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Selenium	ND		0.50	0.17	mg/Kg		10/07/21 08:00	10/25/21 15:37	1

Lab Sample ID: LCS 140-54567/18-A
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample
Prep Type: Step 6
Prep Batch: 54567

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	96.9		mg/Kg		97	80 - 120
Arsenic	5.00	5.01		mg/Kg		100	80 - 120
Beryllium	2.50	2.64		mg/Kg		106	80 - 120
Calcium	2500	2470		mg/Kg		99	80 - 120
Chromium	10.0	10.1		mg/Kg		101	80 - 120
Cobalt	5.00	5.00		mg/Kg		100	80 - 120
Iron	50.0	50.1		mg/Kg		100	80 - 120
Lead	5.00	5.10		mg/Kg		102	80 - 120
Lithium	5.00	4.95		mg/Kg		99	80 - 120
Manganese	5.00	5.09		mg/Kg		102	80 - 120
Molybdenum	25.0	25.1		mg/Kg		100	80 - 120
Selenium	7.50	7.68		mg/Kg		102	80 - 120

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-54567/19-A
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 6
Prep Batch: 54567

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	101		mg/Kg		101	80 - 120	4	30
Arsenic			5.00	5.07		mg/Kg		101	80 - 120	1	30
Beryllium			2.50	2.70		mg/Kg		108	80 - 120	2	30
Calcium			2500	2530		mg/Kg		101	80 - 120	2	30
Chromium			10.0	10.3		mg/Kg		103	80 - 120	2	30
Cobalt			5.00	5.10		mg/Kg		102	80 - 120	2	30
Iron			50.0	51.0		mg/Kg		102	80 - 120	2	30
Lead			5.00	5.24		mg/Kg		105	80 - 120	3	30
Lithium			5.00	5.04		mg/Kg		101	80 - 120	2	30
Manganese			5.00	5.20		mg/Kg		104	80 - 120	2	30
Molybdenum			25.0	25.8		mg/Kg		103	80 - 120	3	30
Selenium			7.50	7.82		mg/Kg		104	80 - 120	2	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 6
Prep Batch: 54567

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	2300			1960		mg/Kg	☼			14	30
Arsenic	2.2			1.82		mg/Kg	☼			19	30
Beryllium	0.095	J		0.0803	J	mg/Kg	☼			17	30
Calcium	4500			3620		mg/Kg	☼			21	30
Chromium	3.9			3.48		mg/Kg	☼			12	30
Cobalt	1.6	J		1.28	J	mg/Kg	☼			23	30
Iron	4500			3880		mg/Kg	☼			14	30
Lead	2.0			1.66		mg/Kg	☼			18	30
Lithium	3.9			3.31		mg/Kg	☼			17	30
Manganese	61			49.6		mg/Kg	☼			20	30
Molybdenum	0.24	J		0.198	J	mg/Kg	☼			21	30
Selenium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: MB 140-54607/17-A
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: Method Blank
Prep Type: Step 7
Prep Batch: 54607

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Arsenic	ND		0.50	0.13	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Beryllium	ND		0.25	0.016	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Calcium	ND		250	2.6	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Chromium	ND		0.50	0.070	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Cobalt	ND		2.5	0.026	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Iron	ND		5.0	4.1	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Lead	ND		0.50	0.11	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Lithium	ND		2.5	0.15	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Manganese	ND		0.75	0.11	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Molybdenum	ND		2.0	0.082	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Selenium	ND		0.50	0.17	mg/Kg		10/08/21 08:00	10/26/21 11:23	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-54607/18-A
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: Lab Control Sample
Prep Type: Step 7
Prep Batch: 54607

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aluminum			100	98.4		mg/Kg		98	80 - 120		
Arsenic			5.00	4.99		mg/Kg		100	80 - 120		
Beryllium			2.50	2.52		mg/Kg		101	80 - 120		
Calcium			2500	2510		mg/Kg		101	80 - 120		
Chromium			10.0	10.3		mg/Kg		103	80 - 120		
Cobalt			5.00	5.09		mg/Kg		102	80 - 125		
Iron			50.0	51.8		mg/Kg		104	80 - 120		
Lead			5.00	5.06		mg/Kg		101	80 - 120		
Lithium			5.00	4.99		mg/Kg		100	80 - 120		
Manganese			5.00	5.15		mg/Kg		103	80 - 120		
Molybdenum			25.0	25.7		mg/Kg		103	80 - 125		
Selenium			7.50	7.37		mg/Kg		98	80 - 120		

Lab Sample ID: LCSD 140-54607/19-A
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 7
Prep Batch: 54607

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	98.0		mg/Kg		98	80 - 120	0	30
Arsenic			5.00	5.04		mg/Kg		101	80 - 120	1	30
Beryllium			2.50	2.54		mg/Kg		102	80 - 120	1	30
Calcium			2500	2520		mg/Kg		101	80 - 120	0	30
Chromium			10.0	10.4		mg/Kg		104	80 - 120	1	30
Cobalt			5.00	5.16		mg/Kg		103	80 - 125	1	30
Iron			50.0	52.0		mg/Kg		104	80 - 120	0	30
Lead			5.00	5.15		mg/Kg		103	80 - 120	2	30
Lithium			5.00	4.97		mg/Kg		99	80 - 120	0	30
Manganese			5.00	5.18		mg/Kg		104	80 - 120	1	30
Molybdenum			25.0	26.1		mg/Kg		104	80 - 125	2	30
Selenium			7.50	7.51		mg/Kg		100	80 - 120	2	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 7
Prep Batch: 54607

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	25000			24700		mg/Kg	☼			0.4	30
Calcium	3100			3220		mg/Kg	☼			2	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 7
Prep Batch: 54607

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Arsenic	0.70			0.687		mg/Kg	☼			2	30
Beryllium	0.37			0.366		mg/Kg	☼			2	30
Chromium	9.3			8.59		mg/Kg	☼			8	30
Cobalt	0.15	J		0.112	J	mg/Kg	☼			26	30
Iron	2800			2670		mg/Kg	☼			5	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 7
Prep Batch: 54607

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Lead	4.3			4.29		mg/Kg	☼			0.5	30
Lithium	6.9			5.78		mg/Kg	☼			17	30
Manganese	53			54.1		mg/Kg	☼			3	30
Molybdenum	ND			ND		mg/Kg	☼			NC	30
Selenium	ND			ND		mg/Kg	☼			NC	30

Metals

Prep Batch: 54251

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Total/NA	Solid	Total	
140-24350-2	N-SB-05 (60.0-67.1)	Total/NA	Solid	Total	
140-24350-3	N-SB-18 (77.5-80.0)	Total/NA	Solid	Total	
140-24350-4	N-SB-02 (12.5-20.0)	Total/NA	Solid	Total	
140-24350-5	N-SB-02 (65.0-71.5)	Total/NA	Solid	Total	
140-24350-6	N-SB-14 (44.2-52.0)	Total/NA	Solid	Total	
140-24350-7	N-SB-04 (12.0-18.0)	Total/NA	Solid	Total	
140-24350-8	N-SB-04 (38.7-45.4)	Total/NA	Solid	Total	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Total/NA	Solid	Total	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Total/NA	Solid	Total	
MB 140-54251/17-A	Method Blank	Total/NA	Solid	Total	
LCS 140-54251/18-A	Lab Control Sample	Total/NA	Solid	Total	
LCSD 140-54251/19-A	Lab Control Sample Dup	Total/NA	Solid	Total	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Total/NA	Solid	Total	

SEP Batch: 54252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 1	Solid	Exchangeable	
140-24350-2	N-SB-05 (60.0-67.1)	Step 1	Solid	Exchangeable	
140-24350-3	N-SB-18 (77.5-80.0)	Step 1	Solid	Exchangeable	
140-24350-4	N-SB-02 (12.5-20.0)	Step 1	Solid	Exchangeable	
140-24350-5	N-SB-02 (65.0-71.5)	Step 1	Solid	Exchangeable	
140-24350-6	N-SB-14 (44.2-52.0)	Step 1	Solid	Exchangeable	
140-24350-7	N-SB-04 (12.0-18.0)	Step 1	Solid	Exchangeable	
140-24350-8	N-SB-04 (38.7-45.4)	Step 1	Solid	Exchangeable	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 1	Solid	Exchangeable	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 1	Solid	Exchangeable	
MB 140-54252/17-B ^4	Method Blank	Step 1	Solid	Exchangeable	
LCS 140-54252/18-B ^5	Lab Control Sample	Step 1	Solid	Exchangeable	
LCSD 140-54252/19-B ^5	Lab Control Sample Dup	Step 1	Solid	Exchangeable	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 1	Solid	Exchangeable	

Prep Batch: 54333

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 1	Solid	3010A	54252
140-24350-2	N-SB-05 (60.0-67.1)	Step 1	Solid	3010A	54252
140-24350-3	N-SB-18 (77.5-80.0)	Step 1	Solid	3010A	54252
140-24350-4	N-SB-02 (12.5-20.0)	Step 1	Solid	3010A	54252
140-24350-5	N-SB-02 (65.0-71.5)	Step 1	Solid	3010A	54252
140-24350-6	N-SB-14 (44.2-52.0)	Step 1	Solid	3010A	54252
140-24350-7	N-SB-04 (12.0-18.0)	Step 1	Solid	3010A	54252
140-24350-8	N-SB-04 (38.7-45.4)	Step 1	Solid	3010A	54252
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 1	Solid	3010A	54252
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 1	Solid	3010A	54252
MB 140-54252/17-B ^4	Method Blank	Step 1	Solid	3010A	54252
LCS 140-54252/18-B ^5	Lab Control Sample	Step 1	Solid	3010A	54252
LCSD 140-54252/19-B ^5	Lab Control Sample Dup	Step 1	Solid	3010A	54252
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 1	Solid	3010A	54252

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Metals

SEP Batch: 54334

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 2	Solid	Carbonate	
140-24350-2	N-SB-05 (60.0-67.1)	Step 2	Solid	Carbonate	
140-24350-3	N-SB-18 (77.5-80.0)	Step 2	Solid	Carbonate	
140-24350-4	N-SB-02 (12.5-20.0)	Step 2	Solid	Carbonate	
140-24350-5	N-SB-02 (65.0-71.5)	Step 2	Solid	Carbonate	
140-24350-6	N-SB-14 (44.2-52.0)	Step 2	Solid	Carbonate	
140-24350-7	N-SB-04 (12.0-18.0)	Step 2	Solid	Carbonate	
140-24350-8	N-SB-04 (38.7-45.4)	Step 2	Solid	Carbonate	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 2	Solid	Carbonate	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 2	Solid	Carbonate	
MB 140-54334/17-B ^3	Method Blank	Step 2	Solid	Carbonate	
LCS 140-54334/18-B ^5	Lab Control Sample	Step 2	Solid	Carbonate	
LCSD 140-54334/19-B ^5	Lab Control Sample Dup	Step 2	Solid	Carbonate	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 2	Solid	Carbonate	

Prep Batch: 54370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 2	Solid	3010A	54334
140-24350-2	N-SB-05 (60.0-67.1)	Step 2	Solid	3010A	54334
140-24350-3	N-SB-18 (77.5-80.0)	Step 2	Solid	3010A	54334
140-24350-4	N-SB-02 (12.5-20.0)	Step 2	Solid	3010A	54334
140-24350-5	N-SB-02 (65.0-71.5)	Step 2	Solid	3010A	54334
140-24350-6	N-SB-14 (44.2-52.0)	Step 2	Solid	3010A	54334
140-24350-7	N-SB-04 (12.0-18.0)	Step 2	Solid	3010A	54334
140-24350-8	N-SB-04 (38.7-45.4)	Step 2	Solid	3010A	54334
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 2	Solid	3010A	54334
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 2	Solid	3010A	54334
MB 140-54334/17-B ^3	Method Blank	Step 2	Solid	3010A	54334
LCS 140-54334/18-B ^5	Lab Control Sample	Step 2	Solid	3010A	54334
LCSD 140-54334/19-B ^5	Lab Control Sample Dup	Step 2	Solid	3010A	54334
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 2	Solid	3010A	54334

SEP Batch: 54371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 3	Solid	Non-Crystalline	
140-24350-2	N-SB-05 (60.0-67.1)	Step 3	Solid	Non-Crystalline	
140-24350-3	N-SB-18 (77.5-80.0)	Step 3	Solid	Non-Crystalline	
140-24350-4	N-SB-02 (12.5-20.0)	Step 3	Solid	Non-Crystalline	
140-24350-5	N-SB-02 (65.0-71.5)	Step 3	Solid	Non-Crystalline	
140-24350-6	N-SB-14 (44.2-52.0)	Step 3	Solid	Non-Crystalline	
140-24350-7	N-SB-04 (12.0-18.0)	Step 3	Solid	Non-Crystalline	
140-24350-8	N-SB-04 (38.7-45.4)	Step 3	Solid	Non-Crystalline	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 3	Solid	Non-Crystalline	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 3	Solid	Non-Crystalline	
MB 140-54371/17-B	Method Blank	Step 3	Solid	Non-Crystalline	
LCS 140-54371/18-B	Lab Control Sample	Step 3	Solid	Non-Crystalline	
LCSD 140-54371/19-B	Lab Control Sample Dup	Step 3	Solid	Non-Crystalline	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 3	Solid	Non-Crystalline	

Metals

Prep Batch: 54400

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 3	Solid	3010A	54371
140-24350-2	N-SB-05 (60.0-67.1)	Step 3	Solid	3010A	54371
140-24350-3	N-SB-18 (77.5-80.0)	Step 3	Solid	3010A	54371
140-24350-4	N-SB-02 (12.5-20.0)	Step 3	Solid	3010A	54371
140-24350-5	N-SB-02 (65.0-71.5)	Step 3	Solid	3010A	54371
140-24350-6	N-SB-14 (44.2-52.0)	Step 3	Solid	3010A	54371
140-24350-7	N-SB-04 (12.0-18.0)	Step 3	Solid	3010A	54371
140-24350-8	N-SB-04 (38.7-45.4)	Step 3	Solid	3010A	54371
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 3	Solid	3010A	54371
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 3	Solid	3010A	54371
MB 140-54371/17-B	Method Blank	Step 3	Solid	3010A	54371
LCS 140-54371/18-B	Lab Control Sample	Step 3	Solid	3010A	54371
LCSD 140-54371/19-B	Lab Control Sample Dup	Step 3	Solid	3010A	54371
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 3	Solid	3010A	54371

SEP Batch: 54401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 4	Solid	Metal Hydroxide	
140-24350-2	N-SB-05 (60.0-67.1)	Step 4	Solid	Metal Hydroxide	
140-24350-3	N-SB-18 (77.5-80.0)	Step 4	Solid	Metal Hydroxide	
140-24350-4	N-SB-02 (12.5-20.0)	Step 4	Solid	Metal Hydroxide	
140-24350-5	N-SB-02 (65.0-71.5)	Step 4	Solid	Metal Hydroxide	
140-24350-6	N-SB-14 (44.2-52.0)	Step 4	Solid	Metal Hydroxide	
140-24350-7	N-SB-04 (12.0-18.0)	Step 4	Solid	Metal Hydroxide	
140-24350-8	N-SB-04 (38.7-45.4)	Step 4	Solid	Metal Hydroxide	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 4	Solid	Metal Hydroxide	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 4	Solid	Metal Hydroxide	
MB 140-54401/17-B	Method Blank	Step 4	Solid	Metal Hydroxide	
LCS 140-54401/18-B	Lab Control Sample	Step 4	Solid	Metal Hydroxide	
LCSD 140-54401/19-B	Lab Control Sample Dup	Step 4	Solid	Metal Hydroxide	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 4	Solid	Metal Hydroxide	

Prep Batch: 54485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 4	Solid	3010A	54401
140-24350-2	N-SB-05 (60.0-67.1)	Step 4	Solid	3010A	54401
140-24350-3	N-SB-18 (77.5-80.0)	Step 4	Solid	3010A	54401
140-24350-4	N-SB-02 (12.5-20.0)	Step 4	Solid	3010A	54401
140-24350-5	N-SB-02 (65.0-71.5)	Step 4	Solid	3010A	54401
140-24350-6	N-SB-14 (44.2-52.0)	Step 4	Solid	3010A	54401
140-24350-7	N-SB-04 (12.0-18.0)	Step 4	Solid	3010A	54401
140-24350-8	N-SB-04 (38.7-45.4)	Step 4	Solid	3010A	54401
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 4	Solid	3010A	54401
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 4	Solid	3010A	54401
MB 140-54401/17-B	Method Blank	Step 4	Solid	3010A	54401
LCS 140-54401/18-B	Lab Control Sample	Step 4	Solid	3010A	54401
LCSD 140-54401/19-B	Lab Control Sample Dup	Step 4	Solid	3010A	54401
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 4	Solid	3010A	54401

Metals

SEP Batch: 54486

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 5	Solid	Organic-Bound	
140-24350-2	N-SB-05 (60.0-67.1)	Step 5	Solid	Organic-Bound	
140-24350-3	N-SB-18 (77.5-80.0)	Step 5	Solid	Organic-Bound	
140-24350-4	N-SB-02 (12.5-20.0)	Step 5	Solid	Organic-Bound	
140-24350-5	N-SB-02 (65.0-71.5)	Step 5	Solid	Organic-Bound	
140-24350-6	N-SB-14 (44.2-52.0)	Step 5	Solid	Organic-Bound	
140-24350-7	N-SB-04 (12.0-18.0)	Step 5	Solid	Organic-Bound	
140-24350-8	N-SB-04 (38.7-45.4)	Step 5	Solid	Organic-Bound	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 5	Solid	Organic-Bound	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 5	Solid	Organic-Bound	
MB 140-54486/17-B ^5	Method Blank	Step 5	Solid	Organic-Bound	
LCS 140-54486/18-B ^5	Lab Control Sample	Step 5	Solid	Organic-Bound	
LCSD 140-54486/19-B ^5	Lab Control Sample Dup	Step 5	Solid	Organic-Bound	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 5	Solid	Organic-Bound	

Prep Batch: 54566

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 5	Solid	3010A	54486
140-24350-2	N-SB-05 (60.0-67.1)	Step 5	Solid	3010A	54486
140-24350-3	N-SB-18 (77.5-80.0)	Step 5	Solid	3010A	54486
140-24350-4	N-SB-02 (12.5-20.0)	Step 5	Solid	3010A	54486
140-24350-5	N-SB-02 (65.0-71.5)	Step 5	Solid	3010A	54486
140-24350-6	N-SB-14 (44.2-52.0)	Step 5	Solid	3010A	54486
140-24350-7	N-SB-04 (12.0-18.0)	Step 5	Solid	3010A	54486
140-24350-8	N-SB-04 (38.7-45.4)	Step 5	Solid	3010A	54486
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 5	Solid	3010A	54486
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 5	Solid	3010A	54486
MB 140-54486/17-B ^5	Method Blank	Step 5	Solid	3010A	54486
LCS 140-54486/18-B ^5	Lab Control Sample	Step 5	Solid	3010A	54486
LCSD 140-54486/19-B ^5	Lab Control Sample Dup	Step 5	Solid	3010A	54486
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 5	Solid	3010A	54486

SEP Batch: 54567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 6	Solid	Acid/Sulfide	
140-24350-2	N-SB-05 (60.0-67.1)	Step 6	Solid	Acid/Sulfide	
140-24350-3	N-SB-18 (77.5-80.0)	Step 6	Solid	Acid/Sulfide	
140-24350-4	N-SB-02 (12.5-20.0)	Step 6	Solid	Acid/Sulfide	
140-24350-5	N-SB-02 (65.0-71.5)	Step 6	Solid	Acid/Sulfide	
140-24350-6	N-SB-14 (44.2-52.0)	Step 6	Solid	Acid/Sulfide	
140-24350-7	N-SB-04 (12.0-18.0)	Step 6	Solid	Acid/Sulfide	
140-24350-8	N-SB-04 (38.7-45.4)	Step 6	Solid	Acid/Sulfide	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 6	Solid	Acid/Sulfide	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 6	Solid	Acid/Sulfide	
MB 140-54567/17-A	Method Blank	Step 6	Solid	Acid/Sulfide	
LCS 140-54567/18-A	Lab Control Sample	Step 6	Solid	Acid/Sulfide	
LCSD 140-54567/19-A	Lab Control Sample Dup	Step 6	Solid	Acid/Sulfide	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 6	Solid	Acid/Sulfide	

Metals

Prep Batch: 54607

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 7	Solid	Residual	
140-24350-2	N-SB-05 (60.0-67.1)	Step 7	Solid	Residual	
140-24350-3	N-SB-18 (77.5-80.0)	Step 7	Solid	Residual	
140-24350-4	N-SB-02 (12.5-20.0)	Step 7	Solid	Residual	
140-24350-5	N-SB-02 (65.0-71.5)	Step 7	Solid	Residual	
140-24350-6	N-SB-14 (44.2-52.0)	Step 7	Solid	Residual	
140-24350-7	N-SB-04 (12.0-18.0)	Step 7	Solid	Residual	
140-24350-8	N-SB-04 (38.7-45.4)	Step 7	Solid	Residual	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 7	Solid	Residual	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 7	Solid	Residual	
MB 140-54607/17-A	Method Blank	Step 7	Solid	Residual	
LCS 140-54607/18-A	Lab Control Sample	Step 7	Solid	Residual	
LCSD 140-54607/19-A	Lab Control Sample Dup	Step 7	Solid	Residual	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 7	Solid	Residual	

Analysis Batch: 55087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 1	Solid	6010B SEP	54333
140-24350-1	N-SB-05 (18.0-20.0)	Step 2	Solid	6010B SEP	54370
140-24350-1	N-SB-05 (18.0-20.0)	Step 3	Solid	6010B SEP	54400
140-24350-2	N-SB-05 (60.0-67.1)	Step 1	Solid	6010B SEP	54333
140-24350-2	N-SB-05 (60.0-67.1)	Step 2	Solid	6010B SEP	54370
140-24350-2	N-SB-05 (60.0-67.1)	Step 3	Solid	6010B SEP	54400
140-24350-3	N-SB-18 (77.5-80.0)	Step 1	Solid	6010B SEP	54333
140-24350-3	N-SB-18 (77.5-80.0)	Step 2	Solid	6010B SEP	54370
140-24350-3	N-SB-18 (77.5-80.0)	Step 3	Solid	6010B SEP	54400
140-24350-4	N-SB-02 (12.5-20.0)	Step 1	Solid	6010B SEP	54333
140-24350-4	N-SB-02 (12.5-20.0)	Step 2	Solid	6010B SEP	54370
140-24350-4	N-SB-02 (12.5-20.0)	Step 3	Solid	6010B SEP	54400
140-24350-5	N-SB-02 (65.0-71.5)	Step 1	Solid	6010B SEP	54333
140-24350-5	N-SB-02 (65.0-71.5)	Step 2	Solid	6010B SEP	54370
140-24350-5	N-SB-02 (65.0-71.5)	Step 3	Solid	6010B SEP	54400
140-24350-6	N-SB-14 (44.2-52.0)	Step 1	Solid	6010B SEP	54333
140-24350-6	N-SB-14 (44.2-52.0)	Step 2	Solid	6010B SEP	54370
140-24350-6	N-SB-14 (44.2-52.0)	Step 3	Solid	6010B SEP	54400
140-24350-7	N-SB-04 (12.0-18.0)	Step 1	Solid	6010B SEP	54333
140-24350-7	N-SB-04 (12.0-18.0)	Step 2	Solid	6010B SEP	54370
140-24350-7	N-SB-04 (12.0-18.0)	Step 3	Solid	6010B SEP	54400
140-24350-8	N-SB-04 (38.7-45.4)	Step 1	Solid	6010B SEP	54333
140-24350-8	N-SB-04 (38.7-45.4)	Step 2	Solid	6010B SEP	54370
140-24350-8	N-SB-04 (38.7-45.4)	Step 3	Solid	6010B SEP	54400
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 1	Solid	6010B SEP	54333
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 2	Solid	6010B SEP	54370
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 3	Solid	6010B SEP	54400
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 1	Solid	6010B SEP	54333
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 2	Solid	6010B SEP	54370
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 3	Solid	6010B SEP	54400
MB 140-54252/17-B ^4	Method Blank	Step 1	Solid	6010B SEP	54333
MB 140-54334/17-B ^3	Method Blank	Step 2	Solid	6010B SEP	54370
MB 140-54371/17-B	Method Blank	Step 3	Solid	6010B SEP	54400
LCS 140-54252/18-B ^5	Lab Control Sample	Step 1	Solid	6010B SEP	54333

Metals (Continued)

Analysis Batch: 55087 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 140-54334/18-B ^5	Lab Control Sample	Step 2	Solid	6010B SEP	54370
LCS 140-54371/18-B	Lab Control Sample	Step 3	Solid	6010B SEP	54400
LCSD 140-54252/19-B ^5	Lab Control Sample Dup	Step 1	Solid	6010B SEP	54333
LCSD 140-54334/19-B ^5	Lab Control Sample Dup	Step 2	Solid	6010B SEP	54370
LCSD 140-54371/19-B	Lab Control Sample Dup	Step 3	Solid	6010B SEP	54400
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 1	Solid	6010B SEP	54333
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 2	Solid	6010B SEP	54370
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 3	Solid	6010B SEP	54400

Analysis Batch: 55146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 4	Solid	6010B SEP	54485
140-24350-1	N-SB-05 (18.0-20.0)	Step 5	Solid	6010B SEP	54566
140-24350-1	N-SB-05 (18.0-20.0)	Step 6	Solid	6010B SEP	54567
140-24350-2	N-SB-05 (60.0-67.1)	Step 4	Solid	6010B SEP	54485
140-24350-2	N-SB-05 (60.0-67.1)	Step 4	Solid	6010B SEP	54485
140-24350-2	N-SB-05 (60.0-67.1)	Step 5	Solid	6010B SEP	54566
140-24350-2	N-SB-05 (60.0-67.1)	Step 6	Solid	6010B SEP	54567
140-24350-3	N-SB-18 (77.5-80.0)	Step 4	Solid	6010B SEP	54485
140-24350-3	N-SB-18 (77.5-80.0)	Step 5	Solid	6010B SEP	54566
140-24350-3	N-SB-18 (77.5-80.0)	Step 6	Solid	6010B SEP	54567
140-24350-4	N-SB-02 (12.5-20.0)	Step 4	Solid	6010B SEP	54485
140-24350-4	N-SB-02 (12.5-20.0)	Step 5	Solid	6010B SEP	54566
140-24350-4	N-SB-02 (12.5-20.0)	Step 6	Solid	6010B SEP	54567
140-24350-5	N-SB-02 (65.0-71.5)	Step 4	Solid	6010B SEP	54485
140-24350-5	N-SB-02 (65.0-71.5)	Step 5	Solid	6010B SEP	54566
140-24350-5	N-SB-02 (65.0-71.5)	Step 6	Solid	6010B SEP	54567
140-24350-6	N-SB-14 (44.2-52.0)	Step 4	Solid	6010B SEP	54485
140-24350-6	N-SB-14 (44.2-52.0)	Step 5	Solid	6010B SEP	54566
140-24350-6	N-SB-14 (44.2-52.0)	Step 6	Solid	6010B SEP	54567
140-24350-7	N-SB-04 (12.0-18.0)	Step 4	Solid	6010B SEP	54485
140-24350-7	N-SB-04 (12.0-18.0)	Step 5	Solid	6010B SEP	54566
140-24350-7	N-SB-04 (12.0-18.0)	Step 6	Solid	6010B SEP	54567
140-24350-8	N-SB-04 (38.7-45.4)	Step 4	Solid	6010B SEP	54485
140-24350-8	N-SB-04 (38.7-45.4)	Step 5	Solid	6010B SEP	54566
140-24350-8	N-SB-04 (38.7-45.4)	Step 6	Solid	6010B SEP	54567
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 4	Solid	6010B SEP	54485
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 5	Solid	6010B SEP	54566
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 6	Solid	6010B SEP	54567
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 6	Solid	6010B SEP	54567
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 3	Solid	6010B SEP	54400
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 4	Solid	6010B SEP	54485
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 5	Solid	6010B SEP	54566
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 6	Solid	6010B SEP	54567
MB 140-54401/17-B	Method Blank	Step 4	Solid	6010B SEP	54485
MB 140-54486/17-B ^5	Method Blank	Step 5	Solid	6010B SEP	54566
MB 140-54567/17-A	Method Blank	Step 6	Solid	6010B SEP	54567
LCS 140-54401/18-B	Lab Control Sample	Step 4	Solid	6010B SEP	54485
LCS 140-54486/18-B ^5	Lab Control Sample	Step 5	Solid	6010B SEP	54566
LCS 140-54567/18-A	Lab Control Sample	Step 6	Solid	6010B SEP	54567
LCSD 140-54401/19-B	Lab Control Sample Dup	Step 4	Solid	6010B SEP	54485

Metals (Continued)

Analysis Batch: 55146 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 140-54486/19-B ^5	Lab Control Sample Dup	Step 5	Solid	6010B SEP	54566
LCSD 140-54567/19-A	Lab Control Sample Dup	Step 6	Solid	6010B SEP	54567
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 4	Solid	6010B SEP	54485
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 5	Solid	6010B SEP	54566
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 6	Solid	6010B SEP	54567

Analysis Batch: 55197

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 7	Solid	6010B SEP	54607
140-24350-1	N-SB-05 (18.0-20.0)	Step 7	Solid	6010B SEP	54607
140-24350-2	N-SB-05 (60.0-67.1)	Step 7	Solid	6010B SEP	54607
140-24350-2	N-SB-05 (60.0-67.1)	Step 7	Solid	6010B SEP	54607
140-24350-3	N-SB-18 (77.5-80.0)	Step 7	Solid	6010B SEP	54607
140-24350-3	N-SB-18 (77.5-80.0)	Step 7	Solid	6010B SEP	54607
140-24350-3	N-SB-18 (77.5-80.0)	Step 7	Solid	6010B SEP	54607
140-24350-4	N-SB-02 (12.5-20.0)	Step 7	Solid	6010B SEP	54607
140-24350-4	N-SB-02 (12.5-20.0)	Step 7	Solid	6010B SEP	54607
140-24350-5	N-SB-02 (65.0-71.5)	Step 7	Solid	6010B SEP	54607
140-24350-5	N-SB-02 (65.0-71.5)	Step 7	Solid	6010B SEP	54607
140-24350-5	N-SB-02 (65.0-71.5)	Step 7	Solid	6010B SEP	54607
140-24350-6	N-SB-14 (44.2-52.0)	Step 7	Solid	6010B SEP	54607
140-24350-6	N-SB-14 (44.2-52.0)	Step 7	Solid	6010B SEP	54607
140-24350-7	N-SB-04 (12.0-18.0)	Step 7	Solid	6010B SEP	54607
140-24350-7	N-SB-04 (12.0-18.0)	Step 7	Solid	6010B SEP	54607
140-24350-7	N-SB-04 (12.0-18.0)	Step 7	Solid	6010B SEP	54607
140-24350-8	N-SB-04 (38.7-45.4)	Step 7	Solid	6010B SEP	54607
140-24350-8	N-SB-04 (38.7-45.4)	Step 7	Solid	6010B SEP	54607
140-24350-8	N-SB-04 (38.7-45.4)	Step 7	Solid	6010B SEP	54607
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 7	Solid	6010B SEP	54607
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 7	Solid	6010B SEP	54607
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 7	Solid	6010B SEP	54607
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 7	Solid	6010B SEP	54607
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 7	Solid	6010B SEP	54607
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 7	Solid	6010B SEP	54607
MB 140-54607/17-A	Method Blank	Step 7	Solid	6010B SEP	54607
LCS 140-54607/18-A	Lab Control Sample	Step 7	Solid	6010B SEP	54607
LCSD 140-54607/19-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	54607
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 7	Solid	6010B SEP	54607
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 7	Solid	6010B SEP	54607

Analysis Batch: 55243

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Total/NA	Solid	6010B	54251
140-24350-1	N-SB-05 (18.0-20.0)	Total/NA	Solid	6010B	54251
140-24350-2	N-SB-05 (60.0-67.1)	Total/NA	Solid	6010B	54251
140-24350-2	N-SB-05 (60.0-67.1)	Total/NA	Solid	6010B	54251
140-24350-3	N-SB-18 (77.5-80.0)	Total/NA	Solid	6010B	54251
140-24350-3	N-SB-18 (77.5-80.0)	Total/NA	Solid	6010B	54251
140-24350-4	N-SB-02 (12.5-20.0)	Total/NA	Solid	6010B	54251
140-24350-4	N-SB-02 (12.5-20.0)	Total/NA	Solid	6010B	54251
140-24350-4	N-SB-02 (12.5-20.0)	Total/NA	Solid	6010B	54251

Metals (Continued)

Analysis Batch: 55243 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-5	N-SB-02 (65.0-71.5)	Total/NA	Solid	6010B	54251
140-24350-5	N-SB-02 (65.0-71.5)	Total/NA	Solid	6010B	54251
140-24350-5	N-SB-02 (65.0-71.5)	Total/NA	Solid	6010B	54251
140-24350-6	N-SB-14 (44.2-52.0)	Total/NA	Solid	6010B	54251
140-24350-6	N-SB-14 (44.2-52.0)	Total/NA	Solid	6010B	54251
140-24350-7	N-SB-04 (12.0-18.0)	Total/NA	Solid	6010B	54251
140-24350-7	N-SB-04 (12.0-18.0)	Total/NA	Solid	6010B	54251
140-24350-7	N-SB-04 (12.0-18.0)	Total/NA	Solid	6010B	54251
140-24350-8	N-SB-04 (38.7-45.4)	Total/NA	Solid	6010B	54251
140-24350-8	N-SB-04 (38.7-45.4)	Total/NA	Solid	6010B	54251
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Total/NA	Solid	6010B	54251
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Total/NA	Solid	6010B	54251
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Total/NA	Solid	6010B	54251
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Total/NA	Solid	6010B	54251
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Total/NA	Solid	6010B	54251
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Total/NA	Solid	6010B	54251
MB 140-54251/17-A	Method Blank	Total/NA	Solid	6010B	54251
LCS 140-54251/18-A	Lab Control Sample	Total/NA	Solid	6010B	54251
LCSD 140-54251/19-A	Lab Control Sample Dup	Total/NA	Solid	6010B	54251
140-24350-1 DU	N-SB-05 (18.0-20.0)	Total/NA	Solid	6010B	54251
140-24350-1 DU	N-SB-05 (18.0-20.0)	Total/NA	Solid	6010B	54251

Analysis Batch: 55436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-2	N-SB-05 (60.0-67.1)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-3	N-SB-18 (77.5-80.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-4	N-SB-02 (12.5-20.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-5	N-SB-02 (65.0-71.5)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-6	N-SB-14 (44.2-52.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-7	N-SB-04 (12.0-18.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-8	N-SB-04 (38.7-45.4)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Sum of Steps 1-7	Solid	6010B SEP	

General Chemistry

Analysis Batch: 53225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Total/NA	Solid	Moisture	
140-24350-2	N-SB-05 (60.0-67.1)	Total/NA	Solid	Moisture	
140-24350-3	N-SB-18 (77.5-80.0)	Total/NA	Solid	Moisture	
140-24350-4	N-SB-02 (12.5-20.0)	Total/NA	Solid	Moisture	
140-24350-5	N-SB-02 (65.0-71.5)	Total/NA	Solid	Moisture	
140-24350-6	N-SB-14 (44.2-52.0)	Total/NA	Solid	Moisture	
140-24350-7	N-SB-04 (12.0-18.0)	Total/NA	Solid	Moisture	
140-24350-8	N-SB-04 (38.7-45.4)	Total/NA	Solid	Moisture	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Total/NA	Solid	Moisture	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Total/NA	Solid	Moisture	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: N-SB-05 (18.0-20.0)
Lab Sample ID: 140-24350-1
Date Collected: 08/17/21 12:40
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-05 (18.0-20.0)
Lab Sample ID: 140-24350-1
Date Collected: 08/17/21 12:40
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 11:28	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:14	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:32	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:39	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:37	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 11:54	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 13:52	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 15:51	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 11:43	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 12:50	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: N-SB-05 (60.0-67.1)
Lab Sample ID: 140-24350-2
Date Collected: 08/17/21 15:40
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-05 (60.0-67.1)
Lab Sample ID: 140-24350-2
Date Collected: 08/17/21 15:40
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 81.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 11:52	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:25	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:41	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:49	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:47	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:03	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		2			55146	10/25/21 17:56	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:02	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:01	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 11:52	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: N-SB-05 (60.0-67.1)
Lab Sample ID: 140-24350-2
Date Collected: 08/17/21 15:40
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 81.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:00	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-18 (77.5-80.0)
Lab Sample ID: 140-24350-3
Date Collected: 08/18/21 10:00
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-18 (77.5-80.0)
Lab Sample ID: 140-24350-3
Date Collected: 08/18/21 10:00
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 91.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 11:57	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:45	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:46	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:54	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:52	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:08	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:07	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-18 (77.5-80.0)

Lab Sample ID: 140-24350-3

Date Collected: 08/18/21 10:00
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 91.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:06	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 11:57	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:20	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 14:50	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-02 (12.5-20.0)

Lab Sample ID: 140-24350-4

Date Collected: 08/18/21 14:10
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-02 (12.5-20.0)

Lab Sample ID: 140-24350-4

Date Collected: 08/18/21 14:10
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 93.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:02	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:50	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			55243	10/27/21 16:12	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:51	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:59	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-02 (12.5-20.0)

Lab Sample ID: 140-24350-4
Date Collected: 08/18/21 14:10
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 93.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:57	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:13	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:12	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:11	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:02	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:25	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-02 (65.0-71.5)

Lab Sample ID: 140-24350-5
Date Collected: 08/19/21 12:00
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-02 (65.0-71.5)

Lab Sample ID: 140-24350-5
Date Collected: 08/19/21 12:00
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 89.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:07	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:55	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			55243	10/27/21 16:18	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-02 (65.0-71.5)
Lab Sample ID: 140-24350-5
Date Collected: 08/19/21 12:00
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 89.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:56	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:04	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:02	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:33	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:32	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:31	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:21	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:30	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 14:55	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-14 (44.2-52.0)
Lab Sample ID: 140-24350-6
Date Collected: 08/19/21 14:45
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-14 (44.2-52.0)

Lab Sample ID: 140-24350-6

Date Collected: 08/19/21 14:45

Matrix: Solid

Date Received: 08/24/21 09:40

Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:12	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 14:01	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 12:26	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:23	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:21	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:38	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:37	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:36	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:26	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:35	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-04 (12.0-18.0)

Lab Sample ID: 140-24350-7

Date Collected: 08/21/21 07:35

Matrix: Solid

Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: N-SB-04 (12.0-18.0)
Date Collected: 08/21/21 07:35
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-7
Matrix: Solid
Percent Solids: 89.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:17	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 14:06	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			55243	10/27/21 16:23	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 12:31	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:28	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:26	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:43	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:42	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:41	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:31	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:40	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 15:00	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-04 (38.7-45.4)
Lab Sample ID: 140-24350-8
Date Collected: 08/21/21 08:30
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-04 (38.7-45.4)
Lab Sample ID: 140-24350-8
Date Collected: 08/21/21 08:30
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 86.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:21	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 14:12	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 12:35	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:33	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:31	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:48	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:47	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:46	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:36	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:45	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-04 (38.7-45.4)

Lab Sample ID: 140-24350-8
Date Collected: 08/21/21 08:30
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 86.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 15:05	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-XPW 04 (10.0-15.0)

Lab Sample ID: 140-24350-9
Date Collected: 08/21/21 09:20
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-XPW 04 (10.0-15.0)

Lab Sample ID: 140-24350-9
Date Collected: 08/21/21 09:20
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 56.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:26	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 14:17	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			55243	10/27/21 16:28	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 12:40	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:38	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:36	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:53	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-XPW 04 (10.0-15.0)

Lab Sample ID: 140-24350-9
Date Collected: 08/21/21 09:20
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 56.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:52	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:51	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		5			55146	10/25/21 18:01	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:40	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:50	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 15:09	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-XPW 01 (10.0-12.7)

Lab Sample ID: 140-24350-10
Date Collected: 08/21/21 10:10
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 16:02	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-XPW 01 (10.0-12.7)

Lab Sample ID: 140-24350-10
Date Collected: 08/21/21 10:10
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 77.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:31	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 14:23	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			55243	10/27/21 16:33	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-XPW 01 (10.0-12.7)

Lab Sample ID: 140-24350-10

Date Collected: 08/21/21 10:10

Matrix: Solid

Date Received: 08/24/21 09:40

Percent Solids: 77.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 12:45	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:43	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:41	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55146	10/25/21 11:49	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:58	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:57	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:56	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:45	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:55	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 15:19	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-54251/17-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 10:49	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54252/17-B ^4
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:17	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54334/17-B ^3
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:24	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54371/17-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:23	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54401/17-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 11:34	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54486/17-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 13:37	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc. Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: Method Blank — Lab Sample ID: MB 140-54567/17-A
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 15:37	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-54607/17-A
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 11:23	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-54251/18-A
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 10:54	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-54252/18-B ^5
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			55087	10/22/21 11:22	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-54334/18-B ^5
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			55087	10/22/21 13:29	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54371/18-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:28	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54401/18-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 11:39	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54486/18-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 13:42	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54567/18-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 15:42	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54607/18-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 11:28	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54251/19-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 10:59	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54252/19-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			55087	10/22/21 11:27	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54334/19-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			55087	10/22/21 13:34	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54371/19-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:32	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54401/19-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 11:44	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54486/19-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 13:47	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54567/19-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 15:47	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54607/19-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 11:33	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-05 (18.0-20.0)
Lab Sample ID: 140-24350-1 DU
Date Collected: 08/17/21 12:40
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-05 (18.0-20.0)
Lab Sample ID: 140-24350-1 DU
Date Collected: 08/17/21 12:40
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 11:47	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:19	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:36	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: N-SB-05 (18.0-20.0)
Lab Sample ID: 140-24350-1 DU
Date Collected: 08/17/21 12:40
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:44	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:42	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 11:58	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 13:57	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 15:56	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 11:48	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 12:55	KNC	TAL KNX
	Instrument ID: DUO									

Laboratory References:
TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Laboratory: Eurofins TestAmerica, Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
Arkansas DEQ	State	88-0688	06-17-22
California	State	2423	06-30-22
Colorado	State	TN00009	02-28-22
Connecticut	State	PH-0223	02-28-22
Florida	NELAP	E87177	06-30-22
Georgia (DW)	State	906	12-11-22
Hawaii	State	NA	12-11-21
Kansas	NELAP	E-10349	10-31-21 *
Kentucky (DW)	State	90101	12-31-21
Louisiana	NELAP	83979	06-30-22
Louisiana (DW)	State	LA019	12-31-21
Maryland	State	277	03-31-22
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-22
New Hampshire	NELAP	299919	01-17-22
New Jersey	NELAP	TN001	06-30-22
New York	NELAP	10781	03-31-22
North Carolina (DW)	State	21705	07-31-22
North Carolina (WW/SW)	State	64	12-31-21
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-22
Oregon	NELAP	TNI0189	01-01-22
Pennsylvania	NELAP	68-00576	12-31-21
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-22
US Fish & Wildlife	US Federal Programs	058448	07-31-22
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-22
Virginia	NELAP	460176	09-14-22
Washington	State	C593	01-19-22
West Virginia (DW)	State	9955C	01-02-22
West Virginia DEP	State	345	04-30-22
Wisconsin	State	998044300	08-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Method	Method Description	Protocol	Laboratory
6010B	SEP Metals (ICP) - Total	SW846	TAL KNX
6010B SEP	SEP Metals (ICP)	SW846	TAL KNX
Moisture	Percent Moisture	EPA	TAL KNX
3010A	Preparation, Total Metals	SW846	TAL KNX
Acid/Sulfide	Sequential Extraction Procedure, Acid/Sulfide Fraction	TAL-KNOX	TAL KNX
Carbonate	Sequential Extraction Procedure, Carbonate Fraction	TAL-KNOX	TAL KNX
Exchangeable	Sequential Extraction Procedure, Exchangeable Fraction	TAL-KNOX	TAL KNX
Metal Hydroxide	Sequential Extraction Procedure, Metal Hydroxide Fraction	TAL-KNOX	TAL KNX
Non-Crystalline	Sequential Extraction Procedure, Non-crystalline Materials	TAL-KNOX	TAL KNX
Organic-Bound	Sequential Extraction Procedure, Organic Bound Fraction	TAL-KNOX	TAL KNX
Residual	Sequential Extraction Procedure, Residual Fraction	TAL-KNOX	TAL KNX
Total	Preparation, Total Material	TAL-KNOX	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-KNOX = TestAmerica Laboratories, Knoxville, Facility Standard Operating Procedure.

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: Brendan Talbert	Lab PM: Henry, Ryan	Carrier Tracking No(s):	COC No: 140-9736-2903.2
Client Contact: Jeffrey Ingram	Phone: (636) 485-8185	E-Mail: williamr.henry@eurofinset.com	State of Origin: IL	Page: Page 1 of 2
Company: Golder Associates Inc.	PWSID:			Job #:
Address: 13515 Barrett Parkway Drive Suite 260	Due Date Requested:			
City: Ballwin	TAT Requested (days):			
State, Zip: MO, 63021	Compliance Project: Δ Yes Δ No			
Phone: 314-984-8800(Tel) 636-724-9323(Fax)	PO #: Purchase Order not required			
Email: Jeffrey_Ingram@golder.com	WO #:			
Project Name: ~~Kincaid~~ Newton Power Station - Illinois	Project #: 14006434			
Site:	SSOW#:			

Analysis Requested

140-24350 Chain of Custody

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010B - Select Total Metals	6010B_SEP - SEP	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N		
N-SB-05(18.0-20.0)	8-17-21	1240	G	S	N	N	/	/		
N-SB-05(60.0-67.1)	8-17-21	1540	G	S			/	/		
N-SB-18 (77.5-80.0)	8-18-21	1000	G	S			/	/		
N-SB-02 (12.5-20.0)	8-18-21	1410	G	S			/	/		
N-SB-02(65.0-71.5)	8-19-21	1200	G	S			/	/		
N-SB-14 ~~(Foam Core)~~	8-19-21	1445	G	S			/	/		N-SB-14 (44.2-52.0)
N-SB-04 (12.0-18.0)	8-21-21	0735	G	S			/	/		
N-SB-04 ~~(Foam Core)~~	8-21-21	0830	G	S			/	/		N-SB-04 (38.7-45.4)
N-SB-xpw04 (10.0-15.0)	8-21-21	0920	G	S			/	/		
N-SB-xpw01 (10.0-12.7)	8-21-21	1010	G	S			/	Y		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Brendan Talbert	8-23-21 / 1830	Golder		8/24/21 0940	ETA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:** Loc: 140 **24350**

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	/			☐ Containers, Broken
2. Were ambient air containers received intact?			/	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?	/			☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC 71 Correction factor: +0.1	/			☐ Cooler Out of Temp, Client Contacted, Proceed/Cancel ☐ Cooler Out of Temp, Same Day Receipt
5. Were all of the sample containers received intact?	/			☐ Containers, Broken
6. Were samples received in appropriate containers?	/			☐ Containers, Improper; Client Contacted; Proceed/Cancel
7. Do sample container labels match COC? (IDs, Dates, Times)	/			☐ COC & Samples Do Not Match ☐ COC Incorrect/Incomplete ☐ COC Not Received
8. Were all of the samples listed on the COC received?	/			☐ Sample Received, Not on COC ☐ Sample on COC, Not Received
9. Is the date/time of sample collection noted?	/			☐ COC; No Date/Time; Client Contacted
10. Was the sampler identified on the COC?	/			☐ Sampler Not Listed on COC
11. Is the client and project name/# identified?	/			☐ COC Incorrect/Incomplete
12. Are tests/parameters listed for each sample?	/			☐ COC No tests on COC
13. Is the matrix of the samples noted?	/			☐ COC Incorrect/Incomplete
14. Was COC relinquished? (Signed/Dated/Timed)	/			☐ COC Incorrect/Incomplete
15. Were samples received within holding time?	/			☐ Holding Time - Receipt
16. Were samples received with correct chemical preservative (excluding Encore)?			/	☐ pH Adjusted, pH Included (See box 16A) ☐ Incorrect Preservative
17. Were VOA samples received without headspace?			/	☐ Headspace (VOA only)
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			/	☐ Residual Chlorine
19. For 1613B water samples is pH<9?			/	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			/	☐ Project missing info

Comments/Actions Taken

RT: 1.3°C CT: 1.4°C
1 cooler, FedEx Pg
Custody seal intact
Tr# 2828 8850 9224
KW 8/24/21

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: 1400647 PM Instructions:

Sample Receiving Associate: Kelsey Date: 8/24/21

QA026R32.doc, 062719

ATTACHMENT 2
EUROFINS SEQUENTIAL EXTRACTION LABORATORY REPORT

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-24350-1
Client Project/Site: Newton Power Station - Illinois

For:
Golder Associates Inc.
13515 Barrett Parkway Drive
Suite 260
Ballwin, Missouri 63021

Attn: Jeffrey Ingram

Ryan Henry

Authorized for release by:
11/2/2021 4:41:43 PM

Ryan Henry, Project Manager I
(865)291-3000
williamr.henry@eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Qualifiers

Metals

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
B	Compound was found in the blank and sample.
F3	Duplicate RPD exceeds the control limit
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL, and the absolute difference between results is < the upper reporting limits for both.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
L	A negative instrument reading had an absolute value greater than the reporting limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 140-24350-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-24350-1

Receipt
The samples were received on 8/24/2021 at 9:40am and arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.4º C.

Metals
7 Step Sequential Extraction Procedure

These soil samples were prepared and analyzed using Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0008, "7 Step Sequential Extraction Procedure". SW-846 Method 6010B as incorporated in Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analyses.

An aliquot of each sample was sequentially extracted using the steps listed below:

· Step 1 - Exchangeable Fraction: A 5 gram aliquot of sample was extracted with 25 mL of 1M magnesium sulfate (MgSO4), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 2 - Carbonate Fraction: The sample residue from step 1 was extracted with 25 mL of 1M sodium acetate/acetic acid (NaOAc/HOAc) at pH 5, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 3 - Non-crystalline Materials Fraction: The sample residue from step 2 was extracted with 25 mL of 0.2M ammonium oxalate (pH 3), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 4 - Metal Hydroxide Fraction: The sample residue from step 3 was extracted with 25 mL of 1M hydroxylamine hydrochloride solution in 25% v/v acetic acid, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 5 - Organic-bound Fraction: The sample residue from step 4 was extracted three times with 25 mL of 5% sodium hypochlorite (NaClO) at pH 9.5, centrifuged and filtered. The resulting leachates were combined and 5 mL were digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 6 - Acid/Sulfide Fraction: The sample residue from step 5 was extracted with 25 mL of a 3:1:2 v/v solution of HCl-HNO3-H2O, centrifuged and filtered. 5 mL of the resulting leachate was diluted to 50 mL with reagent water and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 7 - Residual Fraction: A 1.0 g aliquot of the sample residue from step 6 was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Results are reported in mg/kg on a dry weight basis.

In addition, a 1.0 g aliquot of the original sample was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Total metal results are reported in mg/kg on a dry weight basis.

Results were calculated using the following equation:

Result, µg/g or mg/Kg, dry weight = (C × V × V1 × D) / (W × S × V2)

Where:
C = Concentration from instrument readout, µg/mL
V = Final volume of digestate, mL
D = Instrument dilution factor
V1 = Total volume of leachate, mL
V2 = Volume of leachate digested, mL
W = Wet weight of sample, g
S = Percent solids/100

A method blank, laboratory control sample and laboratory control sample duplicate were prepared and analyzed with each SEP step in

Job ID: 140-24350-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

order to provide information about both the presence of elements of interest in the extraction solutions, and the recovery of elements of interest from the extraction solutions. Results outside of laboratory QC limits do not reflect out of control performance, but rather the effect of the extraction solution upon the analyte.

A laboratory sample duplicate was prepared and analyzed with each batch of samples in order to provide information regarding the reproducibility of the procedure.

SEP Report Notes:

The final report lists the results for each step, the result for the total digestion of the sample, and a sum of the results of steps 1 through 7 by element.

Magnesium was not reported for step 1 because the extraction solution for this step (magnesium sulfate) contains high levels of magnesium. Sodium was not reported for steps 2 and 5 since the extraction solutions for these steps contain high levels of sodium. The sum of steps 1 through 7 is much higher than the total result for sodium and magnesium due to the magnesium and sodium introduced by the extraction solutions.

The digestates for steps 1, 2 and 5 were analyzed at a dilution due to instrument problems caused by the high solids content of the digestates. The reporting limits were adjusted accordingly.

Method 6010B: The sample duplicate (DUP) precision for preparation batch 140-54251 and analytical batch 140-55243 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 6010B: The serial dilution performed for the following samples associated with batch 140-55243 was outside control limits: (140-24350-A-1-A SD ^5) and (140-24350-A-1-A SD ^50)

Method 6010B: The following samples were diluted due to the presence of titanium which interferes with Cobalt and Lead: N-SB-04 (12.0-18.0) (140-24350-7), N-SB-XPW 04 (10.0-15.0) (140-24350-9) and N-SB-XPW 01 (10.0-12.7) (140-24350-10). Elevated reporting limits (RLs) are provided.

Method 6010B: The following sample was diluted due to the presence of silicon which interferes with Arsenic, Lead and Selenium: N-SB-02 (65.0-71.5) (140-24350-5). Elevated reporting limits (RLs) are provided.

Method 6010B: The following sample was diluted due to the presence of iron which interferes with Arsenic and Selenium: N-SB-02 (12.5-20.0) (140-24350-4). Elevated reporting limits (RLs) are provided.

Method 6010B: The following samples were diluted due to the nature of the sample matrix: N-SB-05 (18.0-20.0) (140-24350-1), N-SB-05 (60.0-67.1) (140-24350-2), N-SB-18 (77.5-80.0) (140-24350-3), N-SB-02 (12.5-20.0) (140-24350-4), N-SB-02 (65.0-71.5) (140-24350-5), N-SB-14 (44.2-52.0) (140-24350-6), N-SB-04 (12.0-18.0) (140-24350-7), N-SB-04 (38.7-45.4) (140-24350-8), N-SB-XPW 04 (10.0-15.0) (140-24350-9) and N-SB-XPW 01 (10.0-12.7) (140-24350-10). Elevated reporting limits (RLs) are provided for aluminum and calcium.

Method 6010B SEP: The sample duplicate (DUP) precision for preparation batch 140-54371 and 140-54400 and analytical batch 140-55087 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 6010B SEP: The sample duplicate (DUP) precision for preparation batch 140-54401, 140-54485, 140-54486 and 140-54566 and analytical batch 140-55146 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 6010B SEP: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 140-54486 and 140-54566 and analytical batch 140-55146 recovered outside control limits for the following analyte: Lithium. This analyte was biased high in the LCS/LCSD and was detected in the associated samples as an estimated value; therefore, the data have been

Job ID: 140-24350-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

reported.

Method 6010B SEP: The following sample was diluted to bring the concentration of target analyte, calcium, within the calibration range: N-SB-05 (60.0-67.1) (140-24350-2). Elevated reporting limits (RLs) are provided.

Method 6010B SEP: The following samples were diluted due to the presence of silicon which interferes with Arsenic, Lead and Selenium: N-SB-18 (77.5-80.0) (140-24350-3), N-SB-02 (65.0-71.5) (140-24350-5), N-SB-04 (12.0-18.0) (140-24350-7), N-SB-04 (38.7-45.4) (140-24350-8), N-SB-XPW 04 (10.0-15.0) (140-24350-9) and N-SB-XPW 01 (10.0-12.7) (140-24350-10). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-24350-1	N-SB-05 (18.0-20.0)	Solid	08/17/21 12:40	08/24/21 09:40
140-24350-2	N-SB-05 (60.0-67.1)	Solid	08/17/21 15:40	08/24/21 09:40
140-24350-3	N-SB-18 (77.5-80.0)	Solid	08/18/21 10:00	08/24/21 09:40
140-24350-4	N-SB-02 (12.5-20.0)	Solid	08/18/21 14:10	08/24/21 09:40
140-24350-5	N-SB-02 (65.0-71.5)	Solid	08/19/21 12:00	08/24/21 09:40
140-24350-6	N-SB-14 (44.2-52.0)	Solid	08/19/21 14:45	08/24/21 09:40
140-24350-7	N-SB-04 (12.0-18.0)	Solid	08/21/21 07:35	08/24/21 09:40
140-24350-8	N-SB-04 (38.7-45.4)	Solid	08/21/21 08:30	08/24/21 09:40
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Solid	08/21/21 09:20	08/24/21 09:40
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Solid	08/21/21 10:10	08/24/21 09:40

Client Sample ID: N-SB-05 (18.0-20.0)
Date Collected: 08/17/21 12:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-1
Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		44	7.1	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Arsenic	ND		2.2	0.58	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Beryllium	ND		1.1	0.34	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Calcium	**880**	**J B**	1100	8.4	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Chromium	ND		2.2	0.31	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Cobalt	ND		11	0.20	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Iron	ND		22	13	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Lead	ND		2.2	0.49	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Lithium	ND		11	0.66	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Manganese	**2.8**	**J**	3.3	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Molybdenum	ND		8.9	0.36	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4
Selenium	ND		2.2	0.75	mg/Kg	☼	09/30/21 08:00	10/22/21 11:32	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**16**	**J**	33	5.3	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Arsenic	ND		1.7	0.43	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Beryllium	ND		0.83	0.053	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Calcium	**16000**		830	7.3	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Chromium	ND		1.7	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Cobalt	**0.57**	**J**	8.3	0.21	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Iron	**36**		17	9.6	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Lead	**0.77**	**J**	1.7	0.37	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Lithium	ND		8.3	0.50	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Manganese	**84**		2.5	0.93	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Molybdenum	ND		6.6	0.27	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3
Selenium	ND		1.7	0.56	mg/Kg	☼	10/01/21 08:00	10/22/21 13:39	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**52**		11	2.3	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Arsenic	**0.26**	**J**	0.55	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Beryllium	ND		0.28	0.017	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Calcium	**9.2**	**J**	280	1.7	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Chromium	**0.31**	**J**	0.55	0.078	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Cobalt	**0.62**	**J**	2.8	0.050	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Iron	**240**		5.5	3.2	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Lead	ND		0.55	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Lithium	ND		2.8	0.17	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Manganese	**51**	**B**	0.83	0.030	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Molybdenum	ND		2.2	0.091	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 15:37	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**370**		11	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Arsenic	**1.2**		0.55	0.24	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Beryllium	**0.077**	**J**	0.28	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Calcium	**16000**		280	2.4	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Chromium	**1.6**		0.55	0.078	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1

Client Sample ID: N-SB-05 (18.0-20.0)

Date Collected: 08/17/21 12:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-1

Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.2	J	2.8	0.059	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Iron	3900		5.5	3.2	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Lead	2.7		0.55	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Lithium	0.99	J	2.8	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Manganese	93		0.83	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Molybdenum	0.45	J	2.2	0.091	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1
Selenium	ND		0.55	0.52	mg/Kg	☼	10/05/21 08:00	10/25/21 11:54	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	210	B	170	26	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Arsenic	ND		8.3	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Beryllium	ND		4.2	0.35	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Calcium	11000		4200	12	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Chromium	2.1	J	8.3	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Cobalt	ND		42	0.66	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Iron	ND		83	49	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Lead	ND		8.3	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Lithium	14	J B *+	42	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Manganese	5.2	J	12	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Molybdenum	ND		33	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5
Selenium	ND		8.3	2.9	mg/Kg	☼	10/07/21 08:00	10/25/21 13:52	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	2300		11	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Arsenic	2.2		0.55	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Beryllium	0.095	J	0.28	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Calcium	4500		280	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Chromium	3.9		0.55	0.078	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Cobalt	1.6	J	2.8	0.051	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Iron	4500		5.5	3.2	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Lead	2.0		0.55	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Lithium	3.9		2.8	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Manganese	61		0.83	0.28	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Molybdenum	0.24	J	2.2	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 15:51	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	25000		110	18	mg/Kg	☼	10/08/21 08:00	10/26/21 11:43	10
Arsenic	0.70		0.55	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Beryllium	0.37		0.28	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Calcium	3100		2800	29	mg/Kg	☼	10/08/21 08:00	10/26/21 11:43	10
Chromium	9.3		0.55	0.078	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Cobalt	0.15	J	2.8	0.029	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Iron	2800		5.5	4.5	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Lead	4.3		0.55	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Lithium	6.9		2.8	0.17	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Manganese	53		0.83	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1

Client Sample ID: N-SB-05 (18.0-20.0)

Date Collected: 08/17/21 12:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-1

Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.2	0.091	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/08/21 08:00	10/26/21 12:50	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**28000**		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	**4.4**		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	**0.55**		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	**52000**		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	**17**		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	**4.1**		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	**11000**		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	**9.8**		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	**26**		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	**350**		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	**0.69**	**J**	2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**26000**		110	18	mg/Kg	☼	09/29/21 08:00	10/27/21 11:28	10
Arsenic	**5.3**		0.55	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Beryllium	**0.55**		0.28	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Calcium	**51000**		2800	29	mg/Kg	☼	09/29/21 08:00	10/27/21 11:28	10
Chromium	**17**		0.55	0.078	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Cobalt	**3.2**		2.8	0.029	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Iron	**10000**		5.5	4.5	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Lead	**8.4**		0.55	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Lithium	**12**		2.8	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Manganese	**280**		0.83	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Molybdenum	**0.78**	**J**	2.2	0.091	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1
Selenium	ND		0.55	0.19	mg/Kg	☼	09/29/21 08:00	10/27/21 13:14	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-05 (60.0-67.1)

Date Collected: 08/17/21 15:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-2

Matrix: Solid
Percent Solids: 81.3

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		49	7.9	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Arsenic	ND		2.5	0.64	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Beryllium	ND		1.2	0.38	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Calcium	**560**	**J B**	1200	9.4	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Chromium	ND		2.5	0.34	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Cobalt	ND		12	0.22	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Iron	ND		25	14	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Lead	ND		2.5	0.54	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Lithium	ND		12	0.74	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Manganese	**2.7**	**J**	3.7	0.15	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Molybdenum	ND		9.8	0.40	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4
Selenium	ND		2.5	0.84	mg/Kg	☼	09/30/21 08:00	10/22/21 11:41	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**33**	**J**	37	5.9	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Arsenic	ND		1.8	0.48	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Beryllium	ND		0.92	0.059	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Calcium	**25000**		920	8.1	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Chromium	ND		1.8	0.26	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Cobalt	ND		9.2	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Iron	**380**		18	11	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Lead	**1.2**	**J**	1.8	0.41	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Lithium	ND		9.2	0.55	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Manganese	**85**		2.8	1.0	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Molybdenum	ND		7.4	0.30	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3
Selenium	ND		1.8	0.63	mg/Kg	☼	10/01/21 08:00	10/22/21 13:49	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**340**		12	2.6	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Arsenic	**0.31**	**J**	0.62	0.16	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Beryllium	**0.054**	**J**	0.31	0.018	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Calcium	**6.9**	**J**	310	1.8	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Chromium	**0.77**		0.62	0.086	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Cobalt	**0.67**	**J**	3.1	0.055	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Iron	**4100**		6.2	3.6	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Lead	**0.15**	**J**	0.62	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Lithium	ND		3.1	0.18	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Manganese	**42**	**B**	0.92	0.033	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Molybdenum	ND		2.5	0.10	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1
Selenium	ND		0.62	0.21	mg/Kg	☼	10/04/21 08:00	10/22/21 15:47	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**120**		12	2.0	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Arsenic	ND		0.62	0.27	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Beryllium	**0.026**	**J**	0.31	0.020	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Calcium	**59000**		620	5.4	mg/Kg	☼	10/05/21 08:00	10/25/21 17:56	2
Chromium	**0.80**		0.62	0.086	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1

Client Sample ID: N-SB-05 (60.0-67.1)
Date Collected: 08/17/21 15:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-2
Matrix: Solid
Percent Solids: 81.3

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.70	J	3.1	0.065	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Iron	3000		6.2	3.6	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Lead	4.5		0.62	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Lithium	0.95	J	3.1	0.18	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Manganese	350		0.92	0.16	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Molybdenum	ND		2.5	0.10	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1
Selenium	ND		0.62	0.58	mg/Kg	☼	10/05/21 08:00	10/25/21 12:03	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	64	J B	180	29	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Arsenic	ND		9.2	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Beryllium	ND		4.6	0.39	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Calcium	8700		4600	14	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Chromium	1.5	J	9.2	1.3	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Cobalt	ND		46	0.74	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Iron	ND		92	54	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Lead	ND		9.2	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Lithium	14	J B *+	46	2.7	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Manganese	5.4	J	14	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Molybdenum	ND		37	1.5	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5
Selenium	ND		9.2	3.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:02	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1800		12	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Arsenic	2.3		0.62	0.18	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Beryllium	0.076	J	0.31	0.015	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Calcium	7000		310	2.6	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Chromium	4.0		0.62	0.086	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Cobalt	2.0	J	3.1	0.057	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Iron	6300		6.2	3.6	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Lead	2.1		0.62	0.14	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Lithium	3.6		3.1	0.18	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Manganese	69		0.92	0.31	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Molybdenum	0.29	J	2.5	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1
Selenium	ND		0.62	0.21	mg/Kg	☼	10/07/21 08:00	10/25/21 16:01	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	27000		120	20	mg/Kg	☼	10/08/21 08:00	10/26/21 11:52	10
Arsenic	0.61	J	0.62	0.16	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Beryllium	0.52		0.31	0.020	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Calcium	4800		3100	32	mg/Kg	☼	10/08/21 08:00	10/26/21 11:52	10
Chromium	10		0.62	0.086	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Cobalt	0.34	J	3.1	0.032	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Iron	3400		6.2	5.0	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Lead	4.4		0.62	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Lithium	6.0		3.1	0.18	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Manganese	59		0.92	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-05 (60.0-67.1)
Date Collected: 08/17/21 15:40
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-2
Matrix: Solid
Percent Solids: 81.3

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.5	0.10	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1
Selenium	ND		0.62	0.21	mg/Kg	☼	10/08/21 08:00	10/26/21 13:00	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**29000**		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	**3.2**		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	**0.67**		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	**110000**		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	**17**		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	**3.7**		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	**17000**		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	**12**		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	**24**		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	**610**		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	**0.29**	**J**	2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**22000**		120	20	mg/Kg	☼	09/29/21 08:00	10/27/21 11:52	10
Arsenic	**2.5**		0.62	0.16	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Beryllium	**0.54**		0.31	0.020	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Calcium	**84000**		3100	32	mg/Kg	☼	09/29/21 08:00	10/27/21 11:52	10
Chromium	**13**		0.62	0.086	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Cobalt	**3.2**		3.1	0.032	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Iron	**14000**		6.2	5.0	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Lead	**9.9**		0.62	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Lithium	**9.6**		3.1	0.18	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Manganese	**380**		0.92	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Molybdenum	**0.31**	**J**	2.5	0.10	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1
Selenium	ND		0.62	0.21	mg/Kg	☼	09/29/21 08:00	10/27/21 13:25	1

Client Sample ID: N-SB-18 (77.5-80.0)

Date Collected: 08/18/21 10:00
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-3

Matrix: Solid
Percent Solids: 91.3

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		44	7.0	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Arsenic	ND		2.2	0.57	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Beryllium	ND		1.1	0.34	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Calcium	**500**	**J B**	1100	8.3	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Chromium	ND		2.2	0.31	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Cobalt	ND		11	0.20	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Iron	ND		22	13	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Lead	ND		2.2	0.48	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Lithium	ND		11	0.66	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Manganese	**4.0**		3.3	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Molybdenum	ND		8.8	0.36	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4
Selenium	ND		2.2	0.74	mg/Kg	☼	09/30/21 08:00	10/22/21 11:46	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**20**	**J**	33	5.3	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Arsenic	ND		1.6	0.43	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Beryllium	ND		0.82	0.053	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Calcium	**12000**		820	7.2	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Chromium	ND		1.6	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Cobalt	**0.91**	**J**	8.2	0.21	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Iron	**440**		16	9.5	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Lead	**1.7**		1.6	0.36	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Lithium	ND		8.2	0.49	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Manganese	**82**		2.5	0.92	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Molybdenum	ND		6.6	0.27	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3
Selenium	ND		1.6	0.56	mg/Kg	☼	10/01/21 08:00	10/22/21 13:54	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**82**		11	2.3	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Arsenic	**0.91**		0.55	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Beryllium	**0.035**	**J**	0.27	0.016	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Calcium	**6.5**	**J**	270	1.6	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Chromium	**0.62**		0.55	0.077	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Cobalt	**0.53**	**J**	2.7	0.049	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Iron	**2500**		5.5	3.2	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Lead	**0.12**	**J**	0.55	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Lithium	ND		2.7	0.16	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Manganese	**69**	**B**	0.82	0.030	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Molybdenum	**0.13**	**J**	2.2	0.090	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 15:52	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**77**		11	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Arsenic	ND		0.55	0.24	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Beryllium	**0.030**	**J**	0.27	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Calcium	**39000**		270	2.4	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Chromium	**0.87**		0.55	0.077	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1

Client Sample ID: N-SB-18 (77.5-80.0)

Date Collected: 08/18/21 10:00
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-3

Matrix: Solid
Percent Solids: 91.3

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.48	J	2.7	0.058	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Iron	3800		5.5	3.2	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Lead	2.4		0.55	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Lithium	0.83	J	2.7	0.16	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Manganese	360		0.82	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Molybdenum	0.11	J	2.2	0.090	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1
Selenium	ND		0.55	0.51	mg/Kg	☼	10/05/21 08:00	10/25/21 12:08	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	63	J B	160	26	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Arsenic	ND		8.2	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Beryllium	ND		4.1	0.35	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Calcium	7700		4100	12	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Chromium	1.4	J	8.2	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Cobalt	ND		41	0.66	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Iron	ND		82	48	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Lead	ND		8.2	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Lithium	12	J B *+	41	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Manganese	39		12	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Molybdenum	ND		33	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5
Selenium	ND		8.2	2.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:07	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1200		11	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Arsenic	2.2		0.55	0.16	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Beryllium	0.084	J	0.27	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Calcium	25000		270	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Chromium	2.9		0.55	0.077	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Cobalt	1.5	J	2.7	0.050	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Iron	8500		5.5	3.2	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Lead	2.0		0.55	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Lithium	4.9		2.7	0.16	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Manganese	300		0.82	0.27	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Molybdenum	0.28	J	2.2	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:06	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	21000		110	18	mg/Kg	☼	10/08/21 08:00	10/26/21 11:57	10
Arsenic	0.66	J	1.1	0.28	mg/Kg	☼	10/08/21 08:00	10/26/21 14:50	2
Beryllium	0.29		0.27	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Calcium	4200		2700	28	mg/Kg	☼	10/08/21 08:00	10/26/21 11:57	10
Chromium	9.7		0.55	0.077	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Cobalt	0.71	J	2.7	0.028	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Iron	3300		5.5	4.5	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Lead	2.8		1.1	0.24	mg/Kg	☼	10/08/21 08:00	10/26/21 14:50	2
Lithium	5.9		2.7	0.16	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Manganese	52		0.82	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-18 (77.5-80.0)
Date Collected: 08/18/21 10:00
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-3
Matrix: Solid
Percent Solids: 91.3

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.2	0.090	mg/Kg	☼	10/08/21 08:00	10/26/21 13:20	1
Selenium	ND		1.1	0.37	mg/Kg	☼	10/08/21 08:00	10/26/21 14:50	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**22000**		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	**3.8**		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	**0.44**		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	**89000**		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	**16**		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	**4.1**		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	**19000**		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	**8.9**		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	**24**		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	**910**		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	**0.52**	**J**	2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**19000**		110	18	mg/Kg	☼	09/29/21 08:00	10/27/21 11:57	10
Arsenic	**5.8**		0.55	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Beryllium	**0.38**		0.27	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Calcium	**83000**		2700	28	mg/Kg	☼	09/29/21 08:00	10/27/21 11:57	10
Chromium	**17**		0.55	0.077	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Cobalt	**5.0**		2.7	0.028	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Iron	**13000**		5.5	4.5	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Lead	**9.0**		0.55	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Lithium	**10**		2.7	0.16	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Manganese	**600**		0.82	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Molybdenum	**1.0**	**J**	2.2	0.090	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1
Selenium	ND	L	0.55	0.19	mg/Kg	☼	09/29/21 08:00	10/27/21 13:45	1

Client Sample ID: N-SB-02 (12.5-20.0)
Lab Sample ID: 140-24350-4

Date Collected: 08/18/21 14:10
Matrix: Solid

Date Received: 08/24/21 09:40
Percent Solids: 93.1

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		43	6.9	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Arsenic	ND		2.1	0.56	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Beryllium	ND		1.1	0.33	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Calcium	**1200**	**B**	1100	8.2	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Chromium	ND		2.1	0.30	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Cobalt	ND		11	0.19	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Iron	ND		21	12	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Lead	ND		2.1	0.47	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Lithium	ND		11	0.64	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Manganese	**3.1**	**J**	3.2	0.13	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Molybdenum	ND		8.6	0.35	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4
Selenium	ND		2.1	0.73	mg/Kg	☼	09/30/21 08:00	10/22/21 11:51	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**12**	**J**	32	5.2	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Arsenic	ND		1.6	0.42	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Beryllium	ND		0.81	0.052	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Calcium	**18000**		810	7.1	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Chromium	ND		1.6	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Cobalt	**0.31**	**J**	8.1	0.20	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Iron	**19**		16	9.3	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Lead	**0.61**	**J**	1.6	0.35	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Lithium	ND		8.1	0.48	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Manganese	**150**		2.4	0.90	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Molybdenum	ND		6.4	0.26	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3
Selenium	ND		1.6	0.55	mg/Kg	☼	10/01/21 08:00	10/22/21 13:59	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**58**		11	2.3	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Arsenic	**0.24**	**J**	0.54	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Beryllium	ND		0.27	0.016	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Calcium	**9.7**	**J**	270	1.6	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Chromium	**0.25**	**J**	0.54	0.075	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Cobalt	**2.3**	**J**	2.7	0.048	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Iron	**310**		5.4	3.1	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Lead	ND		0.54	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Lithium	ND		2.7	0.16	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Manganese	**210**	**B**	0.81	0.029	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Molybdenum	**0.13**	**J**	2.1	0.088	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1
Selenium	ND		0.54	0.18	mg/Kg	☼	10/04/21 08:00	10/22/21 15:57	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**510**		11	1.7	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Arsenic	ND		0.54	0.24	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Beryllium	**0.17**	**J**	0.27	0.017	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Calcium	**19000**		270	2.4	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Chromium	**1.6**		0.54	0.075	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-02 (12.5-20.0)
Date Collected: 08/18/21 14:10
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-4
Matrix: Solid
Percent Solids: 93.1

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.1	J	2.7	0.057	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Iron	8000		5.4	3.1	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Lead	3.7		0.54	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Lithium	1.4	J	2.7	0.16	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Manganese	170		0.81	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Molybdenum	0.75	J	2.1	0.088	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1
Selenium	ND		0.54	0.50	mg/Kg	☼	10/05/21 08:00	10/25/21 12:13	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	140	J B	160	25	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Arsenic	3.4	J	8.1	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Beryllium	ND		4.0	0.34	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Calcium	12000		4000	12	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Chromium	2.6	J	8.1	1.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Cobalt	ND		40	0.64	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Iron	ND		81	47	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Lead	ND		8.1	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Lithium	10	J B *+	40	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Manganese	17		12	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Molybdenum	ND		32	1.3	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5
Selenium	ND		8.1	2.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:12	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	4000		11	1.7	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Arsenic	31		0.54	0.16	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Beryllium	0.23	J	0.27	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Calcium	5000		270	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Chromium	6.9		0.54	0.075	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Cobalt	3.3		2.7	0.049	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Iron	19000		5.4	3.1	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Lead	4.2		0.54	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Lithium	6.6		2.7	0.16	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Manganese	120		0.81	0.27	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Molybdenum	2.8		2.1	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1
Selenium	ND		0.54	0.18	mg/Kg	☼	10/07/21 08:00	10/25/21 16:11	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	29000		110	17	mg/Kg	☼	10/08/21 08:00	10/26/21 12:02	10
Arsenic	4.1		0.54	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Beryllium	0.57		0.27	0.017	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Calcium	2300		270	2.8	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Chromium	17		0.54	0.075	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Cobalt	0.44	J	2.7	0.028	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Iron	5200		5.4	4.4	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Lead	4.2		0.54	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Lithium	13		2.7	0.16	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Manganese	52		0.81	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-02 (12.5-20.0)
Date Collected: 08/18/21 14:10
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-4
Matrix: Solid
Percent Solids: 93.1

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.31	J	2.1	0.088	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1
Selenium	ND		0.54	0.18	mg/Kg	☼	10/08/21 08:00	10/26/21 13:25	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	34000		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	38		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	0.97		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	57000		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	28		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	7.4		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	33000		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	13		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	31		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	720		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	4.0		2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	31000		110	17	mg/Kg	☼	09/29/21 08:00	10/27/21 12:02	10
Arsenic	51		1.1	0.28	mg/Kg	☼	09/29/21 08:00	10/27/21 16:12	2
Beryllium	0.76		0.27	0.017	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Calcium	54000		2700	28	mg/Kg	☼	09/29/21 08:00	10/27/21 12:02	10
Chromium	22		0.54	0.075	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Cobalt	6.2		2.7	0.028	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Iron	34000		11	8.8	mg/Kg	☼	09/29/21 08:00	10/27/21 16:12	2
Lead	11		0.54	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Lithium	19		2.7	0.16	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Manganese	590		0.81	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Molybdenum	5.5		2.1	0.088	mg/Kg	☼	09/29/21 08:00	10/27/21 13:50	1
Selenium	ND		1.1	0.37	mg/Kg	☼	09/29/21 08:00	10/27/21 16:12	2

Client Sample ID: N-SB-02 (65.0-71.5)
Lab Sample ID: 140-24350-5

Date Collected: 08/19/21 12:00
Matrix: Solid

Date Received: 08/24/21 09:40
Percent Solids: 89.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		45	7.2	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Arsenic	ND		2.2	0.58	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Beryllium	ND		1.1	0.35	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Calcium	**300**	**J B**	1100	8.5	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Chromium	ND		2.2	0.31	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Cobalt	ND		11	0.20	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Iron	ND		22	13	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Lead	ND		2.2	0.49	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Lithium	ND		11	0.67	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Manganese	**3.5**		3.4	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Molybdenum	ND		9.0	0.37	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4
Selenium	ND		2.2	0.76	mg/Kg	☼	09/30/21 08:00	10/22/21 11:56	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**11**	**J**	34	5.4	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Arsenic	ND		1.7	0.44	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Beryllium	ND		0.84	0.054	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Calcium	**11000**		840	7.4	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Chromium	ND		1.7	0.24	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Cobalt	**0.29**	**J**	8.4	0.21	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Iron	**270**		17	9.8	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Lead	**1.3**	**J**	1.7	0.37	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Lithium	ND		8.4	0.50	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Manganese	**68**		2.5	0.94	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Molybdenum	ND		6.7	0.28	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3
Selenium	ND		1.7	0.57	mg/Kg	☼	10/01/21 08:00	10/22/21 14:04	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**45**		11	2.4	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Arsenic	**0.62**		0.56	0.15	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Beryllium	**0.034**	**J**	0.28	0.017	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Calcium	**6.2**	**J**	280	1.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Chromium	**0.44**	**J**	0.56	0.078	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Cobalt	**0.36**	**J**	2.8	0.050	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Iron	**3100**		5.6	3.3	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Lead	**0.16**	**J**	0.56	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Lithium	ND		2.8	0.17	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Manganese	**54**	**B**	0.84	0.030	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Molybdenum	ND		2.2	0.092	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1
Selenium	ND		0.56	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 16:02	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**79**		11	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Arsenic	ND		0.56	0.25	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Beryllium	ND		0.28	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Calcium	**40000**		280	2.5	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Chromium	**0.87**		0.56	0.078	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1

Client Sample ID: N-SB-02 (65.0-71.5)
Date Collected: 08/19/21 12:00
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-5
Matrix: Solid
Percent Solids: 89.2

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.30	J	2.8	0.059	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Iron	2200		5.6	3.3	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Lead	1.7		0.56	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Lithium	0.96	J	2.8	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Manganese	150		0.84	0.15	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Molybdenum	ND		2.2	0.092	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1
Selenium	ND		0.56	0.53	mg/Kg	☼	10/05/21 08:00	10/25/21 12:33	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	46	J B	170	26	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Arsenic	ND		8.4	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Beryllium	ND		4.2	0.35	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Calcium	7200		4200	12	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Chromium	ND		8.4	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Cobalt	ND		42	0.67	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Iron	ND		84	49	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Lead	ND		8.4	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Lithium	7.6	J B *+	42	2.5	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Manganese	14		13	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Molybdenum	ND		34	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5
Selenium	ND		8.4	2.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:32	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1200		11	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Arsenic	2.0		0.56	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Beryllium	0.040	J	0.28	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Calcium	25000		280	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Chromium	4.3		0.56	0.078	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Cobalt	1.3	J	2.8	0.052	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Iron	3400		5.6	3.3	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Lead	1.2		0.56	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Lithium	3.6		2.8	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Manganese	49		0.84	0.28	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Molybdenum	ND		2.2	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1
Selenium	ND		0.56	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:31	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	18000		110	18	mg/Kg	☼	10/08/21 08:00	10/26/21 12:21	10
Arsenic	0.72	J	1.1	0.29	mg/Kg	☼	10/08/21 08:00	10/26/21 14:55	2
Beryllium	0.25	J	0.28	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Calcium	4100		2800	29	mg/Kg	☼	10/08/21 08:00	10/26/21 12:21	10
Chromium	7.4		0.56	0.078	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Cobalt	0.078	J	2.8	0.029	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Iron	2500		5.6	4.6	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Lead	3.7		1.1	0.25	mg/Kg	☼	10/08/21 08:00	10/26/21 14:55	2
Lithium	11		2.8	0.17	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Manganese	45		0.84	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-02 (65.0-71.5)
Date Collected: 08/19/21 12:00
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-5
Matrix: Solid
Percent Solids: 89.2

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.2	0.092	mg/Kg	☼	10/08/21 08:00	10/26/21 13:30	1
Selenium	ND		1.1	0.38	mg/Kg	☼	10/08/21 08:00	10/26/21 14:55	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**20000**		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	**3.4**		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	**0.32**		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	**88000**		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	**13**		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	**2.3**	**J**	2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	**12000**		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	**8.1**		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	**23**		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	**390**		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	ND		2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**13000**		110	18	mg/Kg	☼	09/29/21 08:00	10/27/21 12:07	10
Arsenic	**3.0**		1.1	0.29	mg/Kg	☼	09/29/21 08:00	10/27/21 16:18	2
Beryllium	**0.26**	**J**	0.28	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Calcium	**95000**		2800	29	mg/Kg	☼	09/29/21 08:00	10/27/21 12:07	10
Chromium	**10**		0.56	0.078	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Cobalt	**2.6**	**J**	2.8	0.029	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Iron	**14000**		5.6	4.6	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Lead	**6.8**		1.1	0.25	mg/Kg	☼	09/29/21 08:00	10/27/21 16:18	2
Lithium	**7.6**		2.8	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Manganese	**440**		0.84	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Molybdenum	**0.26**	**J**	2.2	0.092	mg/Kg	☼	09/29/21 08:00	10/27/21 13:55	1
Selenium	ND		1.1	0.38	mg/Kg	☼	09/29/21 08:00	10/27/21 16:18	2

Client Sample ID: N-SB-14 (44.2-52.0)
Date Collected: 08/19/21 14:45
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-6
Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		44	7.1	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Arsenic	ND		2.2	0.58	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Beryllium	ND		1.1	0.34	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Calcium	**1100**	**B**	1100	8.4	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Chromium	ND		2.2	0.31	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Cobalt	ND		11	0.20	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Iron	ND		22	13	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Lead	ND		2.2	0.49	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Lithium	ND		11	0.66	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Manganese	**10**		3.3	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Molybdenum	ND		8.9	0.36	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4
Selenium	ND		2.2	0.75	mg/Kg	☼	09/30/21 08:00	10/22/21 12:26	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**31**	**J**	33	5.3	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Arsenic	ND		1.7	0.43	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Beryllium	ND		0.83	0.053	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Calcium	**25000**		830	7.3	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Chromium	**0.41**	**J**	1.7	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Cobalt	ND		8.3	0.21	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Iron	**160**		17	9.6	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Lead	**1.3**	**J**	1.7	0.37	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Lithium	ND		8.3	0.50	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Manganese	**130**		2.5	0.93	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Molybdenum	ND		6.6	0.27	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3
Selenium	ND		1.7	0.56	mg/Kg	☼	10/01/21 08:00	10/22/21 14:23	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**200**		11	2.3	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Arsenic	**0.32**	**J**	0.55	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Beryllium	**0.028**	**J**	0.28	0.017	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Calcium	**8.5**	**J**	280	1.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Chromium	**1.7**		0.55	0.078	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Cobalt	**0.39**	**J**	2.8	0.050	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Iron	**1700**		5.5	3.2	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Lead	ND		0.55	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Lithium	ND		2.8	0.17	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Manganese	**61**	**B**	0.83	0.030	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Molybdenum	**0.29**	**J**	2.2	0.091	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 16:21	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**300**		11	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Arsenic	ND		0.55	0.24	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Beryllium	**0.064**	**J**	0.28	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Calcium	**46000**		280	2.4	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Chromium	**1.6**		0.55	0.078	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1

Client Sample ID: N-SB-14 (44.2-52.0)
Date Collected: 08/19/21 14:45
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-6
Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.3	J	2.8	0.059	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Iron	2200		5.5	3.2	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Lead	2.8		0.55	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Lithium	1.6	J	2.8	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Manganese	300		0.83	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Molybdenum	0.28	J	2.2	0.091	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1
Selenium	ND		0.55	0.52	mg/Kg	☼	10/05/21 08:00	10/25/21 12:38	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	130	J B	170	26	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Arsenic	ND		8.3	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Beryllium	ND		4.2	0.35	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Calcium	14000		4200	12	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Chromium	2.0	J	8.3	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Cobalt	ND		42	0.66	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Iron	ND		83	49	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Lead	ND		8.3	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Lithium	8.2	J B *+	42	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Manganese	4.2	J	12	2.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Molybdenum	ND		33	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5
Selenium	ND		8.3	2.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:37	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	3000		11	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Arsenic	2.4		0.55	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Beryllium	0.13	J	0.28	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Calcium	5900		280	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Chromium	5.5		0.55	0.078	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Cobalt	2.8		2.8	0.051	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Iron	8100		5.5	3.2	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Lead	2.7		0.55	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Lithium	5.4		2.8	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Manganese	100		0.83	0.28	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Molybdenum	0.38	J	2.2	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:36	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	30000		110	18	mg/Kg	☼	10/08/21 08:00	10/26/21 12:26	10
Arsenic	0.88		0.55	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Beryllium	0.49		0.28	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Calcium	3600		2800	29	mg/Kg	☼	10/08/21 08:00	10/26/21 12:26	10
Chromium	14		0.55	0.078	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Cobalt	0.22	J	2.8	0.029	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Iron	4000		5.5	4.5	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Lead	3.8		0.55	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Lithium	8.8		2.8	0.17	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Manganese	62		0.83	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-14 (44.2-52.0)
Date Collected: 08/19/21 14:45
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-6
Matrix: Solid
Percent Solids: 90.3

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.2	0.091	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1
Selenium	ND		0.55	0.19	mg/Kg	☼	10/08/21 08:00	10/26/21 13:35	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**33000**		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	**3.6**		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	**0.71**		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	**96000**		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	**25**		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	**4.7**		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	**16000**		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	**11**		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	**24**		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	**670**		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	**0.94**	**J**	2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**30000**		110	18	mg/Kg	☼	09/29/21 08:00	10/27/21 12:12	10
Arsenic	**30**		0.55	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Beryllium	**0.61**		0.28	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Calcium	**81000**		2800	29	mg/Kg	☼	09/29/21 08:00	10/27/21 12:12	10
Chromium	**21**		0.55	0.078	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Cobalt	**7.9**		2.8	0.029	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Iron	**19000**		5.5	4.5	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Lead	**9.2**		0.55	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Lithium	**15**		2.8	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Manganese	**420**		0.83	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Molybdenum	**8.3**		2.2	0.091	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1
Selenium	ND	L	0.55	0.19	mg/Kg	☼	09/29/21 08:00	10/27/21 14:01	1

Client Sample ID: N-SB-04 (12.0-18.0)
Date Collected: 08/21/21 07:35
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-7
Matrix: Solid
Percent Solids: 89.7

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		45	7.1	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Arsenic	ND		2.2	0.58	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Beryllium	ND		1.1	0.34	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Calcium	**1400**	**B**	1100	8.5	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Chromium	ND		2.2	0.31	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Cobalt	ND		11	0.20	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Iron	ND		22	13	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Lead	ND		2.2	0.49	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Lithium	ND		11	0.67	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Manganese	**0.62**	**J**	3.3	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Molybdenum	ND		8.9	0.37	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4
Selenium	ND		2.2	0.76	mg/Kg	☼	09/30/21 08:00	10/22/21 12:31	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**10**	**J**	33	5.4	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Arsenic	ND		1.7	0.43	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Beryllium	ND		0.84	0.054	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Calcium	**31000**		840	7.4	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Chromium	**0.32**	**J**	1.7	0.23	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Cobalt	ND		8.4	0.21	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Iron	ND		17	9.7	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Lead	**0.82**	**J**	1.7	0.37	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Lithium	ND		8.4	0.50	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Manganese	**170**		2.5	0.94	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Molybdenum	ND		6.7	0.27	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3
Selenium	ND		1.7	0.57	mg/Kg	☼	10/01/21 08:00	10/22/21 14:28	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**120**		11	2.3	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Arsenic	**0.42**	**J**	0.56	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Beryllium	**0.039**	**J**	0.28	0.017	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Calcium	**7.8**	**J**	280	1.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Chromium	**0.50**	**J**	0.56	0.078	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Cobalt	**2.6**	**J**	2.8	0.050	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Iron	**330**		5.6	3.2	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Lead	**0.13**	**J**	0.56	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Lithium	ND		2.8	0.17	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Manganese	**450**	**B**	0.84	0.030	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Molybdenum	**0.31**	**J**	2.2	0.091	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1
Selenium	ND		0.56	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 16:26	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**600**		11	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Arsenic	ND		0.56	0.25	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Beryllium	**0.16**	**J**	0.28	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Calcium	**28000**		280	2.5	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Chromium	**2.4**		0.56	0.078	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1

Client Sample ID: N-SB-04 (12.0-18.0)
Date Collected: 08/21/21 07:35
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-7
Matrix: Solid
Percent Solids: 89.7

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.9	J	2.8	0.059	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Iron	6700		5.6	3.2	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Lead	5.1		0.56	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Lithium	1.7	J	2.8	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Manganese	220		0.84	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Molybdenum	0.60	J	2.2	0.091	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1
Selenium	0.52	J	0.56	0.52	mg/Kg	☼	10/05/21 08:00	10/25/21 12:43	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	200	B	170	26	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Arsenic	ND		8.4	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Beryllium	ND		4.2	0.35	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Calcium	13000		4200	12	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Chromium	2.5	J	8.4	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Cobalt	ND		42	0.67	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Iron	ND		84	49	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Lead	ND		8.4	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Lithium	8.4	J B *+	42	2.5	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Manganese	11	J	13	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Molybdenum	ND		33	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5
Selenium	ND		8.4	2.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:42	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	5400		11	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Arsenic	4.5		0.56	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Beryllium	0.24	J	0.28	0.013	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Calcium	5300		280	2.3	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Chromium	8.7		0.56	0.078	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Cobalt	4.0		2.8	0.051	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Iron	13000		5.6	3.2	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Lead	3.8		0.56	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Lithium	8.5		2.8	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Manganese	130		0.84	0.28	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Molybdenum	0.57	J	2.2	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1
Selenium	ND		0.56	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:41	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	34000		110	18	mg/Kg	☼	10/08/21 08:00	10/26/21 12:31	10
Arsenic	1.4		1.1	0.29	mg/Kg	☼	10/08/21 08:00	10/26/21 15:00	2
Beryllium	0.58		0.28	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Calcium	1700		280	2.9	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Chromium	21		0.56	0.078	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Cobalt	0.36	J	5.6	0.058	mg/Kg	☼	10/08/21 08:00	10/26/21 15:00	2
Iron	4800		5.6	4.6	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Lead	3.1		1.1	0.25	mg/Kg	☼	10/08/21 08:00	10/26/21 15:00	2
Lithium	16		2.8	0.17	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Manganese	46		0.84	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-04 (12.0-18.0)
Date Collected: 08/21/21 07:35
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-7
Matrix: Solid
Percent Solids: 89.7

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.13	J	2.2	0.091	mg/Kg	☼	10/08/21 08:00	10/26/21 13:40	1
Selenium	ND		1.1	0.38	mg/Kg	☼	10/08/21 08:00	10/26/21 15:00	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	40000		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	6.4		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	1.0		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	80000		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	35		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	8.8		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	25000		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	13		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	35		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	1000		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	1.6	J	2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	0.52		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	48000		110	18	mg/Kg	☼	09/29/21 08:00	10/27/21 12:17	10
Arsenic	8.3		0.56	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Beryllium	0.98		0.28	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Calcium	67000		2800	29	mg/Kg	☼	09/29/21 08:00	10/27/21 12:17	10
Chromium	36		0.56	0.078	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Cobalt	10		5.6	0.058	mg/Kg	☼	09/29/21 08:00	10/27/21 16:23	2
Iron	23000		5.6	4.6	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Lead	13		1.1	0.25	mg/Kg	☼	09/29/21 08:00	10/27/21 16:23	2
Lithium	28		2.8	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Manganese	770		0.84	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Molybdenum	1.7	J	2.2	0.091	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1
Selenium	ND	L	0.56	0.19	mg/Kg	☼	09/29/21 08:00	10/27/21 14:06	1

Client Sample ID: N-SB-04 (38.7-45.4)
Date Collected: 08/21/21 08:30
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-8
Matrix: Solid
Percent Solids: 86.5

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		46	7.4	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Arsenic	ND		2.3	0.60	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Beryllium	ND		1.2	0.36	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Calcium	**800**	**J B**	1200	8.8	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Chromium	ND		2.3	0.32	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Cobalt	ND		12	0.21	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Iron	ND		23	13	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Lead	ND		2.3	0.51	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Lithium	ND		12	0.69	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Manganese	**9.1**		3.5	0.14	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Molybdenum	ND		9.2	0.38	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4
Selenium	ND		2.3	0.79	mg/Kg	☼	09/30/21 08:00	10/22/21 12:35	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**13**	**J**	35	5.5	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Arsenic	ND		1.7	0.45	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Beryllium	ND		0.87	0.055	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Calcium	**19000**		870	7.6	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Chromium	ND		1.7	0.24	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Cobalt	ND		8.7	0.22	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Iron	**40**		17	10	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Lead	**0.97**	**J**	1.7	0.38	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Lithium	ND		8.7	0.52	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Manganese	**120**		2.6	0.97	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Molybdenum	ND		6.9	0.28	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3
Selenium	ND		1.7	0.59	mg/Kg	☼	10/01/21 08:00	10/22/21 14:33	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**52**		12	2.4	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Arsenic	ND		0.58	0.15	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Beryllium	**0.026**	**J**	0.29	0.017	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Calcium	**8.5**	**J**	290	1.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Chromium	**0.22**	**J**	0.58	0.081	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Cobalt	**0.069**	**J**	2.9	0.052	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Iron	**180**		5.8	3.4	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Lead	ND		0.58	0.13	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Lithium	ND		2.9	0.17	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Manganese	**23**	**B**	0.87	0.031	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Molybdenum	ND		2.3	0.095	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1
Selenium	ND		0.58	0.20	mg/Kg	☼	10/04/21 08:00	10/22/21 16:31	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**470**		12	1.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Arsenic	ND		0.58	0.25	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Beryllium	**0.10**	**J**	0.29	0.018	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Calcium	**15000**		290	2.5	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Chromium	**1.8**		0.58	0.081	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1

Client Sample ID: N-SB-04 (38.7-45.4)
Date Collected: 08/21/21 08:30
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-8
Matrix: Solid
Percent Solids: 86.5

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.3	J	2.9	0.061	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Iron	5600		5.8	3.4	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Lead	3.1		0.58	0.13	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Lithium	1.1	J	2.9	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Manganese	100		0.87	0.15	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Molybdenum	1.6	J	2.3	0.095	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1
Selenium	ND		0.58	0.54	mg/Kg	☼	10/05/21 08:00	10/25/21 12:48	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	160	J B	170	27	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Arsenic	ND		8.7	2.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Beryllium	ND		4.3	0.36	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Calcium	8800		4300	13	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Chromium	1.9	J	8.7	1.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Cobalt	ND		43	0.69	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Iron	ND		87	51	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Lead	ND		8.7	1.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Lithium	8.0	J B *+	43	2.5	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Manganese	3.4	J	13	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Molybdenum	ND		35	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5
Selenium	ND		8.7	3.0	mg/Kg	☼	10/07/21 08:00	10/25/21 14:47	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	2700		12	1.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Arsenic	4.0		0.58	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Beryllium	0.12	J	0.29	0.014	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Calcium	5300		290	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Chromium	5.2		0.58	0.081	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Cobalt	2.6	J	2.9	0.053	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Iron	12000		5.8	3.4	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Lead	3.1		0.58	0.13	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Lithium	4.5		2.9	0.17	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Manganese	94		0.87	0.29	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Molybdenum	3.5		2.3	0.11	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1
Selenium	ND		0.58	0.20	mg/Kg	☼	10/07/21 08:00	10/25/21 16:46	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	31000		120	18	mg/Kg	☼	10/08/21 08:00	10/26/21 12:36	10
Arsenic	1.2		1.2	0.30	mg/Kg	☼	10/08/21 08:00	10/26/21 15:05	2
Beryllium	0.54		0.29	0.018	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Calcium	5700		2900	30	mg/Kg	☼	10/08/21 08:00	10/26/21 12:36	10
Chromium	17		0.58	0.081	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Cobalt	0.96	J	2.9	0.030	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Iron	5800		5.8	4.7	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Lead	4.9		1.2	0.25	mg/Kg	☼	10/08/21 08:00	10/26/21 15:05	2
Lithium	7.5		2.9	0.17	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Manganese	91		0.87	0.13	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-04 (38.7-45.4)
Date Collected: 08/21/21 08:30
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-8
Matrix: Solid
Percent Solids: 86.5

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.28	J	2.3	0.095	mg/Kg	☼	10/08/21 08:00	10/26/21 13:45	1
Selenium	ND		1.2	0.39	mg/Kg	☼	10/08/21 08:00	10/26/21 15:05	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	35000		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	5.2		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	0.79		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	54000		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	27		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	4.9		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	24000		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	12		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	21		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	440		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	5.4		2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	ND		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	27000		120	18	mg/Kg	☼	09/29/21 08:00	10/27/21 12:21	10
Arsenic	4.1		0.58	0.15	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Beryllium	0.55		0.29	0.018	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Calcium	61000		2900	30	mg/Kg	☼	09/29/21 08:00	10/27/21 12:21	10
Chromium	15		0.58	0.081	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Cobalt	3.3		2.9	0.030	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Iron	15000		5.8	4.7	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Lead	8.5		0.58	0.13	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Lithium	10		2.9	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Manganese	330		0.87	0.13	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Molybdenum	2.6		2.3	0.095	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1
Selenium	ND		0.58	0.20	mg/Kg	☼	09/29/21 08:00	10/27/21 14:12	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-XPW 04 (10.0-15.0)

Date Collected: 08/21/21 09:20
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-9

Matrix: Solid
Percent Solids: 56.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		71	11	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Arsenic	ND		3.6	0.93	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Beryllium	ND		1.8	0.55	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Calcium	**3700**	**B**	1800	14	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Chromium	**0.52**	**J**	3.6	0.50	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Cobalt	ND		18	0.32	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Iron	ND		36	21	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Lead	ND		3.6	0.78	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Lithium	ND		18	1.1	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Manganese	ND		5.3	0.22	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Molybdenum	**1.8**	**J**	14	0.58	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4
Selenium	ND		3.6	1.2	mg/Kg	☼	09/30/21 08:00	10/22/21 12:40	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**9000**		53	8.5	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Arsenic	**3.5**		2.7	0.69	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Beryllium	**0.30**	**J**	1.3	0.085	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Calcium	**32000**		1300	12	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Chromium	**6.9**		2.7	0.37	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Cobalt	**0.49**	**J**	13	0.34	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Iron	**2000**		27	15	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Lead	**1.2**	**J**	2.7	0.59	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Lithium	**1.4**	**J**	13	0.80	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Manganese	**12**		4.0	1.5	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Molybdenum	**0.75**	**J**	11	0.44	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3
Selenium	**0.99**	**J**	2.7	0.91	mg/Kg	☼	10/01/21 08:00	10/22/21 14:38	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**6200**		18	3.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Arsenic	**0.87**	**J**	0.89	0.23	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Beryllium	**0.027**	**J**	0.44	0.027	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Calcium	**42**	**J**	440	2.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Chromium	**8.4**		0.89	0.12	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Cobalt	**0.91**	**J**	4.4	0.080	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Iron	**2400**		8.9	5.2	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Lead	ND		0.89	0.20	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Lithium	**0.61**	**J**	4.4	0.27	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Manganese	**2.7**	**B**	1.3	0.048	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Molybdenum	**1.2**	**J**	3.6	0.15	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1
Selenium	**0.98**		0.89	0.30	mg/Kg	☼	10/04/21 08:00	10/22/21 16:36	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**21000**		18	2.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Arsenic	**1.5**		0.89	0.39	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Beryllium	**1.7**		0.44	0.028	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Calcium	**42000**		440	3.9	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Chromium	**26**		0.89	0.12	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1

Client Sample ID: N-SB-XPW 04 (10.0-15.0)
Date Collected: 08/21/21 09:20
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-9
Matrix: Solid
Percent Solids: 56.2

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	8.0		4.4	0.094	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Iron	12000		8.9	5.2	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Lead	13		0.89	0.20	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Lithium	9.9		4.4	0.27	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Manganese	91		1.3	0.23	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Molybdenum	3.7		3.6	0.15	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1
Selenium	ND		0.89	0.84	mg/Kg	☼	10/05/21 08:00	10/25/21 12:53	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	330	B	270	42	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Arsenic	ND		13	3.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Beryllium	ND		6.7	0.56	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Calcium	26000		6700	20	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Chromium	11	J	13	1.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Cobalt	ND		67	1.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Iron	ND		130	78	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Lead	ND		13	2.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Lithium	14	J B *+	67	3.9	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Manganese	9.2	J	20	3.3	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Molybdenum	ND		53	2.2	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5
Selenium	6.4	J	13	4.6	mg/Kg	☼	10/07/21 08:00	10/25/21 14:52	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	27000		18	2.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Arsenic	10		0.89	0.27	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Beryllium	0.52		0.44	0.021	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Calcium	17000		440	3.7	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Chromium	8.4		0.89	0.12	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Cobalt	8.0	J	22	0.41	mg/Kg	☼	10/07/21 08:00	10/25/21 18:01	5
Iron	12000		8.9	5.2	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Lead	24		4.4	0.98	mg/Kg	☼	10/07/21 08:00	10/25/21 18:01	5
Lithium	16		4.4	0.27	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Manganese	60		1.3	0.44	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Molybdenum	0.65	J	3.6	0.18	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1
Selenium	ND		0.89	0.30	mg/Kg	☼	10/07/21 08:00	10/25/21 16:51	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	29000		180	28	mg/Kg	☼	10/08/21 08:00	10/26/21 12:40	10
Arsenic	1.8		1.8	0.46	mg/Kg	☼	10/08/21 08:00	10/26/21 15:09	2
Beryllium	0.25	J	0.44	0.028	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1
Calcium	10000		4400	46	mg/Kg	☼	10/08/21 08:00	10/26/21 12:40	10
Chromium	11		0.89	0.12	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1
Cobalt	3.3	J	8.9	0.093	mg/Kg	☼	10/08/21 08:00	10/26/21 15:09	2
Iron	6000		8.9	7.3	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1
Lead	12		1.8	0.39	mg/Kg	☼	10/08/21 08:00	10/26/21 15:09	2
Lithium	19		4.4	0.27	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1
Manganese	39		1.3	0.20	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-XPW 04 (10.0-15.0)

Date Collected: 08/21/21 09:20
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-9

Matrix: Solid
Percent Solids: 56.2

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.16	J	3.6	0.15	mg/Kg	☼	10/08/21 08:00	10/26/21 13:50	1
Selenium	ND		1.8	0.61	mg/Kg	☼	10/08/21 08:00	10/26/21 15:09	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	93000		10	1.6	mg/Kg			11/02/21 15:59	1
Arsenic	18		0.50	0.13	mg/Kg			11/02/21 15:59	1
Beryllium	2.8		0.25	0.0075	mg/Kg			11/02/21 15:59	1
Calcium	130000		250	0.74	mg/Kg			11/02/21 15:59	1
Chromium	72		0.50	0.070	mg/Kg			11/02/21 15:59	1
Cobalt	21		2.5	0.023	mg/Kg			11/02/21 15:59	1
Iron	35000		5.0	4.1	mg/Kg			11/02/21 15:59	1
Lead	51		0.50	0.11	mg/Kg			11/02/21 15:59	1
Lithium	61		2.5	0.15	mg/Kg			11/02/21 15:59	1
Manganese	210		0.75	0.052	mg/Kg			11/02/21 15:59	1
Molybdenum	8.2		2.0	0.082	mg/Kg			11/02/21 15:59	1
Selenium	8.3		0.50	0.17	mg/Kg			11/02/21 15:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	73000		180	28	mg/Kg	☼	09/29/21 08:00	10/27/21 12:26	10
Arsenic	16		0.89	0.23	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Beryllium	1.9		0.44	0.028	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Calcium	130000		4400	46	mg/Kg	☼	09/29/21 08:00	10/27/21 12:26	10
Chromium	54		0.89	0.12	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Cobalt	20	J	22	0.23	mg/Kg	☼	09/29/21 08:00	10/27/21 16:28	5
Iron	27000		8.9	7.3	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Lead	43		4.4	0.98	mg/Kg	☼	09/29/21 08:00	10/27/21 16:28	5
Lithium	34		4.4	0.27	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Manganese	160		1.3	0.20	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Molybdenum	6.7		3.6	0.15	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1
Selenium	4.9		0.89	0.30	mg/Kg	☼	09/29/21 08:00	10/27/21 14:17	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-XPW 01 (10.0-12.7)

Date Collected: 08/21/21 10:10
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-10

Matrix: Solid
Percent Solids: 77.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		52	8.3	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Arsenic	ND		2.6	0.67	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Beryllium	ND		1.3	0.40	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Calcium	**520**	**J B**	1300	9.8	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Chromium	ND		2.6	0.36	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Cobalt	ND		13	0.23	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Iron	ND		26	15	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Lead	ND		2.6	0.57	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Lithium	ND		13	0.78	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Manganese	**3.5**	**J**	3.9	0.16	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Molybdenum	**0.86**	**J**	10	0.42	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4
Selenium	ND		2.6	0.88	mg/Kg	☼	09/30/21 08:00	10/22/21 12:45	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**210**		39	6.2	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Arsenic	ND		1.9	0.51	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Beryllium	**0.11**	**J**	0.97	0.062	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Calcium	**1700**		970	8.5	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Chromium	**0.52**	**J**	1.9	0.27	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Cobalt	**0.94**	**J**	9.7	0.24	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Iron	**1600**		19	11	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Lead	**2.5**		1.9	0.43	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Lithium	ND		9.7	0.58	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Manganese	**190**		2.9	1.1	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Molybdenum	ND		7.8	0.32	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3
Selenium	ND		1.9	0.66	mg/Kg	☼	10/01/21 08:00	10/22/21 14:43	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**810**		13	2.7	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Arsenic	**3.9**		0.65	0.17	mg/Kg	☼	10/04/21 08:00	10/25/21 11:49	1
Beryllium	**0.24**	**J**	0.32	0.019	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Calcium	**7.7**	**J**	320	1.9	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Chromium	**1.5**		0.65	0.091	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Cobalt	**0.94**	**J**	3.2	0.058	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Iron	**2500**		6.5	3.8	mg/Kg	☼	10/04/21 08:00	10/25/21 11:49	1
Lead	**1.3**		0.65	0.14	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Lithium	ND		3.2	0.19	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Manganese	**120**	**B**	0.97	0.035	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Molybdenum	**0.43**	**J**	2.6	0.11	mg/Kg	☼	10/04/21 08:00	10/22/21 16:41	1
Selenium	ND		0.65	0.22	mg/Kg	☼	10/04/21 08:00	10/25/21 11:49	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2500**		13	2.1	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Arsenic	**3.2**		0.65	0.28	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Beryllium	**0.21**	**J**	0.32	0.021	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Calcium	**800**		320	2.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Chromium	**4.2**		0.65	0.091	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1

Client Sample ID: N-SB-XPW 01 (10.0-12.7)
Date Collected: 08/21/21 10:10
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-10
Matrix: Solid
Percent Solids: 77.2

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	2.2	J	3.2	0.069	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Iron	5400		6.5	3.8	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Lead	6.9		0.65	0.14	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Lithium	2.0	J	3.2	0.19	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Manganese	140		0.97	0.17	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Molybdenum	0.84	J	2.6	0.11	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1
Selenium	0.66		0.65	0.61	mg/Kg	☼	10/05/21 08:00	10/25/21 12:58	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	64	J B	190	30	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Arsenic	ND		9.7	2.5	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Beryllium	ND		4.9	0.41	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Calcium	110	J	4900	14	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Chromium	3.4	J	9.7	1.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Cobalt	ND		49	0.78	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Iron	ND		97	57	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Lead	ND		9.7	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Lithium	8.8	J B *+	49	2.8	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Manganese	13	J	15	2.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Molybdenum	ND		39	1.6	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5
Selenium	ND		9.7	3.4	mg/Kg	☼	10/07/21 08:00	10/25/21 14:57	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	5200		13	2.1	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Arsenic	2.2		0.65	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Beryllium	0.095	J	0.32	0.016	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Calcium	110	J	320	2.7	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Chromium	4.8		0.65	0.091	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Cobalt	0.83	J	3.2	0.060	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Iron	4400		6.5	3.8	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Lead	2.2		0.65	0.14	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Lithium	3.6		3.2	0.19	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Manganese	23		0.97	0.32	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Molybdenum	0.16	J	2.6	0.13	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1
Selenium	ND		0.65	0.22	mg/Kg	☼	10/07/21 08:00	10/25/21 16:56	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	28000		130	21	mg/Kg	☼	10/08/21 08:00	10/26/21 12:45	10
Arsenic	2.0		1.3	0.34	mg/Kg	☼	10/08/21 08:00	10/26/21 15:19	2
Beryllium	0.19	J	0.32	0.021	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Calcium	1700		320	3.4	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Chromium	14		0.65	0.091	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Cobalt	ND		6.5	0.067	mg/Kg	☼	10/08/21 08:00	10/26/21 15:19	2
Iron	3500		6.5	5.3	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Lead	5.0		1.3	0.28	mg/Kg	☼	10/08/21 08:00	10/26/21 15:19	2
Lithium	9.2		3.2	0.19	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Manganese	51		0.97	0.14	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-XPW 01 (10.0-12.7)
Date Collected: 08/21/21 10:10
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-10
Matrix: Solid
Percent Solids: 77.2

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.15	J	2.6	0.11	mg/Kg	☼	10/08/21 08:00	10/26/21 13:55	1
Selenium	ND		1.3	0.44	mg/Kg	☼	10/08/21 08:00	10/26/21 15:19	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	37000		10	1.6	mg/Kg			11/02/21 16:02	1
Arsenic	11		0.50	0.13	mg/Kg			11/02/21 16:02	1
Beryllium	0.85		0.25	0.0075	mg/Kg			11/02/21 16:02	1
Calcium	4900		250	0.74	mg/Kg			11/02/21 16:02	1
Chromium	29		0.50	0.070	mg/Kg			11/02/21 16:02	1
Cobalt	4.9		2.5	0.023	mg/Kg			11/02/21 16:02	1
Iron	17000		5.0	4.1	mg/Kg			11/02/21 16:02	1
Lead	18		0.50	0.11	mg/Kg			11/02/21 16:02	1
Lithium	23		2.5	0.15	mg/Kg			11/02/21 16:02	1
Manganese	540		0.75	0.052	mg/Kg			11/02/21 16:02	1
Molybdenum	2.4		2.0	0.082	mg/Kg			11/02/21 16:02	1
Selenium	0.66		0.50	0.17	mg/Kg			11/02/21 16:02	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	36000		130	21	mg/Kg	☼	09/29/21 08:00	10/27/21 12:31	10
Arsenic	9.4		0.65	0.17	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Beryllium	0.74		0.32	0.021	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Calcium	5100		3200	34	mg/Kg	☼	09/29/21 08:00	10/27/21 12:31	10
Chromium	23		0.65	0.091	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Cobalt	4.6	J	6.5	0.067	mg/Kg	☼	09/29/21 08:00	10/27/21 16:33	2
Iron	15000		6.5	5.3	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Lead	15		1.3	0.28	mg/Kg	☼	09/29/21 08:00	10/27/21 16:33	2
Lithium	13		3.2	0.19	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Manganese	350		0.97	0.14	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Molybdenum	2.3	J	2.6	0.11	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1
Selenium	0.58	J	0.65	0.22	mg/Kg	☼	09/29/21 08:00	10/27/21 14:23	1

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Prep: 3010A

SEP: Exchangeable

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.077	mg/Kg
Calcium	250	1.9	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.031	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Prep: 3010A

SEP: Carbonate

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Calcium	250	2.2	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.063	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.28	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Prep: 3010A

SEP: Non-Crystalline

Analyte	RL	MDL	Units
Aluminum	10	2.1	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.015	mg/Kg
Calcium	250	1.5	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.027	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.22	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Calcium	250	2.2	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.053	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.13	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.47	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Prep: 3010A

SEP: Organic-Bound

Analyte	RL	MDL	Units
Aluminum	30	4.7	mg/Kg
Arsenic	1.5	0.38	mg/Kg
Beryllium	0.75	0.063	mg/Kg
Calcium	750	2.2	mg/Kg
Chromium	1.5	0.21	mg/Kg
Cobalt	7.5	0.12	mg/Kg
Iron	15	8.8	mg/Kg
Lead	1.5	0.33	mg/Kg
Lithium	7.5	0.44	mg/Kg
Manganese	2.3	0.37	mg/Kg
Molybdenum	6.0	0.25	mg/Kg
Selenium	1.5	0.52	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 6

SEP: Acid/Sulfide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.15	mg/Kg
Beryllium	0.25	0.012	mg/Kg
Calcium	250	2.1	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.046	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.25	mg/Kg
Molybdenum	2.0	0.099	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Prep: Residual

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Prep: Residual

Analyte	RL	MDL	Units
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Calcium	250	2.6	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.026	mg/Kg
Iron	5.0	4.1	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.11	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Calcium	250	0.74	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.023	mg/Kg
Iron	5.0	4.1	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Prep: Total

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Calcium	250	2.6	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.026	mg/Kg
Iron	5.0	4.1	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.11	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Lab Sample ID: MB 140-54251/17-A
Matrix: Solid
Analysis Batch: 55243

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 54251

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Arsenic	ND		0.50	0.13	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Beryllium	ND		0.25	0.016	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Calcium	ND		250	2.6	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Chromium	ND		0.50	0.070	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Cobalt	ND		2.5	0.026	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Iron	ND		5.0	4.1	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Lead	ND		0.50	0.11	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Lithium	ND		2.5	0.15	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Manganese	ND		0.75	0.11	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Molybdenum	ND		2.0	0.082	mg/Kg		09/29/21 08:00	10/27/21 10:49	1
Selenium	ND		0.50	0.17	mg/Kg		09/29/21 08:00	10/27/21 10:49	1

Lab Sample ID: LCS 140-54251/18-A
Matrix: Solid
Analysis Batch: 55243

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 54251

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	99.3		mg/Kg		99	80 - 120
Arsenic	5.00	5.06		mg/Kg		101	80 - 120
Beryllium	2.50	2.57		mg/Kg		103	80 - 120
Calcium	2500	2560		mg/Kg		102	80 - 120
Chromium	10.0	10.6		mg/Kg		106	80 - 120
Cobalt	5.00	5.19		mg/Kg		104	80 - 125
Iron	50.0	52.2		mg/Kg		104	80 - 120
Lead	5.00	5.20		mg/Kg		104	80 - 120
Lithium	5.00	4.90		mg/Kg		98	80 - 120
Manganese	5.00	5.26		mg/Kg		105	80 - 120
Molybdenum	25.0	26.0		mg/Kg		104	80 - 125
Selenium	7.50	7.30		mg/Kg		97	80 - 120

Lab Sample ID: LCSD 140-54251/19-A
Matrix: Solid
Analysis Batch: 55243

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 54251

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	98.5		mg/Kg		98	80 - 120	1	30
Arsenic	5.00	4.94		mg/Kg		99	80 - 120	2	30
Beryllium	2.50	2.50		mg/Kg		100	80 - 120	3	30
Calcium	2500	2510		mg/Kg		100	80 - 120	2	30
Chromium	10.0	10.3		mg/Kg		103	80 - 120	3	30
Cobalt	5.00	5.05		mg/Kg		101	80 - 125	3	30
Iron	50.0	51.4		mg/Kg		103	80 - 120	2	30
Lead	5.00	5.14		mg/Kg		103	80 - 120	1	30
Lithium	5.00	4.86		mg/Kg		97	80 - 120	1	30
Manganese	5.00	5.13		mg/Kg		103	80 - 120	2	30
Molybdenum	25.0	25.4		mg/Kg		102	80 - 125	3	30
Selenium	7.50	7.21		mg/Kg		96	80 - 120	1	30

Method: 6010B - SEP Metals (ICP) - Total (Continued)

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55243

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Total/NA
Prep Batch: 54251

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	26000		28800		mg/Kg	☼	8	30
Calcium	51000		45400		mg/Kg	☼	12	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55243

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Total/NA
Prep Batch: 54251

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	5.3		5.81		mg/Kg	☼	8	30
Beryllium	0.55		0.571		mg/Kg	☼	4	30
Chromium	17		19.8		mg/Kg	☼	18	30
Cobalt	3.2		3.84		mg/Kg	☼	18	30
Iron	10000		11200		mg/Kg	☼	9	30
Lead	8.4		9.71		mg/Kg	☼	15	30
Lithium	12		13.0		mg/Kg	☼	9	30
Manganese	280		276		mg/Kg	☼	3	30
Molybdenum	0.78	J	1.31	J F5	mg/Kg	☼	51	30
Selenium	ND		ND		mg/Kg	☼	NC	30

Method: 6010B SEP - SEP Metals (ICP)

Lab Sample ID: MB 140-54252/17-B ^4
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Method Blank
Prep Type: Step 1
Prep Batch: 54333

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Arsenic	ND		2.0	0.52	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Beryllium	ND		1.0	0.31	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Calcium	20.3	J	1000	7.6	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Chromium	ND		2.0	0.28	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Cobalt	ND		10	0.18	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Iron	ND		20	12	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Lead	0.558	J	2.0	0.44	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Lithium	ND		10	0.60	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Manganese	ND		3.0	0.12	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Molybdenum	ND		8.0	0.33	mg/Kg		09/30/21 08:00	10/22/21 11:17	4
Selenium	ND		2.0	0.68	mg/Kg		09/30/21 08:00	10/22/21 11:17	4

Lab Sample ID: LCS 140-54252/18-B ^5
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 54333

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	103		mg/Kg		103	80 - 120
Arsenic	5.00	5.07		mg/Kg		101	80 - 120
Beryllium	2.50	2.68		mg/Kg		107	80 - 120
Calcium	2500	2560		mg/Kg		102	80 - 120
Chromium	10.0	10.2		mg/Kg		102	80 - 120

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-54252/18-B ^5
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 54333

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cobalt	5.00	4.98	J	mg/Kg		100	80 - 120
Iron	50.0	52.2		mg/Kg		104	80 - 120
Lead	5.00	4.96		mg/Kg		99	80 - 120
Lithium	5.00	5.04	J	mg/Kg		101	80 - 120
Manganese	5.00	5.28		mg/Kg		106	80 - 120
Molybdenum	25.0	25.2		mg/Kg		101	80 - 120
Selenium	7.50	7.34		mg/Kg		98	80 - 120

Lab Sample ID: LCSD 140-54252/19-B ^5
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 1
Prep Batch: 54333

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	96.7		mg/Kg		97	80 - 120	7	30
Arsenic	5.00	4.84		mg/Kg		97	80 - 120	4	30
Beryllium	2.50	2.52		mg/Kg		101	80 - 120	6	30
Calcium	2500	2430		mg/Kg		97	80 - 120	5	30
Chromium	10.0	9.69		mg/Kg		97	80 - 120	5	30
Cobalt	5.00	4.92	J	mg/Kg		98	80 - 120	1	30
Iron	50.0	48.9		mg/Kg		98	80 - 120	6	30
Lead	5.00	5.13		mg/Kg		103	80 - 120	3	30
Lithium	5.00	4.54	J	mg/Kg		91	80 - 120	10	30
Manganese	5.00	4.96		mg/Kg		99	80 - 120	6	30
Molybdenum	25.0	25.0		mg/Kg		100	80 - 120	1	30
Selenium	7.50	7.48		mg/Kg		100	80 - 120	2	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 1
Prep Batch: 54333

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	ND		ND		mg/Kg	☼	NC	30
Arsenic	ND		ND		mg/Kg	☼	NC	30
Beryllium	ND		ND		mg/Kg	☼	NC	30
Calcium	880	J B	843	J	mg/Kg	☼	5	30
Chromium	ND		ND		mg/Kg	☼	NC	30
Cobalt	ND		ND		mg/Kg	☼	NC	30
Iron	ND		ND		mg/Kg	☼	NC	30
Lead	ND		ND		mg/Kg	☼	NC	30
Lithium	ND		ND		mg/Kg	☼	NC	30
Manganese	2.8	J	3.09	J	mg/Kg	☼	8	30
Molybdenum	ND		ND		mg/Kg	☼	NC	30
Selenium	ND		ND		mg/Kg	☼	NC	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-54334/17-B ^3
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Method Blank
Prep Type: Step 2
Prep Batch: 54370

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		30	4.8	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Arsenic	ND		1.5	0.39	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Beryllium	ND		0.75	0.048	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Calcium	ND		750	6.6	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Chromium	ND		1.5	0.21	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Cobalt	ND		7.5	0.19	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Iron	ND		15	8.7	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Lead	ND		1.5	0.33	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Lithium	ND		7.5	0.45	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Manganese	ND		2.3	0.84	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Molybdenum	ND		6.0	0.25	mg/Kg		10/01/21 08:00	10/22/21 13:24	3
Selenium	ND		1.5	0.51	mg/Kg		10/01/21 08:00	10/22/21 13:24	3

Lab Sample ID: LCS 140-54334/18-B ^5
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample
Prep Type: Step 2
Prep Batch: 54370

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	ND		mg/Kg		3	
Arsenic	5.00	3.62		mg/Kg		72	60 - 120
Beryllium	2.50	1.31		mg/Kg		52	40 - 70
Calcium	2500	641	J	mg/Kg		26	10 - 40
Chromium	10.0	7.44		mg/Kg		74	60 - 120
Cobalt	5.00	4.63	J	mg/Kg		93	80 - 120
Iron	50.0	ND		mg/Kg		4	
Lead	5.00	4.76		mg/Kg		95	70 - 120
Lithium	5.00	4.40	J	mg/Kg		88	80 - 120
Manganese	5.00	4.89		mg/Kg		98	80 - 120
Molybdenum	25.0	20.4		mg/Kg		82	70 - 120
Selenium	7.50	5.79		mg/Kg		77	70 - 120

Lab Sample ID: LCSD 140-54334/19-B ^5
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 2
Prep Batch: 54370

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	ND		mg/Kg		1		109	
Arsenic	5.00	3.80		mg/Kg		76	60 - 120	5	30
Beryllium	2.50	1.35		mg/Kg		54	40 - 70	3	30
Calcium	2500	648	J	mg/Kg		26	10 - 40	1	30
Chromium	10.0	7.61		mg/Kg		76	60 - 120	2	30
Cobalt	5.00	4.60	J	mg/Kg		92	80 - 120	1	30
Iron	50.0	ND		mg/Kg		2		52	
Lead	5.00	4.60		mg/Kg		92	70 - 120	3	30
Lithium	5.00	4.50	J	mg/Kg		90	80 - 120	2	30
Manganese	5.00	4.90		mg/Kg		98	80 - 120	0	30
Molybdenum	25.0	20.3		mg/Kg		81	70 - 120	0	30
Selenium	7.50	6.07		mg/Kg		81	70 - 120	5	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 2
Prep Batch: 54370

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	16	J	15.7	J	mg/Kg	☼	3	
Arsenic	ND		ND		mg/Kg	☼	NC	30
Beryllium	ND		ND		mg/Kg	☼	NC	30
Calcium	16000		15200		mg/Kg	☼	6	30
Chromium	ND		ND		mg/Kg	☼	NC	30
Cobalt	0.57	J	0.447	J	mg/Kg	☼	24	30
Iron	36		35.3		mg/Kg	☼	0.5	
Lead	0.77	J	1.01	J	mg/Kg	☼	26	30
Lithium	ND		ND		mg/Kg	☼	NC	30
Manganese	84		75.4		mg/Kg	☼	11	30
Molybdenum	ND		ND		mg/Kg	☼	NC	30
Selenium	ND		ND		mg/Kg	☼	NC	30

Lab Sample ID: MB 140-54371/17-B
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Method Blank
Prep Type: Step 3
Prep Batch: 54400

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	2.1	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Arsenic	ND		0.50	0.13	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Beryllium	ND		0.25	0.015	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Calcium	ND		250	1.5	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Chromium	ND		0.50	0.070	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Cobalt	ND		2.5	0.045	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Iron	ND		5.0	2.9	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Lead	ND		0.50	0.11	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Lithium	ND		2.5	0.15	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Manganese	0.0835	J	0.75	0.027	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Molybdenum	ND		2.0	0.082	mg/Kg		10/04/21 08:00	10/22/21 15:23	1
Selenium	ND		0.50	0.17	mg/Kg		10/04/21 08:00	10/22/21 15:23	1

Lab Sample ID: LCS 140-54371/18-B
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample
Prep Type: Step 3
Prep Batch: 54400

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	93.2		mg/Kg		93	80 - 120
Arsenic	5.00	4.81		mg/Kg		96	80 - 120
Beryllium	2.50	2.62		mg/Kg		105	80 - 120
Calcium	2500	38.3	J	mg/Kg		2	
Chromium	10.0	10.1		mg/Kg		101	80 - 120
Cobalt	5.00	5.01		mg/Kg		100	80 - 120
Iron	50.0	48.5		mg/Kg		97	80 - 120
Lead	5.00	0.139	J	mg/Kg		3	
Lithium	5.00	4.75		mg/Kg		95	80 - 120
Manganese	5.00	5.18		mg/Kg		104	80 - 120
Molybdenum	25.0	24.5		mg/Kg		98	80 - 120
Selenium	7.50	7.34		mg/Kg		98	80 - 120

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-54371/19-B
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 3
Prep Batch: 54400

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	95.6		mg/Kg		96	80 - 120	3	30
Arsenic			5.00	4.76		mg/Kg		95	80 - 120	1	30
Beryllium			2.50	2.60		mg/Kg		104	80 - 120	1	30
Calcium			2500	39.4	J	mg/Kg		2		3	
Chromium			10.0	10.0		mg/Kg		100	80 - 120	1	30
Cobalt			5.00	4.97		mg/Kg		99	80 - 120	1	30
Iron			50.0	50.8		mg/Kg		102	80 - 120	5	30
Lead			5.00	0.122	J	mg/Kg		2		13	
Lithium			5.00	4.95		mg/Kg		99	80 - 120	4	30
Manganese			5.00	5.15		mg/Kg		103	80 - 120	1	30
Molybdenum			25.0	24.2		mg/Kg		97	80 - 120	1	30
Selenium			7.50	7.31		mg/Kg		97	80 - 120	0	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55087

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 3
Prep Batch: 54400

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	52			55.7		mg/Kg	☼			8	30
Arsenic	0.26	J		0.285	J	mg/Kg	☼			10	30
Beryllium	ND			ND		mg/Kg	☼			NC	30
Calcium	9.2	J		9.35	J	mg/Kg	☼			1	
Chromium	0.31	J		0.452	J F5	mg/Kg	☼			38	30
Cobalt	0.62	J		0.294	J F5	mg/Kg	☼			72	30
Iron	240			258		mg/Kg	☼			6	30
Lead	ND			ND		mg/Kg	☼			NC	
Lithium	ND			ND		mg/Kg	☼			NC	30
Manganese	51	B		31.3	F3	mg/Kg	☼			48	30
Molybdenum	ND			ND		mg/Kg	☼			NC	30
Selenium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: MB 140-54401/17-B
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Method Blank
Prep Type: Step 4
Prep Batch: 54485

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Arsenic	ND		0.50	0.22	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Beryllium	ND		0.25	0.016	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Calcium	ND		250	2.2	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Chromium	ND		0.50	0.070	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Cobalt	ND		2.5	0.053	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Iron	ND		5.0	2.9	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Lead	ND		0.50	0.11	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Lithium	ND		2.5	0.15	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Manganese	ND		0.75	0.13	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Molybdenum	ND		2.0	0.082	mg/Kg		10/05/21 08:00	10/25/21 11:34	1
Selenium	ND		0.50	0.47	mg/Kg		10/05/21 08:00	10/25/21 11:34	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-54401/18-B
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample
Prep Type: Step 4
Prep Batch: 54485

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aluminum			100	99.5		mg/Kg		100	80 - 120		
Arsenic			5.00	4.99		mg/Kg		100	80 - 130		
Beryllium			2.50	2.68		mg/Kg		107	80 - 120		
Calcium			2500	2520		mg/Kg		101	80 - 120		
Chromium			10.0	10.3		mg/Kg		103	80 - 120		
Cobalt			5.00	5.10		mg/Kg		102	80 - 120		
Iron			50.0	51.2		mg/Kg		102	80 - 120		
Lead			5.00	5.11		mg/Kg		102	80 - 120		
Lithium			5.00	5.03		mg/Kg		101	80 - 120		
Manganese			5.00	5.14		mg/Kg		103	80 - 120		
Molybdenum			25.0	25.9		mg/Kg		104	80 - 120		
Selenium			7.50	0.568		mg/Kg		8			

Lab Sample ID: LCSD 140-54401/19-B
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 4
Prep Batch: 54485

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	101		mg/Kg		101	80 - 120	1	30
Arsenic			5.00	4.96		mg/Kg		99	80 - 130	1	30
Beryllium			2.50	2.67		mg/Kg		107	80 - 120	1	30
Calcium			2500	2520		mg/Kg		101	80 - 120	0	30
Chromium			10.0	10.2		mg/Kg		102	80 - 120	0	30
Cobalt			5.00	5.07		mg/Kg		101	80 - 120	1	30
Iron			50.0	51.0		mg/Kg		102	80 - 120	0	30
Lead			5.00	5.10		mg/Kg		102	80 - 120	0	30
Lithium			5.00	5.02		mg/Kg		100	80 - 120	0	30
Manganese			5.00	5.13		mg/Kg		103	80 - 120	0	30
Molybdenum			25.0	25.7		mg/Kg		103	80 - 120	1	30
Selenium			7.50	ND		mg/Kg		5		45	

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 4
Prep Batch: 54485

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	370			492		mg/Kg	☼			29	30
Arsenic	1.2			1.80	F3	mg/Kg	☼			41	30
Beryllium	0.077	J		0.0858	J	mg/Kg	☼			11	30
Calcium	16000			10800	F3	mg/Kg	☼			36	30
Chromium	1.6			1.84		mg/Kg	☼			13	30
Cobalt	1.2	J		1.32	J	mg/Kg	☼			10	30
Iron	3900			4250		mg/Kg	☼			9	30
Lead	2.7			2.62		mg/Kg	☼			4	30
Lithium	0.99	J		1.08	J	mg/Kg	☼			9	30
Manganese	93			86.5		mg/Kg	☼			8	30
Molybdenum	0.45	J		0.463	J	mg/Kg	☼			3	30
Selenium	ND			ND		mg/Kg	☼			NC	

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-54486/17-B ^5
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Method Blank
Prep Type: Step 5
Prep Batch: 54566

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	32.1	J	150	24	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Arsenic	ND		7.5	1.9	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Beryllium	ND		3.8	0.32	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Calcium	ND		3800	11	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Chromium	ND		7.5	1.1	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Cobalt	ND		38	0.60	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Iron	ND		75	44	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Lead	ND		7.5	1.7	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Lithium	8.44	J	38	2.2	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Manganese	ND		11	1.9	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Molybdenum	ND		30	1.3	mg/Kg		10/07/21 08:00	10/25/21 13:37	5
Selenium	ND		7.5	2.6	mg/Kg		10/07/21 08:00	10/25/21 13:37	5

Lab Sample ID: LCS 140-54486/18-B ^5
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample
Prep Type: Step 5
Prep Batch: 54566

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	300	ND		mg/Kg		6	
Arsenic	15.0	9.89		mg/Kg		66	60 - 100
Beryllium	7.50	3.89		mg/Kg		52	40 - 70
Calcium	7500	2030	J	mg/Kg		27	20 - 50
Chromium	30.0	30.5		mg/Kg		102	80 - 130
Cobalt	15.0	0.863	J	mg/Kg		6	1 - 60
Iron	150	ND		mg/Kg		-2	
Lead	15.0	9.28		mg/Kg		62	40 - 80
Lithium	15.0	23.8	J *+	mg/Kg		159	80 - 150
Manganese	15.0	2.78	J	mg/Kg		19	1 - 60
Molybdenum	75.0	53.6		mg/Kg		72	60 - 100
Selenium	22.5	22.8		mg/Kg		101	80 - 140

Lab Sample ID: LCSD 140-54486/19-B ^5
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 5
Prep Batch: 54566

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	300	28.1	J	mg/Kg		9		47	
Arsenic	15.0	10.3		mg/Kg		68	60 - 100	4	30
Beryllium	7.50	3.83		mg/Kg		51	40 - 70	2	30
Calcium	7500	2000	J	mg/Kg		27	20 - 50	2	30
Chromium	30.0	30.3		mg/Kg		101	80 - 130	1	30
Cobalt	15.0	0.840	J	mg/Kg		6	1 - 60	3	30
Iron	150	ND		mg/Kg		-1		53	
Lead	15.0	9.87		mg/Kg		66	40 - 80	6	30
Lithium	15.0	23.9	J *+	mg/Kg		159	80 - 150	0	30
Manganese	15.0	2.73	J	mg/Kg		18	1 - 60	2	30
Molybdenum	75.0	53.4		mg/Kg		71	60 - 100	0	30
Selenium	22.5	22.4		mg/Kg		100	80 - 140	2	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 5
Prep Batch: 54566

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	210	B	205		mg/Kg	☼	3	
Arsenic	ND		ND		mg/Kg	☼	NC	30
Beryllium	ND		ND		mg/Kg	☼	NC	30
Calcium	11000		10900		mg/Kg	☼	3	30
Chromium	2.1	J	1.68	J	mg/Kg	☼	20	30
Cobalt	ND		ND		mg/Kg	☼	NC	30
Iron	ND		ND		mg/Kg	☼	NC	
Lead	ND		ND		mg/Kg	☼	NC	30
Lithium	14	J B *+	13.4	J *+	mg/Kg	☼	3	30
Manganese	5.2	J	2.76	J F5	mg/Kg	☼	62	30
Molybdenum	ND		ND		mg/Kg	☼	NC	30
Selenium	ND		ND		mg/Kg	☼	NC	30

Lab Sample ID: MB 140-54567/17-A
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Method Blank
Prep Type: Step 6
Prep Batch: 54567

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Arsenic	ND		0.50	0.15	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Beryllium	ND		0.25	0.012	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Calcium	ND		250	2.1	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Chromium	ND		0.50	0.070	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Cobalt	ND		2.5	0.046	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Iron	ND		5.0	2.9	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Lead	ND		0.50	0.11	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Lithium	ND		2.5	0.15	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Manganese	ND		0.75	0.25	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Molybdenum	ND		2.0	0.099	mg/Kg		10/07/21 08:00	10/25/21 15:37	1
Selenium	ND		0.50	0.17	mg/Kg		10/07/21 08:00	10/25/21 15:37	1

Lab Sample ID: LCS 140-54567/18-A
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample
Prep Type: Step 6
Prep Batch: 54567

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	96.9		mg/Kg		97	80 - 120
Arsenic	5.00	5.01		mg/Kg		100	80 - 120
Beryllium	2.50	2.64		mg/Kg		106	80 - 120
Calcium	2500	2470		mg/Kg		99	80 - 120
Chromium	10.0	10.1		mg/Kg		101	80 - 120
Cobalt	5.00	5.00		mg/Kg		100	80 - 120
Iron	50.0	50.1		mg/Kg		100	80 - 120
Lead	5.00	5.10		mg/Kg		102	80 - 120
Lithium	5.00	4.95		mg/Kg		99	80 - 120
Manganese	5.00	5.09		mg/Kg		102	80 - 120
Molybdenum	25.0	25.1		mg/Kg		100	80 - 120
Selenium	7.50	7.68		mg/Kg		102	80 - 120

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-54567/19-A
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 6
Prep Batch: 54567

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	101		mg/Kg		101	80 - 120	4	30
Arsenic			5.00	5.07		mg/Kg		101	80 - 120	1	30
Beryllium			2.50	2.70		mg/Kg		108	80 - 120	2	30
Calcium			2500	2530		mg/Kg		101	80 - 120	2	30
Chromium			10.0	10.3		mg/Kg		103	80 - 120	2	30
Cobalt			5.00	5.10		mg/Kg		102	80 - 120	2	30
Iron			50.0	51.0		mg/Kg		102	80 - 120	2	30
Lead			5.00	5.24		mg/Kg		105	80 - 120	3	30
Lithium			5.00	5.04		mg/Kg		101	80 - 120	2	30
Manganese			5.00	5.20		mg/Kg		104	80 - 120	2	30
Molybdenum			25.0	25.8		mg/Kg		103	80 - 120	3	30
Selenium			7.50	7.82		mg/Kg		104	80 - 120	2	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55146

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 6
Prep Batch: 54567

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	2300			1960		mg/Kg	☼			14	30
Arsenic	2.2			1.82		mg/Kg	☼			19	30
Beryllium	0.095	J		0.0803	J	mg/Kg	☼			17	30
Calcium	4500			3620		mg/Kg	☼			21	30
Chromium	3.9			3.48		mg/Kg	☼			12	30
Cobalt	1.6	J		1.28	J	mg/Kg	☼			23	30
Iron	4500			3880		mg/Kg	☼			14	30
Lead	2.0			1.66		mg/Kg	☼			18	30
Lithium	3.9			3.31		mg/Kg	☼			17	30
Manganese	61			49.6		mg/Kg	☼			20	30
Molybdenum	0.24	J		0.198	J	mg/Kg	☼			21	30
Selenium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: MB 140-54607/17-A
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: Method Blank
Prep Type: Step 7
Prep Batch: 54607

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Arsenic	ND		0.50	0.13	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Beryllium	ND		0.25	0.016	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Calcium	ND		250	2.6	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Chromium	ND		0.50	0.070	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Cobalt	ND		2.5	0.026	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Iron	ND		5.0	4.1	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Lead	ND		0.50	0.11	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Lithium	ND		2.5	0.15	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Manganese	ND		0.75	0.11	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Molybdenum	ND		2.0	0.082	mg/Kg		10/08/21 08:00	10/26/21 11:23	1
Selenium	ND		0.50	0.17	mg/Kg		10/08/21 08:00	10/26/21 11:23	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-54607/18-A
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: Lab Control Sample
Prep Type: Step 7
Prep Batch: 54607

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aluminum			100	98.4		mg/Kg		98	80 - 120		
Arsenic			5.00	4.99		mg/Kg		100	80 - 120		
Beryllium			2.50	2.52		mg/Kg		101	80 - 120		
Calcium			2500	2510		mg/Kg		101	80 - 120		
Chromium			10.0	10.3		mg/Kg		103	80 - 120		
Cobalt			5.00	5.09		mg/Kg		102	80 - 125		
Iron			50.0	51.8		mg/Kg		104	80 - 120		
Lead			5.00	5.06		mg/Kg		101	80 - 120		
Lithium			5.00	4.99		mg/Kg		100	80 - 120		
Manganese			5.00	5.15		mg/Kg		103	80 - 120		
Molybdenum			25.0	25.7		mg/Kg		103	80 - 125		
Selenium			7.50	7.37		mg/Kg		98	80 - 120		

Lab Sample ID: LCSD 140-54607/19-A
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 7
Prep Batch: 54607

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	98.0		mg/Kg		98	80 - 120	0	30
Arsenic			5.00	5.04		mg/Kg		101	80 - 120	1	30
Beryllium			2.50	2.54		mg/Kg		102	80 - 120	1	30
Calcium			2500	2520		mg/Kg		101	80 - 120	0	30
Chromium			10.0	10.4		mg/Kg		104	80 - 120	1	30
Cobalt			5.00	5.16		mg/Kg		103	80 - 125	1	30
Iron			50.0	52.0		mg/Kg		104	80 - 120	0	30
Lead			5.00	5.15		mg/Kg		103	80 - 120	2	30
Lithium			5.00	4.97		mg/Kg		99	80 - 120	0	30
Manganese			5.00	5.18		mg/Kg		104	80 - 120	1	30
Molybdenum			25.0	26.1		mg/Kg		104	80 - 125	2	30
Selenium			7.50	7.51		mg/Kg		100	80 - 120	2	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 7
Prep Batch: 54607

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	25000			24700		mg/Kg	☼			0.4	30
Calcium	3100			3220		mg/Kg	☼			2	30

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 7
Prep Batch: 54607

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Arsenic	0.70			0.687		mg/Kg	☼			2	30
Beryllium	0.37			0.366		mg/Kg	☼			2	30
Chromium	9.3			8.59		mg/Kg	☼			8	30
Cobalt	0.15	J		0.112	J	mg/Kg	☼			26	30
Iron	2800			2670		mg/Kg	☼			5	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-24350-1 DU
Matrix: Solid
Analysis Batch: 55197

Client Sample ID: N-SB-05 (18.0-20.0)
Prep Type: Step 7
Prep Batch: 54607

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Lead	4.3			4.29		mg/Kg	☼			0.5	30
Lithium	6.9			5.78		mg/Kg	☼			17	30
Manganese	53			54.1		mg/Kg	☼			3	30
Molybdenum	ND			ND		mg/Kg	☼			NC	30
Selenium	ND			ND		mg/Kg	☼			NC	30

Metals

Prep Batch: 54251

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Total/NA	Solid	Total	
140-24350-2	N-SB-05 (60.0-67.1)	Total/NA	Solid	Total	
140-24350-3	N-SB-18 (77.5-80.0)	Total/NA	Solid	Total	
140-24350-4	N-SB-02 (12.5-20.0)	Total/NA	Solid	Total	
140-24350-5	N-SB-02 (65.0-71.5)	Total/NA	Solid	Total	
140-24350-6	N-SB-14 (44.2-52.0)	Total/NA	Solid	Total	
140-24350-7	N-SB-04 (12.0-18.0)	Total/NA	Solid	Total	
140-24350-8	N-SB-04 (38.7-45.4)	Total/NA	Solid	Total	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Total/NA	Solid	Total	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Total/NA	Solid	Total	
MB 140-54251/17-A	Method Blank	Total/NA	Solid	Total	
LCS 140-54251/18-A	Lab Control Sample	Total/NA	Solid	Total	
LCSD 140-54251/19-A	Lab Control Sample Dup	Total/NA	Solid	Total	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Total/NA	Solid	Total	

SEP Batch: 54252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 1	Solid	Exchangeable	
140-24350-2	N-SB-05 (60.0-67.1)	Step 1	Solid	Exchangeable	
140-24350-3	N-SB-18 (77.5-80.0)	Step 1	Solid	Exchangeable	
140-24350-4	N-SB-02 (12.5-20.0)	Step 1	Solid	Exchangeable	
140-24350-5	N-SB-02 (65.0-71.5)	Step 1	Solid	Exchangeable	
140-24350-6	N-SB-14 (44.2-52.0)	Step 1	Solid	Exchangeable	
140-24350-7	N-SB-04 (12.0-18.0)	Step 1	Solid	Exchangeable	
140-24350-8	N-SB-04 (38.7-45.4)	Step 1	Solid	Exchangeable	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 1	Solid	Exchangeable	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 1	Solid	Exchangeable	
MB 140-54252/17-B ^4	Method Blank	Step 1	Solid	Exchangeable	
LCS 140-54252/18-B ^5	Lab Control Sample	Step 1	Solid	Exchangeable	
LCSD 140-54252/19-B ^5	Lab Control Sample Dup	Step 1	Solid	Exchangeable	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 1	Solid	Exchangeable	

Prep Batch: 54333

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 1	Solid	3010A	54252
140-24350-2	N-SB-05 (60.0-67.1)	Step 1	Solid	3010A	54252
140-24350-3	N-SB-18 (77.5-80.0)	Step 1	Solid	3010A	54252
140-24350-4	N-SB-02 (12.5-20.0)	Step 1	Solid	3010A	54252
140-24350-5	N-SB-02 (65.0-71.5)	Step 1	Solid	3010A	54252
140-24350-6	N-SB-14 (44.2-52.0)	Step 1	Solid	3010A	54252
140-24350-7	N-SB-04 (12.0-18.0)	Step 1	Solid	3010A	54252
140-24350-8	N-SB-04 (38.7-45.4)	Step 1	Solid	3010A	54252
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 1	Solid	3010A	54252
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 1	Solid	3010A	54252
MB 140-54252/17-B ^4	Method Blank	Step 1	Solid	3010A	54252
LCS 140-54252/18-B ^5	Lab Control Sample	Step 1	Solid	3010A	54252
LCSD 140-54252/19-B ^5	Lab Control Sample Dup	Step 1	Solid	3010A	54252
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 1	Solid	3010A	54252

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Metals

SEP Batch: 54334

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 2	Solid	Carbonate	
140-24350-2	N-SB-05 (60.0-67.1)	Step 2	Solid	Carbonate	
140-24350-3	N-SB-18 (77.5-80.0)	Step 2	Solid	Carbonate	
140-24350-4	N-SB-02 (12.5-20.0)	Step 2	Solid	Carbonate	
140-24350-5	N-SB-02 (65.0-71.5)	Step 2	Solid	Carbonate	
140-24350-6	N-SB-14 (44.2-52.0)	Step 2	Solid	Carbonate	
140-24350-7	N-SB-04 (12.0-18.0)	Step 2	Solid	Carbonate	
140-24350-8	N-SB-04 (38.7-45.4)	Step 2	Solid	Carbonate	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 2	Solid	Carbonate	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 2	Solid	Carbonate	
MB 140-54334/17-B ^3	Method Blank	Step 2	Solid	Carbonate	
LCS 140-54334/18-B ^5	Lab Control Sample	Step 2	Solid	Carbonate	
LCSD 140-54334/19-B ^5	Lab Control Sample Dup	Step 2	Solid	Carbonate	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 2	Solid	Carbonate	

Prep Batch: 54370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 2	Solid	3010A	54334
140-24350-2	N-SB-05 (60.0-67.1)	Step 2	Solid	3010A	54334
140-24350-3	N-SB-18 (77.5-80.0)	Step 2	Solid	3010A	54334
140-24350-4	N-SB-02 (12.5-20.0)	Step 2	Solid	3010A	54334
140-24350-5	N-SB-02 (65.0-71.5)	Step 2	Solid	3010A	54334
140-24350-6	N-SB-14 (44.2-52.0)	Step 2	Solid	3010A	54334
140-24350-7	N-SB-04 (12.0-18.0)	Step 2	Solid	3010A	54334
140-24350-8	N-SB-04 (38.7-45.4)	Step 2	Solid	3010A	54334
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 2	Solid	3010A	54334
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 2	Solid	3010A	54334
MB 140-54334/17-B ^3	Method Blank	Step 2	Solid	3010A	54334
LCS 140-54334/18-B ^5	Lab Control Sample	Step 2	Solid	3010A	54334
LCSD 140-54334/19-B ^5	Lab Control Sample Dup	Step 2	Solid	3010A	54334
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 2	Solid	3010A	54334

SEP Batch: 54371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 3	Solid	Non-Crystalline	
140-24350-2	N-SB-05 (60.0-67.1)	Step 3	Solid	Non-Crystalline	
140-24350-3	N-SB-18 (77.5-80.0)	Step 3	Solid	Non-Crystalline	
140-24350-4	N-SB-02 (12.5-20.0)	Step 3	Solid	Non-Crystalline	
140-24350-5	N-SB-02 (65.0-71.5)	Step 3	Solid	Non-Crystalline	
140-24350-6	N-SB-14 (44.2-52.0)	Step 3	Solid	Non-Crystalline	
140-24350-7	N-SB-04 (12.0-18.0)	Step 3	Solid	Non-Crystalline	
140-24350-8	N-SB-04 (38.7-45.4)	Step 3	Solid	Non-Crystalline	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 3	Solid	Non-Crystalline	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 3	Solid	Non-Crystalline	
MB 140-54371/17-B	Method Blank	Step 3	Solid	Non-Crystalline	
LCS 140-54371/18-B	Lab Control Sample	Step 3	Solid	Non-Crystalline	
LCSD 140-54371/19-B	Lab Control Sample Dup	Step 3	Solid	Non-Crystalline	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 3	Solid	Non-Crystalline	

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Metals

Prep Batch: 54400

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 3	Solid	3010A	54371
140-24350-2	N-SB-05 (60.0-67.1)	Step 3	Solid	3010A	54371
140-24350-3	N-SB-18 (77.5-80.0)	Step 3	Solid	3010A	54371
140-24350-4	N-SB-02 (12.5-20.0)	Step 3	Solid	3010A	54371
140-24350-5	N-SB-02 (65.0-71.5)	Step 3	Solid	3010A	54371
140-24350-6	N-SB-14 (44.2-52.0)	Step 3	Solid	3010A	54371
140-24350-7	N-SB-04 (12.0-18.0)	Step 3	Solid	3010A	54371
140-24350-8	N-SB-04 (38.7-45.4)	Step 3	Solid	3010A	54371
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 3	Solid	3010A	54371
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 3	Solid	3010A	54371
MB 140-54371/17-B	Method Blank	Step 3	Solid	3010A	54371
LCS 140-54371/18-B	Lab Control Sample	Step 3	Solid	3010A	54371
LCSD 140-54371/19-B	Lab Control Sample Dup	Step 3	Solid	3010A	54371
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 3	Solid	3010A	54371

SEP Batch: 54401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 4	Solid	Metal Hydroxide	
140-24350-2	N-SB-05 (60.0-67.1)	Step 4	Solid	Metal Hydroxide	
140-24350-3	N-SB-18 (77.5-80.0)	Step 4	Solid	Metal Hydroxide	
140-24350-4	N-SB-02 (12.5-20.0)	Step 4	Solid	Metal Hydroxide	
140-24350-5	N-SB-02 (65.0-71.5)	Step 4	Solid	Metal Hydroxide	
140-24350-6	N-SB-14 (44.2-52.0)	Step 4	Solid	Metal Hydroxide	
140-24350-7	N-SB-04 (12.0-18.0)	Step 4	Solid	Metal Hydroxide	
140-24350-8	N-SB-04 (38.7-45.4)	Step 4	Solid	Metal Hydroxide	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 4	Solid	Metal Hydroxide	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 4	Solid	Metal Hydroxide	
MB 140-54401/17-B	Method Blank	Step 4	Solid	Metal Hydroxide	
LCS 140-54401/18-B	Lab Control Sample	Step 4	Solid	Metal Hydroxide	
LCSD 140-54401/19-B	Lab Control Sample Dup	Step 4	Solid	Metal Hydroxide	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 4	Solid	Metal Hydroxide	

Prep Batch: 54485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 4	Solid	3010A	54401
140-24350-2	N-SB-05 (60.0-67.1)	Step 4	Solid	3010A	54401
140-24350-3	N-SB-18 (77.5-80.0)	Step 4	Solid	3010A	54401
140-24350-4	N-SB-02 (12.5-20.0)	Step 4	Solid	3010A	54401
140-24350-5	N-SB-02 (65.0-71.5)	Step 4	Solid	3010A	54401
140-24350-6	N-SB-14 (44.2-52.0)	Step 4	Solid	3010A	54401
140-24350-7	N-SB-04 (12.0-18.0)	Step 4	Solid	3010A	54401
140-24350-8	N-SB-04 (38.7-45.4)	Step 4	Solid	3010A	54401
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 4	Solid	3010A	54401
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 4	Solid	3010A	54401
MB 140-54401/17-B	Method Blank	Step 4	Solid	3010A	54401
LCS 140-54401/18-B	Lab Control Sample	Step 4	Solid	3010A	54401
LCSD 140-54401/19-B	Lab Control Sample Dup	Step 4	Solid	3010A	54401
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 4	Solid	3010A	54401

Metals

SEP Batch: 54486

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 5	Solid	Organic-Bound	
140-24350-2	N-SB-05 (60.0-67.1)	Step 5	Solid	Organic-Bound	
140-24350-3	N-SB-18 (77.5-80.0)	Step 5	Solid	Organic-Bound	
140-24350-4	N-SB-02 (12.5-20.0)	Step 5	Solid	Organic-Bound	
140-24350-5	N-SB-02 (65.0-71.5)	Step 5	Solid	Organic-Bound	
140-24350-6	N-SB-14 (44.2-52.0)	Step 5	Solid	Organic-Bound	
140-24350-7	N-SB-04 (12.0-18.0)	Step 5	Solid	Organic-Bound	
140-24350-8	N-SB-04 (38.7-45.4)	Step 5	Solid	Organic-Bound	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 5	Solid	Organic-Bound	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 5	Solid	Organic-Bound	
MB 140-54486/17-B ^5	Method Blank	Step 5	Solid	Organic-Bound	
LCS 140-54486/18-B ^5	Lab Control Sample	Step 5	Solid	Organic-Bound	
LCSD 140-54486/19-B ^5	Lab Control Sample Dup	Step 5	Solid	Organic-Bound	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 5	Solid	Organic-Bound	

Prep Batch: 54566

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 5	Solid	3010A	54486
140-24350-2	N-SB-05 (60.0-67.1)	Step 5	Solid	3010A	54486
140-24350-3	N-SB-18 (77.5-80.0)	Step 5	Solid	3010A	54486
140-24350-4	N-SB-02 (12.5-20.0)	Step 5	Solid	3010A	54486
140-24350-5	N-SB-02 (65.0-71.5)	Step 5	Solid	3010A	54486
140-24350-6	N-SB-14 (44.2-52.0)	Step 5	Solid	3010A	54486
140-24350-7	N-SB-04 (12.0-18.0)	Step 5	Solid	3010A	54486
140-24350-8	N-SB-04 (38.7-45.4)	Step 5	Solid	3010A	54486
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 5	Solid	3010A	54486
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 5	Solid	3010A	54486
MB 140-54486/17-B ^5	Method Blank	Step 5	Solid	3010A	54486
LCS 140-54486/18-B ^5	Lab Control Sample	Step 5	Solid	3010A	54486
LCSD 140-54486/19-B ^5	Lab Control Sample Dup	Step 5	Solid	3010A	54486
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 5	Solid	3010A	54486

SEP Batch: 54567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 6	Solid	Acid/Sulfide	
140-24350-2	N-SB-05 (60.0-67.1)	Step 6	Solid	Acid/Sulfide	
140-24350-3	N-SB-18 (77.5-80.0)	Step 6	Solid	Acid/Sulfide	
140-24350-4	N-SB-02 (12.5-20.0)	Step 6	Solid	Acid/Sulfide	
140-24350-5	N-SB-02 (65.0-71.5)	Step 6	Solid	Acid/Sulfide	
140-24350-6	N-SB-14 (44.2-52.0)	Step 6	Solid	Acid/Sulfide	
140-24350-7	N-SB-04 (12.0-18.0)	Step 6	Solid	Acid/Sulfide	
140-24350-8	N-SB-04 (38.7-45.4)	Step 6	Solid	Acid/Sulfide	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 6	Solid	Acid/Sulfide	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 6	Solid	Acid/Sulfide	
MB 140-54567/17-A	Method Blank	Step 6	Solid	Acid/Sulfide	
LCS 140-54567/18-A	Lab Control Sample	Step 6	Solid	Acid/Sulfide	
LCSD 140-54567/19-A	Lab Control Sample Dup	Step 6	Solid	Acid/Sulfide	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 6	Solid	Acid/Sulfide	

Metals

Prep Batch: 54607

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 7	Solid	Residual	
140-24350-2	N-SB-05 (60.0-67.1)	Step 7	Solid	Residual	
140-24350-3	N-SB-18 (77.5-80.0)	Step 7	Solid	Residual	
140-24350-4	N-SB-02 (12.5-20.0)	Step 7	Solid	Residual	
140-24350-5	N-SB-02 (65.0-71.5)	Step 7	Solid	Residual	
140-24350-6	N-SB-14 (44.2-52.0)	Step 7	Solid	Residual	
140-24350-7	N-SB-04 (12.0-18.0)	Step 7	Solid	Residual	
140-24350-8	N-SB-04 (38.7-45.4)	Step 7	Solid	Residual	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 7	Solid	Residual	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 7	Solid	Residual	
MB 140-54607/17-A	Method Blank	Step 7	Solid	Residual	
LCS 140-54607/18-A	Lab Control Sample	Step 7	Solid	Residual	
LCSD 140-54607/19-A	Lab Control Sample Dup	Step 7	Solid	Residual	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 7	Solid	Residual	

Analysis Batch: 55087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 1	Solid	6010B SEP	54333
140-24350-1	N-SB-05 (18.0-20.0)	Step 2	Solid	6010B SEP	54370
140-24350-1	N-SB-05 (18.0-20.0)	Step 3	Solid	6010B SEP	54400
140-24350-2	N-SB-05 (60.0-67.1)	Step 1	Solid	6010B SEP	54333
140-24350-2	N-SB-05 (60.0-67.1)	Step 2	Solid	6010B SEP	54370
140-24350-2	N-SB-05 (60.0-67.1)	Step 3	Solid	6010B SEP	54400
140-24350-3	N-SB-18 (77.5-80.0)	Step 1	Solid	6010B SEP	54333
140-24350-3	N-SB-18 (77.5-80.0)	Step 2	Solid	6010B SEP	54370
140-24350-3	N-SB-18 (77.5-80.0)	Step 3	Solid	6010B SEP	54400
140-24350-4	N-SB-02 (12.5-20.0)	Step 1	Solid	6010B SEP	54333
140-24350-4	N-SB-02 (12.5-20.0)	Step 2	Solid	6010B SEP	54370
140-24350-4	N-SB-02 (12.5-20.0)	Step 3	Solid	6010B SEP	54400
140-24350-5	N-SB-02 (65.0-71.5)	Step 1	Solid	6010B SEP	54333
140-24350-5	N-SB-02 (65.0-71.5)	Step 2	Solid	6010B SEP	54370
140-24350-5	N-SB-02 (65.0-71.5)	Step 3	Solid	6010B SEP	54400
140-24350-6	N-SB-14 (44.2-52.0)	Step 1	Solid	6010B SEP	54333
140-24350-6	N-SB-14 (44.2-52.0)	Step 2	Solid	6010B SEP	54370
140-24350-6	N-SB-14 (44.2-52.0)	Step 3	Solid	6010B SEP	54400
140-24350-7	N-SB-04 (12.0-18.0)	Step 1	Solid	6010B SEP	54333
140-24350-7	N-SB-04 (12.0-18.0)	Step 2	Solid	6010B SEP	54370
140-24350-7	N-SB-04 (12.0-18.0)	Step 3	Solid	6010B SEP	54400
140-24350-8	N-SB-04 (38.7-45.4)	Step 1	Solid	6010B SEP	54333
140-24350-8	N-SB-04 (38.7-45.4)	Step 2	Solid	6010B SEP	54370
140-24350-8	N-SB-04 (38.7-45.4)	Step 3	Solid	6010B SEP	54400
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 1	Solid	6010B SEP	54333
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 2	Solid	6010B SEP	54370
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 3	Solid	6010B SEP	54400
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 1	Solid	6010B SEP	54333
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 2	Solid	6010B SEP	54370
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 3	Solid	6010B SEP	54400
MB 140-54252/17-B ^4	Method Blank	Step 1	Solid	6010B SEP	54333
MB 140-54334/17-B ^3	Method Blank	Step 2	Solid	6010B SEP	54370
MB 140-54371/17-B	Method Blank	Step 3	Solid	6010B SEP	54400
LCS 140-54252/18-B ^5	Lab Control Sample	Step 1	Solid	6010B SEP	54333

Metals (Continued)

Analysis Batch: 55087 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 140-54334/18-B ^5	Lab Control Sample	Step 2	Solid	6010B SEP	54370
LCS 140-54371/18-B	Lab Control Sample	Step 3	Solid	6010B SEP	54400
LCSD 140-54252/19-B ^5	Lab Control Sample Dup	Step 1	Solid	6010B SEP	54333
LCSD 140-54334/19-B ^5	Lab Control Sample Dup	Step 2	Solid	6010B SEP	54370
LCSD 140-54371/19-B	Lab Control Sample Dup	Step 3	Solid	6010B SEP	54400
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 1	Solid	6010B SEP	54333
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 2	Solid	6010B SEP	54370
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 3	Solid	6010B SEP	54400

Analysis Batch: 55146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 4	Solid	6010B SEP	54485
140-24350-1	N-SB-05 (18.0-20.0)	Step 5	Solid	6010B SEP	54566
140-24350-1	N-SB-05 (18.0-20.0)	Step 6	Solid	6010B SEP	54567
140-24350-2	N-SB-05 (60.0-67.1)	Step 4	Solid	6010B SEP	54485
140-24350-2	N-SB-05 (60.0-67.1)	Step 4	Solid	6010B SEP	54485
140-24350-2	N-SB-05 (60.0-67.1)	Step 5	Solid	6010B SEP	54566
140-24350-2	N-SB-05 (60.0-67.1)	Step 6	Solid	6010B SEP	54567
140-24350-3	N-SB-18 (77.5-80.0)	Step 4	Solid	6010B SEP	54485
140-24350-3	N-SB-18 (77.5-80.0)	Step 5	Solid	6010B SEP	54566
140-24350-3	N-SB-18 (77.5-80.0)	Step 6	Solid	6010B SEP	54567
140-24350-4	N-SB-02 (12.5-20.0)	Step 4	Solid	6010B SEP	54485
140-24350-4	N-SB-02 (12.5-20.0)	Step 5	Solid	6010B SEP	54566
140-24350-4	N-SB-02 (12.5-20.0)	Step 6	Solid	6010B SEP	54567
140-24350-5	N-SB-02 (65.0-71.5)	Step 4	Solid	6010B SEP	54485
140-24350-5	N-SB-02 (65.0-71.5)	Step 5	Solid	6010B SEP	54566
140-24350-5	N-SB-02 (65.0-71.5)	Step 6	Solid	6010B SEP	54567
140-24350-6	N-SB-14 (44.2-52.0)	Step 4	Solid	6010B SEP	54485
140-24350-6	N-SB-14 (44.2-52.0)	Step 5	Solid	6010B SEP	54566
140-24350-6	N-SB-14 (44.2-52.0)	Step 6	Solid	6010B SEP	54567
140-24350-7	N-SB-04 (12.0-18.0)	Step 4	Solid	6010B SEP	54485
140-24350-7	N-SB-04 (12.0-18.0)	Step 5	Solid	6010B SEP	54566
140-24350-7	N-SB-04 (12.0-18.0)	Step 6	Solid	6010B SEP	54567
140-24350-8	N-SB-04 (38.7-45.4)	Step 4	Solid	6010B SEP	54485
140-24350-8	N-SB-04 (38.7-45.4)	Step 5	Solid	6010B SEP	54566
140-24350-8	N-SB-04 (38.7-45.4)	Step 6	Solid	6010B SEP	54567
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 4	Solid	6010B SEP	54485
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 5	Solid	6010B SEP	54566
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 6	Solid	6010B SEP	54567
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 6	Solid	6010B SEP	54567
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 3	Solid	6010B SEP	54400
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 4	Solid	6010B SEP	54485
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 5	Solid	6010B SEP	54566
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 6	Solid	6010B SEP	54567
MB 140-54401/17-B	Method Blank	Step 4	Solid	6010B SEP	54485
MB 140-54486/17-B ^5	Method Blank	Step 5	Solid	6010B SEP	54566
MB 140-54567/17-A	Method Blank	Step 6	Solid	6010B SEP	54567
LCS 140-54401/18-B	Lab Control Sample	Step 4	Solid	6010B SEP	54485
LCS 140-54486/18-B ^5	Lab Control Sample	Step 5	Solid	6010B SEP	54566
LCS 140-54567/18-A	Lab Control Sample	Step 6	Solid	6010B SEP	54567
LCSD 140-54401/19-B	Lab Control Sample Dup	Step 4	Solid	6010B SEP	54485

Metals (Continued)

Analysis Batch: 55146 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 140-54486/19-B ^5	Lab Control Sample Dup	Step 5	Solid	6010B SEP	54566
LCSD 140-54567/19-A	Lab Control Sample Dup	Step 6	Solid	6010B SEP	54567
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 4	Solid	6010B SEP	54485
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 5	Solid	6010B SEP	54566
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 6	Solid	6010B SEP	54567

Analysis Batch: 55197

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Step 7	Solid	6010B SEP	54607
140-24350-1	N-SB-05 (18.0-20.0)	Step 7	Solid	6010B SEP	54607
140-24350-2	N-SB-05 (60.0-67.1)	Step 7	Solid	6010B SEP	54607
140-24350-2	N-SB-05 (60.0-67.1)	Step 7	Solid	6010B SEP	54607
140-24350-3	N-SB-18 (77.5-80.0)	Step 7	Solid	6010B SEP	54607
140-24350-3	N-SB-18 (77.5-80.0)	Step 7	Solid	6010B SEP	54607
140-24350-3	N-SB-18 (77.5-80.0)	Step 7	Solid	6010B SEP	54607
140-24350-4	N-SB-02 (12.5-20.0)	Step 7	Solid	6010B SEP	54607
140-24350-4	N-SB-02 (12.5-20.0)	Step 7	Solid	6010B SEP	54607
140-24350-5	N-SB-02 (65.0-71.5)	Step 7	Solid	6010B SEP	54607
140-24350-5	N-SB-02 (65.0-71.5)	Step 7	Solid	6010B SEP	54607
140-24350-5	N-SB-02 (65.0-71.5)	Step 7	Solid	6010B SEP	54607
140-24350-6	N-SB-14 (44.2-52.0)	Step 7	Solid	6010B SEP	54607
140-24350-6	N-SB-14 (44.2-52.0)	Step 7	Solid	6010B SEP	54607
140-24350-7	N-SB-04 (12.0-18.0)	Step 7	Solid	6010B SEP	54607
140-24350-7	N-SB-04 (12.0-18.0)	Step 7	Solid	6010B SEP	54607
140-24350-7	N-SB-04 (12.0-18.0)	Step 7	Solid	6010B SEP	54607
140-24350-8	N-SB-04 (38.7-45.4)	Step 7	Solid	6010B SEP	54607
140-24350-8	N-SB-04 (38.7-45.4)	Step 7	Solid	6010B SEP	54607
140-24350-8	N-SB-04 (38.7-45.4)	Step 7	Solid	6010B SEP	54607
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 7	Solid	6010B SEP	54607
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 7	Solid	6010B SEP	54607
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Step 7	Solid	6010B SEP	54607
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 7	Solid	6010B SEP	54607
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 7	Solid	6010B SEP	54607
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Step 7	Solid	6010B SEP	54607
MB 140-54607/17-A	Method Blank	Step 7	Solid	6010B SEP	54607
LCS 140-54607/18-A	Lab Control Sample	Step 7	Solid	6010B SEP	54607
LCSD 140-54607/19-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	54607
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 7	Solid	6010B SEP	54607
140-24350-1 DU	N-SB-05 (18.0-20.0)	Step 7	Solid	6010B SEP	54607

Analysis Batch: 55243

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Total/NA	Solid	6010B	54251
140-24350-1	N-SB-05 (18.0-20.0)	Total/NA	Solid	6010B	54251
140-24350-2	N-SB-05 (60.0-67.1)	Total/NA	Solid	6010B	54251
140-24350-2	N-SB-05 (60.0-67.1)	Total/NA	Solid	6010B	54251
140-24350-3	N-SB-18 (77.5-80.0)	Total/NA	Solid	6010B	54251
140-24350-3	N-SB-18 (77.5-80.0)	Total/NA	Solid	6010B	54251
140-24350-4	N-SB-02 (12.5-20.0)	Total/NA	Solid	6010B	54251
140-24350-4	N-SB-02 (12.5-20.0)	Total/NA	Solid	6010B	54251
140-24350-4	N-SB-02 (12.5-20.0)	Total/NA	Solid	6010B	54251

Metals (Continued)

Analysis Batch: 55243 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-5	N-SB-02 (65.0-71.5)	Total/NA	Solid	6010B	54251
140-24350-5	N-SB-02 (65.0-71.5)	Total/NA	Solid	6010B	54251
140-24350-5	N-SB-02 (65.0-71.5)	Total/NA	Solid	6010B	54251
140-24350-6	N-SB-14 (44.2-52.0)	Total/NA	Solid	6010B	54251
140-24350-6	N-SB-14 (44.2-52.0)	Total/NA	Solid	6010B	54251
140-24350-7	N-SB-04 (12.0-18.0)	Total/NA	Solid	6010B	54251
140-24350-7	N-SB-04 (12.0-18.0)	Total/NA	Solid	6010B	54251
140-24350-7	N-SB-04 (12.0-18.0)	Total/NA	Solid	6010B	54251
140-24350-8	N-SB-04 (38.7-45.4)	Total/NA	Solid	6010B	54251
140-24350-8	N-SB-04 (38.7-45.4)	Total/NA	Solid	6010B	54251
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Total/NA	Solid	6010B	54251
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Total/NA	Solid	6010B	54251
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Total/NA	Solid	6010B	54251
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Total/NA	Solid	6010B	54251
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Total/NA	Solid	6010B	54251
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Total/NA	Solid	6010B	54251
MB 140-54251/17-A	Method Blank	Total/NA	Solid	6010B	54251
LCS 140-54251/18-A	Lab Control Sample	Total/NA	Solid	6010B	54251
LCSD 140-54251/19-A	Lab Control Sample Dup	Total/NA	Solid	6010B	54251
140-24350-1 DU	N-SB-05 (18.0-20.0)	Total/NA	Solid	6010B	54251
140-24350-1 DU	N-SB-05 (18.0-20.0)	Total/NA	Solid	6010B	54251

Analysis Batch: 55436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-2	N-SB-05 (60.0-67.1)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-3	N-SB-18 (77.5-80.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-4	N-SB-02 (12.5-20.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-5	N-SB-02 (65.0-71.5)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-6	N-SB-14 (44.2-52.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-7	N-SB-04 (12.0-18.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-8	N-SB-04 (38.7-45.4)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Sum of Steps 1-7	Solid	6010B SEP	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Sum of Steps 1-7	Solid	6010B SEP	

General Chemistry

Analysis Batch: 53225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-24350-1	N-SB-05 (18.0-20.0)	Total/NA	Solid	Moisture	
140-24350-2	N-SB-05 (60.0-67.1)	Total/NA	Solid	Moisture	
140-24350-3	N-SB-18 (77.5-80.0)	Total/NA	Solid	Moisture	
140-24350-4	N-SB-02 (12.5-20.0)	Total/NA	Solid	Moisture	
140-24350-5	N-SB-02 (65.0-71.5)	Total/NA	Solid	Moisture	
140-24350-6	N-SB-14 (44.2-52.0)	Total/NA	Solid	Moisture	
140-24350-7	N-SB-04 (12.0-18.0)	Total/NA	Solid	Moisture	
140-24350-8	N-SB-04 (38.7-45.4)	Total/NA	Solid	Moisture	
140-24350-9	N-SB-XPW 04 (10.0-15.0)	Total/NA	Solid	Moisture	
140-24350-10	N-SB-XPW 01 (10.0-12.7)	Total/NA	Solid	Moisture	
140-24350-1 DU	N-SB-05 (18.0-20.0)	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: N-SB-05 (18.0-20.0)
Lab Sample ID: 140-24350-1
Date Collected: 08/17/21 12:40
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-05 (18.0-20.0)
Lab Sample ID: 140-24350-1
Date Collected: 08/17/21 12:40
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 11:28	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:14	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:32	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:39	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:37	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 11:54	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 13:52	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 15:51	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 11:43	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 12:50	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-05 (60.0-67.1)
Lab Sample ID: 140-24350-2
Date Collected: 08/17/21 15:40
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-05 (60.0-67.1)
Lab Sample ID: 140-24350-2
Date Collected: 08/17/21 15:40
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 81.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 11:52	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:25	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:41	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:49	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:47	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:03	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		2			55146	10/25/21 17:56	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:02	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:01	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 11:52	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: N-SB-05 (60.0-67.1)
Lab Sample ID: 140-24350-2
Date Collected: 08/17/21 15:40
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 81.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:00	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-18 (77.5-80.0)
Lab Sample ID: 140-24350-3
Date Collected: 08/18/21 10:00
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-18 (77.5-80.0)
Lab Sample ID: 140-24350-3
Date Collected: 08/18/21 10:00
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 91.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 11:57	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:45	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:46	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:54	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:52	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:08	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:07	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-18 (77.5-80.0)

Lab Sample ID: 140-24350-3

Date Collected: 08/18/21 10:00
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 91.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:06	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 11:57	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:20	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 14:50	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-02 (12.5-20.0)

Lab Sample ID: 140-24350-4

Date Collected: 08/18/21 14:10
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-02 (12.5-20.0)

Lab Sample ID: 140-24350-4

Date Collected: 08/18/21 14:10
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 93.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:02	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:50	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			55243	10/27/21 16:12	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:51	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:59	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-02 (12.5-20.0)

Lab Sample ID: 140-24350-4
Date Collected: 08/18/21 14:10
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 93.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:57	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:13	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:12	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:11	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:02	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:25	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-02 (65.0-71.5)

Lab Sample ID: 140-24350-5
Date Collected: 08/19/21 12:00
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-02 (65.0-71.5)

Lab Sample ID: 140-24350-5
Date Collected: 08/19/21 12:00
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 89.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:07	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:55	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			55243	10/27/21 16:18	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-02 (65.0-71.5)

Lab Sample ID: 140-24350-5

Date Collected: 08/19/21 12:00

Matrix: Solid

Date Received: 08/24/21 09:40

Percent Solids: 89.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:56	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:04	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:02	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:33	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:32	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:31	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:21	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:30	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 14:55	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-14 (44.2-52.0)

Lab Sample ID: 140-24350-6

Date Collected: 08/19/21 14:45

Matrix: Solid

Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-14 (44.2-52.0)

Lab Sample ID: 140-24350-6

Date Collected: 08/19/21 14:45

Matrix: Solid

Date Received: 08/24/21 09:40

Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:12	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 14:01	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 12:26	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:23	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:21	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:38	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:37	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:36	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:26	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:35	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-04 (12.0-18.0)

Lab Sample ID: 140-24350-7

Date Collected: 08/21/21 07:35

Matrix: Solid

Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: N-SB-04 (12.0-18.0)

Date Collected: 08/21/21 07:35
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-7

Matrix: Solid
Percent Solids: 89.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:17	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 14:06	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			55243	10/27/21 16:23	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 12:31	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:28	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:26	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:43	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:42	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:41	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:31	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:40	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 15:00	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-04 (38.7-45.4)
Date Collected: 08/21/21 08:30
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-8
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-04 (38.7-45.4)
Date Collected: 08/21/21 08:30
Date Received: 08/24/21 09:40

Lab Sample ID: 140-24350-8
Matrix: Solid
Percent Solids: 86.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:21	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 14:12	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 12:35	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:33	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:31	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:48	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:47	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:46	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:36	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:45	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-04 (38.7-45.4)

Lab Sample ID: 140-24350-8
Date Collected: 08/21/21 08:30
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 86.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 15:05	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-XPW 04 (10.0-15.0)

Lab Sample ID: 140-24350-9
Date Collected: 08/21/21 09:20
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 15:59	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-XPW 04 (10.0-15.0)

Lab Sample ID: 140-24350-9
Date Collected: 08/21/21 09:20
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 56.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:26	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 14:17	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			55243	10/27/21 16:28	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 12:40	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:38	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:36	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:53	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: N-SB-XPW 04 (10.0-15.0)
Lab Sample ID: 140-24350-9
Date Collected: 08/21/21 09:20
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 56.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:52	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:51	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		5			55146	10/25/21 18:01	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:40	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:50	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 15:09	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-XPW 01 (10.0-12.7)
Lab Sample ID: 140-24350-10
Date Collected: 08/21/21 10:10
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			55436	11/02/21 16:02	DKW	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-XPW 01 (10.0-12.7)
Lab Sample ID: 140-24350-10
Date Collected: 08/21/21 10:10
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 77.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 12:31	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 14:23	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			55243	10/27/21 16:33	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: N-SB-XPW 01 (10.0-12.7)
Lab Sample ID: 140-24350-10
Date Collected: 08/21/21 10:10
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 77.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 12:45	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 14:43	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 16:41	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55146	10/25/21 11:49	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 12:58	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 14:57	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 16:56	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 12:45	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 13:55	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			55197	10/26/21 15:19	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54251/17-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 10:49	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Newton Power Station - Illinois

Job ID: 140-24350-1

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54252/17-B ^4
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:17	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54334/17-B ^3
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:24	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54371/17-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:23	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54401/17-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 11:34	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54486/17-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 13:37	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54567/17-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 15:37	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-54607/17-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 11:23	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54251/18-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 10:54	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54252/18-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			55087	10/22/21 11:22	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54334/18-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			55087	10/22/21 13:29	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54371/18-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:28	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54401/18-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 11:39	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54486/18-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 13:42	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54567/18-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 15:42	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-54607/18-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 11:28	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc. Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-54251/19-A
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 10:59	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-54252/19-B ^5
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			55087	10/22/21 11:27	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-54334/19-B ^5
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			55087	10/22/21 13:34	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-54371/19-B
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:32	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-54401/19-B
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 11:44	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54486/19-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 13:47	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54567/19-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 15:47	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-54607/19-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 11:33	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: N-SB-05 (18.0-20.0)
Lab Sample ID: 140-24350-1 DU
Date Collected: 08/17/21 12:40
Matrix: Solid
Date Received: 08/24/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			53225	08/29/21 08:58	BKD	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: N-SB-05 (18.0-20.0)
Lab Sample ID: 140-24350-1 DU
Date Collected: 08/17/21 12:40
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			55243	10/27/21 11:47	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	54251	09/29/21 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			55243	10/27/21 13:19	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	54252	09/29/21 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	54333	09/30/21 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			55087	10/22/21 11:36	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Client Sample ID: N-SB-05 (18.0-20.0)
Lab Sample ID: 140-24350-1 DU
Date Collected: 08/17/21 12:40
Matrix: Solid
Date Received: 08/24/21 09:40
Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	54334	09/30/21 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	54370	10/01/21 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			55087	10/22/21 13:44	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	54371	10/01/21 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	54400	10/04/21 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			55087	10/22/21 15:42	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	54401	10/04/21 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	54485	10/05/21 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			55146	10/25/21 11:58	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	54486	10/05/21 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	54566	10/07/21 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			55146	10/25/21 13:57	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	54567	10/07/21 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			55146	10/25/21 15:56	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			55197	10/26/21 11:48	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	54607	10/08/21 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			55197	10/26/21 12:55	KNC	TAL KNX
	Instrument ID: DUO									

Laboratory References:
TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Laboratory: Eurofins TestAmerica, Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
Arkansas DEQ	State	88-0688	06-17-22
California	State	2423	06-30-22
Colorado	State	TN00009	02-28-22
Connecticut	State	PH-0223	02-28-22
Florida	NELAP	E87177	06-30-22
Georgia (DW)	State	906	12-11-22
Hawaii	State	NA	12-11-21
Kansas	NELAP	E-10349	10-31-21 *
Kentucky (DW)	State	90101	12-31-21
Louisiana	NELAP	83979	06-30-22
Louisiana (DW)	State	LA019	12-31-21
Maryland	State	277	03-31-22
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-22
New Hampshire	NELAP	299919	01-17-22
New Jersey	NELAP	TN001	06-30-22
New York	NELAP	10781	03-31-22
North Carolina (DW)	State	21705	07-31-22
North Carolina (WW/SW)	State	64	12-31-21
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-22
Oregon	NELAP	TNI0189	01-01-22
Pennsylvania	NELAP	68-00576	12-31-21
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-22
US Fish & Wildlife	US Federal Programs	058448	07-31-22
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-22
Virginia	NELAP	460176	09-14-22
Washington	State	C593	01-19-22
West Virginia (DW)	State	9955C	01-02-22
West Virginia DEP	State	345	04-30-22
Wisconsin	State	998044300	08-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Golder Associates Inc.
Job ID: 140-24350-1
Project/Site: Newton Power Station - Illinois

Method	Method Description	Protocol	Laboratory
6010B	SEP Metals (ICP) - Total	SW846	TAL KNX
6010B SEP	SEP Metals (ICP)	SW846	TAL KNX
Moisture	Percent Moisture	EPA	TAL KNX
3010A	Preparation, Total Metals	SW846	TAL KNX
Acid/Sulfide	Sequential Extraction Procedure, Acid/Sulfide Fraction	TAL-KNOX	TAL KNX
Carbonate	Sequential Extraction Procedure, Carbonate Fraction	TAL-KNOX	TAL KNX
Exchangeable	Sequential Extraction Procedure, Exchangeable Fraction	TAL-KNOX	TAL KNX
Metal Hydroxide	Sequential Extraction Procedure, Metal Hydroxide Fraction	TAL-KNOX	TAL KNX
Non-Crystalline	Sequential Extraction Procedure, Non-crystalline Materials	TAL-KNOX	TAL KNX
Organic-Bound	Sequential Extraction Procedure, Organic Bound Fraction	TAL-KNOX	TAL KNX
Residual	Sequential Extraction Procedure, Residual Fraction	TAL-KNOX	TAL KNX
Total	Preparation, Total Material	TAL-KNOX	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-KNOX = TestAmerica Laboratories, Knoxville, Facility Standard Operating Procedure.

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: Brendan Talbert	Lab PM: Henry, Ryan	Carrier Tracking No(s):	COC No: 140-9736-2903.2
Client Contact: Jeffrey Ingram	Phone: (636) 485-8185	E-Mail: williamr.henry@eurofinset.com	State of Origin: IL	Page: Page 1 of 2
Company: Golder Associates Inc.	PWSID:			Job #:
Address: 13515 Barrett Parkway Drive Suite 260	Due Date Requested:			
City: Ballwin	TAT Requested (days):			
State, Zip: MO, 63021	Compliance Project: Δ Yes Δ No			
Phone: 314-984-8800(Tel) 636-724-9323(Fax)	PO #: Purchase Order not required			
Email: Jeffrey_Ingram@golder.com	WO #:			
Project Name: ~~Kincaid~~ Newton Power Station - Illinois	Project #: 14006434			
Site:	SSOW#:			

Analysis Requested

140-24350 Chain of Custody

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010B - Select Total Metals	6010B_SEP - SEP	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N		
N-SB-05(18.0-20.0)	8-17-21	1240	G	S	N	N	/	/		
N-SB-05(60.0-67.1)	8-17-21	1540	G	S			/	/		
N-SB-18 (77.5-80.0)	8-18-21	1000	G	S			/	/		
N-SB-02 (12.5-20.0)	8-18-21	1410	G	S			/	/		
N-SB-02(65.0-71.5)	8-19-21	1200	G	S			/	/		
N-SB-14 ~~(Foam Core)~~	8-19-21	1445	G	S			/	/		N-SB-14 (44.2-52.0)
N-SB-04 (12.0-18.0)	8-21-21	0735	G	S			/	/		
N-SB-04 ~~(Foam Core)~~	8-21-21	0830	G	S			/	/		N-SB-04 (38.7-45.4)
N-SB-xpw04 (10.0-15.0)	8-21-21	0920	G	S			/	/		
N-SB-xpw01 (10.0-12.7)	8-21-21	1010	G	S			/	Y		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Brendan Talbert	8-23-21 / 1830	Golder		8/24/21 0940	ETA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:** Loc: 140 **24350**

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	/			☐ Containers, Broken
2. Were ambient air containers received intact?			/	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?	/			☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC 71 Correction factor: +0.1	/			☐ Cooler Out of Temp, Client Contacted, Proceed/Cancel ☐ Cooler Out of Temp, Same Day Receipt
5. Were all of the sample containers received intact?	/			☐ Containers, Broken
6. Were samples received in appropriate containers?	/			☐ Containers, Improper; Client Contacted; Proceed/Cancel
7. Do sample container labels match COC? (IDs, Dates, Times)	/			☐ COC & Samples Do Not Match ☐ COC Incorrect/Incomplete ☐ COC Not Received
8. Were all of the samples listed on the COC received?	/			☐ Sample Received, Not on COC ☐ Sample on COC, Not Received
9. Is the date/time of sample collection noted?	/			☐ COC; No Date/Time; Client Contacted
10. Was the sampler identified on the COC?	/			☐ Sampler Not Listed on COC
11. Is the client and project name/# identified?	/			☐ COC Incorrect/Incomplete
12. Are tests/parameters listed for each sample?	/			☐ COC No tests on COC
13. Is the matrix of the samples noted?	/			☐ COC Incorrect/Incomplete
14. Was COC relinquished? (Signed/Dated/Timed)	/			☐ COC Incorrect/Incomplete
15. Were samples received within holding time?	/			☐ Holding Time - Receipt
16. Were samples received with correct chemical preservative (excluding Encore)?			/	☐ pH Adjusted, pH Included (See box 16A) ☐ Incorrect Preservative
17. Were VOA samples received without headspace?			/	☐ Headspace (VOA only)
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			/	☐ Residual Chlorine
19. For 1613B water samples is pH<9?			/	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			/	☐ Project missing info

Comments/Actions Taken

RT: 1.3°C CT: 1.4°C
1 cooler, FedEx Pg
Custody seal intact
Tr# 2828 8850 9224
KW 8/24/21

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: 1400647 PM Instructions:

Sample Receiving Associate: Kelsey Date: 8/24/21

QA026R32.doc, 062719

ATTACHMENT 3
SGS SEQUENTIAL EXTRACTION LABORATORY REPORT

SGS proposal: IBD
SGS project #: 2267

Sample receipt date: 13-Dec-23
Report date: 18-Apr-23

Version: Final

Customer details

Name:	Lain Glossop
Address:	SGS Mineralogy

Project reference:

P.O. number:

COC:

ANALYSIS REPORT

SGS WO: 5

Report Distribution

Name	Email
Lain Glossop	
Kim Gibbs	

Special notes:

Tessier sequential extraction

Mineralogy LIMS: MI7011-NOV22
Project: CA20I-00000-211-19465-03

3260 Production Way
Burnaby - British Columbia - V5A 4W4
Phone: 604-638-2349 FAX: 604-444-5486

ANALYSIS REPORT

Method Summaries *Test method information available upon request.*

S(T) and C(T): Total sulfur and total carbon by LECO, Method CSA06V
S(SO4): Sulfate by HCl digestion with ICP finish, Method CSA07V
S(S2-): Sulfide by calculation of S(T) - S(SO4)

TIC: Total inorganic carbon by coulometry, Method CSB02V
AP: Acid generating potential based on sulfide sulfur
NP: Modified neutralisation potential by excess acid addition and back titration to pH 8.3
Net NP: Net neutralisation potential = NP - AP
NPR: Neutralisation potential ratio = NP/AP

Metals by Aqua regia digest with ICP-OES/MS finish, Method ICP21B20/ICM21B20
Metals by multi-acid digest with ICP-OES/MS finish, Method ICP40Q12/IMS40Q12
Tessier Sequential Extraction - method available on request

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Preliminary Data

Noelene Ahern - Manager: ARD

Final Data Approval

Noelene Ahern - Manager: ARD

Tessier Extraction

Water Soluble Metals
Reagent: 15 mL of Nanopure Distilled Water

Sample			N-SB-04 (12-18) Water Soluble	N-SB-04 (40-45) Water Soluble	N-SB-02 (10-13) Water Soluble
Sample weight (g)			1.0357	1.0313	1.0496
Reagent volume (mL)			15	15	15.0
Volume analysed (after wash dilution and preservation) (mL)			22.5	22.5	22.5
Final diluted solution weight (g)			22.32	21.90	21.91
Parameter	**Units**	**RDL**			
Hardness CaCO3	mg/L	0.05	41.6	32.2	45.5
Aluminum Al	mg/L	0.001	0.311	0.241	0.375
Antimony Sb	mg/L	0.0009	< 0.0009	< 0.0009	< 0.0009
Arsenic As	mg/L	0.0002	0.0008	0.0018	0.0011
Barium Ba	mg/L	0.00002	0.00694	0.0119	0.0087
Beryllium Be	mg/L	0.000007	0.000011	< 0.000007	0.000012
Bismuth Bi	mg/L	0.00001	< 0.00001	< 0.00001	< 0.00001
Boron B	mg/L	0.002	0.018	0.016	0.023
Cadmium Cd	mg/L	0.000003	0.000004	0.000006	0.000004
Calcium Ca	mg/L	0.01	10.8	8.09	10.6
Chromium Cr	mg/L	0.00008	0.00239	0.00165	0.00166
Cobalt Co	mg/L	0.000004	0.000084	0.000058	0.000083
Copper Cu	mg/L	0.0002	0.001	0.0012	0.0014
Iron Fe	mg/L	0.007	0.679	0.533	0.456
Lead Pb	mg/L	0.00009	0.00034	0.00027	0.00036
Lithium Li	mg/L	0.0001	0.0148	0.0073	0.0162
Magnesium Mg	mg/L	0.001	3.55	2.92	4.65
Manganese Mn	mg/L	0.00001	0.00514	0.00508	0.00477
Mercury Hg	ug/L	0.01	< 0.01	< 0.01	< 0.01
Molybdenum Mo	mg/L	0.00004	0.00956	0.00494	0.00948
Nickel Ni	mg/L	0.0001	0.0017	0.0009	0.0012
Phosphorus P	mg/L	0.003	0.031	0.027	0.026
Potassium K	mg/L	0.003	3.87	7.15	6.2
Selenium Se	mg/L	0.00004	0.00027	0.0019	0.00075
Silicon Si	mg/L	0.02	3.35	2.74	3.43
Silver Ag	mg/L	0.00005	< 0.00005	< 0.00005	< 0.00005
Sodium Na	mg/L	0.01	4.11	3.94	3.74
Strontium Sr	mg/L	0.00002	0.0228	0.0392	0.0325
Sulphur (S)	mg/L	1	4	2	5
Thallium Tl	mg/L	0.000005	0.000012	0.000023	0.00002
Tin Sn	mg/L	0.00006	0.00041	0.00044	0.00041
Titanium Ti	mg/L	0.00005	0.00306	0.00192	0.00428
Uranium U	mg/L	0.000002	0.000168	0.000359	0.000645
Vanadium V	mg/L	0.00001	0.00149	0.00294	0.00169
Zinc Zn	mg/L	0.002	0.003	0.002	0.003
Zirconium Zr	mg/L	0.002	< 0.002	< 0.002	< 0.002

Tessier Extraction

Water Soluble Metals Reagent: 15 mL of Nanopure Distilled Water					
Sample			**N-SB-05 (10-16.6) Water Soluble**	**N-SB-14 (50-52) Water Soluble**	**Blank**
Sample weight (g)			1.0388	1.0434	0
Reagent volume (mL)			15.0	15.0	15
Volume analysed (after wash dilution and preservation) (mL)			22.5	22.5	22.5
Final diluted solution weight (g)			22.02	22.13	23.18
Parameter	**Units**	**RDL**			
Hardness CaCO3	mg/L	0.05	44.2	80	2.4
Aluminum Al	mg/L	0.001	2.88	0.817	< 0.01
Antimony Sb	mg/L	0.0009	< 0.0009	< 0.0009	< 0.009
Arsenic As	mg/L	0.0002	0.0024	0.0022	< 0.002
Barium Ba	mg/L	0.00002	0.037	0.01524	0.0036
Beryllium Be	mg/L	0.000007	0.000173	0.000053	< 0.00007
Bismuth Bi	mg/L	0.00001	0.00002	0.00002	< 0.0001
Boron B	mg/L	0.002	0.009	0.024	< 0.02
Cadmium Cd	mg/L	0.000003	0.000005	0.000018	< 0.00003
Calcium Ca	mg/L	0.01	10.6	22.5	< 0.1
Chromium Cr	mg/L	0.00008	0.0069	0.00722	0.0449
Cobalt Co	mg/L	0.000004	0.001001	0.000602	0.00139
Copper Cu	mg/L	0.0002	0.0079	0.0146	0.011
Iron Fe	mg/L	0.007	3.45	3.02	25.4
Lead Pb	mg/L	0.00009	0.00257	0.00124	< 0.0009
Lithium Li	mg/L	0.0001	0.0099	0.0113	< 0.001
Magnesium Mg	mg/L	0.001	4.33	5.78	0.57
Manganese Mn	mg/L	0.00001	0.0289	0.0403	0.174
Mercury Hg	ug/L	0.01	< 0.01	< 0.01	< 0.01
Molybdenum Mo	mg/L	0.00004	0.0024	0.02013	0.0047
Nickel Ni	mg/L	0.0001	0.005	0.0208	0.059
Phosphorus P	mg/L	0.003	0.082	0.069	< 0.03
Potassium K	mg/L	0.003	2.69	11	0.09
Selenium Se	mg/L	0.00004	0.00141	0.00218	< 0.0004
Silicon Si	mg/L	0.02	9.36	3.3	< 0.2
Silver Ag	mg/L	0.00005	< 0.00005	< 0.00005	< 0.0005
Sodium Na	mg/L	0.01	5.05	4.8	< 0.1
Strontium Sr	mg/L	0.00002	0.0359	0.0634	< 0.0008
Sulphur (S)	mg/L	1	5	18	< 1
Thallium Tl	mg/L	0.000005	0.000033	0.000052	< 0.00005
Tin Sn	mg/L	0.00006	0.00043	0.00043	0.0018
Titanium Ti	mg/L	0.00005	0.0467	0.0145	0.001
Uranium U	mg/L	0.000002	0.000255	0.00176	0.00002
Vanadium V	mg/L	0.00001	0.00779	0.00257	0.0009
Zinc Zn	mg/L	0.002	0.009	0.007	0.02
Zirconium Zr	mg/L	0.002	0.005	0.003	< 0.02

Tessier Extraction

Exchangeable Metals
Reagent: 15 mL of 1 M MgCl2 (pH 7)

Sample			N-SB-04 (12-18)	N-SB-04 (40-45)	N-SB-02 (10-13)
Reagent volume (mL)			15	15	15
Volume analysed (after wash dilution and preservation) (mL)			27.5	27.5	27.5
Final diluted solution weight (g)			28.82	29.36	30.0
Parameter	**Units**	**RDL**			
Hardness CaCO3	mg/L	0.05	42500	33000	31000
Aluminum Al	mg/L	0.001	0.35	0.25	0.17
Antimony Sb	mg/L	0.0009	< 0.009	< 0.009	< 0.009
Arsenic As	mg/L	0.0002	0.005	0.006	0.006
Barium Ba	mg/L	0.00002	0.954	0.609	0.699
Beryllium Be	mg/L	0.000007	0.00013	0.00013	0.00011
Bismuth Bi	mg/L	0.00001	0.0002	0.0003	0.0003
Boron B	mg/L	0.002	< 0.02	< 0.02	< 0.02
Cadmium Cd	mg/L	0.000003	0.00074	0.00127	0.00081
Calcium Ca	mg/L	0.01	129	97.8	106
Chromium Cr	mg/L	0.00008	0.0246	0.0275	0.0296
Cobalt Co	mg/L	0.000004	0.00111	0.00093	0.00118
Copper Cu	mg/L	0.0002	0.004	0.016	0.011
Iron Fe	mg/L	0.007	0.65	0.49	0.32
Lead Pb	mg/L	0.00009	< 0.0009	< 0.0009	< 0.0009
Lithium Li	mg/L	0.0001	0.017	0.009	0.015
Magnesium Mg	mg/L	0.001	10300	7990	7480
Manganese Mn	mg/L	0.00001	0.173	0.415	0.276
Mercury Hg	ug/L	0.01	< 0.01	< 0.01	< 0.01
Molybdenum Mo	mg/L	0.00004	0.0052	0.004	0.0045
Nickel Ni	mg/L	0.0001	0.002	0.002	0.003
Phosphorus P	mg/L	0.003	0.11	0.14	0.08
Potassium K	mg/L	0.003	12.7	9.2	11.5
Selenium Se	mg/L	0.00004	0.0042	0.0048	0.0034
Silicon Si	mg/L	0.02	3.5	3	3
Silver Ag	mg/L	0.00005	0.003	0.0084	0.0072
Sodium Na	mg/L	0.01	5.8	4.7	4.1
Strontium Sr	mg/L	0.00002	0.279	0.242	0.244
Sulphur (S)	mg/L	1	26	26	25
Thallium Tl	mg/L	0.000005	0.00018	0.00026	0.00017
Tin Sn	mg/L	0.00006	0.0043	0.0038	0.004
Titanium Ti	mg/L	0.00005	0.0105	0.0083	0.0048
Uranium U	mg/L	0.000002	0.00243	0.00256	0.0029
Vanadium V	mg/L	0.00001	0.0111	0.0124	0.0116
Zinc Zn	mg/L	0.002	0.03	0.03	0.02
Zirconium Zr	mg/L	0.002	< 0.02	< 0.02	< 0.02

Tessier Extraction

Exchangeable Metals Reagent: 15 mL of 1 M MgCl2 (pH 7)					
Sample			**N-SB-05 (10-16.6)**	**N-SB-14 (50-52)**	**Blank**
Reagent volume (mL)			15	15	15
Volume analysed (after wash dilution and preservation) (mL)			27.5	27.5	27.5
Final diluted solution weight (g)			29.025	30.01	28.52
Parameter	**Units**	**RDL**			
Hardness CaCO3	mg/L	0.05	39000	36300	30600
Aluminum Al	mg/L	0.001	0.42	0.23	0.02
Antimony Sb	mg/L	0.0009	< 0.009	< 0.009	< 0.009
Arsenic As	mg/L	0.0002	0.003	0.005	0.003
Barium Ba	mg/L	0.00002	1.86	0.327	0.0046
Beryllium Be	mg/L	0.000007	0.00014	0.0001	< 0.00007
Bismuth Bi	mg/L	0.00001	0.0008	0.0003	< 0.0001
Boron B	mg/L	0.002	< 0.02	< 0.02	< 0.02
Cadmium Cd	mg/L	0.000003	0.00056	0.001	< 0.00003
Calcium Ca	mg/L	0.01	104	116	1.7
Chromium Cr	mg/L	0.00008	0.0197	0.0244	0.0599
Cobalt Co	mg/L	0.000004	0.00791	0.00164	0.00094
Copper Cu	mg/L	0.0002	0.007	0.008	0.011
Iron Fe	mg/L	0.007	0.5	0.38	20.8
Lead Pb	mg/L	0.00009	0.0011	< 0.0009	0.001
Lithium Li	mg/L	0.0001	0.013	0.012	0.001
Magnesium Mg	mg/L	0.001	9430	8770	7420
Manganese Mn	mg/L	0.00001	0.486	0.561	0.149
Mercury Hg	ug/L	0.01	< 0.01	0.02	< 0.01
Molybdenum Mo	mg/L	0.00004	0.0037	0.0084	0.0071
Nickel Ni	mg/L	0.0001	0.007	0.004	0.059
Phosphorus P	mg/L	0.003	0.09	0.11	< 0.03
Potassium K	mg/L	0.003	9.91	10.9	1.91
Selenium Se	mg/L	0.00004	0.0049	0.0041	< 0.0004
Silicon Si	mg/L	0.02	4	2.7	< 0.2
Silver Ag	mg/L	0.00005	0.0072	0.0043	0.0076
Sodium Na	mg/L	0.01	10.9	7.4	1.3
Strontium Sr	mg/L	0.00002	0.421	0.248	0.003
Sulphur (S)	mg/L	1	26	26	22
Thallium Tl	mg/L	0.000005	0.00016	0.00032	< 0.00005
Tin Sn	mg/L	0.00006	0.0042	0.0041	0.0035
Titanium Ti	mg/L	0.00005	0.015	0.0077	0.0006
Uranium U	mg/L	0.000002	0.0004	0.00647	0.00003
Vanadium V	mg/L	0.00001	0.0086	0.0097	0.0082
Zinc Zn	mg/L	0.002	0.03	0.02	0.03
Zirconium Zr	mg/L	0.002	< 0.02	< 0.02	< 0.02

Tessier Extraction

Metals Bound to Carbonates

Reagent: 15 mL of 1 M NaOAc (adjusted to pH 5.0 with Acetic Acid)

Sample			N-SB-04 (12-18) Bound to Carbonate	N-SB-04 (40-45) Bound to Carbonate	N-SB-02 (10-13) Bound to Carbonate
Reagent volume (mL)			15	15	15
Volume analysed (after wash dilution and preservation) (mL)			32.5	32.5	32.5
Final diluted solution weight (g)			33.705	33.68	33.6
Parameter	**Units**	**RDL**			
Hardness CaCO3	mg/L	0.05	4960	4450	5020
Aluminum Al	mg/L	0.001	18.3	13.3	16.7
Antimony Sb	mg/L	0.0009	< 0.009	< 0.009	< 0.009
Arsenic As	mg/L	0.0002	0.008	0.009	0.007
Barium Ba	mg/L	0.00002	1.99	0.709	1.23
Beryllium Be	mg/L	0.000007	0.00383	0.00302	0.00317
Bismuth Bi	mg/L	0.00001	0.0009	0.0008	0.0006
Boron B	mg/L	0.002	0.03	0.03	0.05
Cadmium Cd	mg/L	0.000003	0.00621	0.00455	0.00267
Calcium Ca	mg/L	0.01	1560	1310	1360
Chromium Cr	mg/L	0.00008	0.83	2.12	1.85
Cobalt Co	mg/L	0.000004	0.136	0.0217	0.118
Copper Cu	mg/L	0.0002	0.405	0.399	0.575
Iron Fe	mg/L	0.007	23.2	53	46.2
Lead Pb	mg/L	0.00009	0.116	0.0707	0.0947
Lithium Li	mg/L	0.0001	0.034	0.024	0.033
Magnesium Mg	mg/L	0.001	259	290	393
Manganese Mn	mg/L	0.00001	18.1	8.75	10.4
Mercury Hg	ug/L	0.01	< 0.01	< 0.01	< 0.01
Molybdenum Mo	mg/L	0.00004	0.0159	0.0382	0.0187
Nickel Ni	mg/L	0.0001	0.152	0.099	0.193
Phosphorus P	mg/L	0.003	0.1	0.33	0.17
Potassium K	mg/L	0.003	9.92	8.24	9.87
Selenium Se	mg/L	0.00004	0.0048	0.0048	0.0043
Silicon Si	mg/L	0.02	23	17.4	23.4
Silver Ag	mg/L	0.00005	< 0.0005	< 0.0005	< 0.0005
Sodium Na	mg/L	0.01	8700	8610	8630
Strontium Sr	mg/L	0.00002	1.45	1.52	1.19
Sulphur (S)	mg/L	1	5	3	5
Thallium Tl	mg/L	0.000005	0.00026	0.0002	0.00019
Tin Sn	mg/L	0.00006	0.0032	0.0028	0.0027
Titanium Ti	mg/L	0.00005	0.0118	0.0195	0.0158
Uranium U	mg/L	0.000002	0.00843	0.00618	0.00852
Vanadium V	mg/L	0.00001	0.0251	0.0842	0.0708
Zinc Zn	mg/L	0.002	0.19	0.21	0.3
Zirconium Zr	mg/L	0.002	< 0.02	< 0.02	< 0.02

Tessier Extraction

Metals Bound to Carbonates Reagent: 15 mL of 1 M NaOAc (adjusted to pH 5.0 with Acetic Acid)					
Sample			**N-SB-05 (10-16.6) Bound to Carbonate**	**N-SB-14 (50-52) Bound to Carbonate**	**Blank**
Reagent volume (mL)			15	15	15
Volume analysed (after wash dilution and preservation) (mL)			32.5	32.5	32.5
Final diluted solution weight (g)			33.78	33.74	33.42
Parameter	**Units**	**RDL**			
Hardness CaCO3	mg/L	0.05	890	4770	1
Aluminum Al	mg/L	0.001	17.5	17.1	0.02
Antimony Sb	mg/L	0.0009	< 0.009	< 0.009	< 0.009
Arsenic As	mg/L	0.0002	0.006	0.009	< 0.002
Barium Ba	mg/L	0.00002	1.57	0.711	0.002
Beryllium Be	mg/L	0.000007	0.00537	0.00372	< 0.00007
Bismuth Bi	mg/L	0.00001	0.0007	0.001	< 0.0001
Boron B	mg/L	0.002	< 0.02	0.04	< 0.02
Cadmium Cd	mg/L	0.000003	0.00068	0.00348	< 0.00003
Calcium Ca	mg/L	0.01	22.2	1410	0
Chromium Cr	mg/L	0.00008	1.53	1.89	0.004
Cobalt Co	mg/L	0.000004	0.0977	0.0502	< 0.00004
Copper Cu	mg/L	0.0002	0.442	0.033	< 0.002
Iron Fe	mg/L	0.007	31.7	72	0.16
Lead Pb	mg/L	0.00009	0.0857	0.0701	< 0.0009
Lithium Li	mg/L	0.0001	0.019	0.031	0.002
Magnesium Mg	mg/L	0.001	203	301	0.18
Manganese Mn	mg/L	0.00001	2.22	10.8	0.0075
Mercury Hg	ug/L	0.01	< 0.01	< 0.01	< 0.01
Molybdenum Mo	mg/L	0.00004	0.0173	0.0292	0.002
Nickel Ni	mg/L	0.0001	0.113	0.136	0.001
Phosphorus P	mg/L	0.003	0.12	0.16	< 0.03
Potassium K	mg/L	0.003	6.92	9.33	2.78
Selenium Se	mg/L	0.00004	0.0047	0.0066	0.0007
Silicon Si	mg/L	0.02	25.5	22.5	0
Silver Ag	mg/L	0.00005	< 0.0005	< 0.0005	0.0065
Sodium Na	mg/L	0.01	8770	8540	9600
Strontium Sr	mg/L	0.00002	0.0944	1.65	< 0.0008
Sulphur (S)	mg/L	1	4	4	< 10
Thallium Tl	mg/L	0.000005	0.00009	0.00021	< 0.00005
Tin Sn	mg/L	0.00006	0.0025	0.003	0.0015
Titanium Ti	mg/L	0.00005	0.0091	0.017	0.0005
Uranium U	mg/L	0.000002	0.00511	0.0127	0.00005
Vanadium V	mg/L	0.00001	0.0937	0.0919	0.0002
Zinc Zn	mg/L	0.002	0.19	0.37	0.02
Zirconium Zr	mg/L	0.002	< 0.02	< 0.02	< 0.02

Tessier Extraction

Metals Bound to Fe and Mn Oxides
Reagent: 15 mL of 0.04M NH2OH. HCl in 25% HOAc

Sample			N-SB-04 (12-18) Bound to Fe&Mn Oxides	N-SB-04 (40-45) Bound to Fe&Mn Oxides	N-SB-02 (10-13) Bound to Fe&Mn Oxides
Reagent volume (mL)			15	15	15
Volume analysed (after wash dilution and preservation) (mL)			32.5	32.5	32.5
Final diluted solution weight (g)			31.99	32.23	33.0
Parameter	**Units**	**RDL**			
Hardness CaCO3	mg/L	0.05	1260	939	1540
Aluminum Al	mg/L	0.001	31.2	26.1	25.2
Antimony Sb	mg/L	0.0009	< 0.009	< 0.009	< 0.009
Arsenic As	mg/L	0.0002	0.009	0.025	0.009
Barium Ba	mg/L	0.00002	0.275	0.148	0.178
Beryllium Be	mg/L	0.000007	0.00777	0.00395	0.0051
Bismuth Bi	mg/L	0.00001	0.001	0.0007	0.0009
Boron B	mg/L	0.002	0.07	0.04	0.07
Cadmium Cd	mg/L	0.000003	0.00043	0.00384	0.00072
Calcium Ca	mg/L	0.01	265	203	319
Chromium Cr	mg/L	0.00008	0.759	0.718	0.789
Cobalt Co	mg/L	0.000004	0.0519	0.044	0.0248
Copper Cu	mg/L	0.0002	0.223	0.222	0.211
Iron Fe	mg/L	0.007	89.4	73.7	94.4
Lead Pb	mg/L	0.00009	0.0791	0.0605	0.0893
Lithium Li	mg/L	0.0001	0.106	0.062	0.084
Magnesium Mg	mg/L	0.001	146	105	181
Manganese Mn	mg/L	0.00001	1.77	1.57	2.09
Mercury Hg	ug/L	0.01	0.04	0.02	0.02
Molybdenum Mo	mg/L	0.00004	0.0432	0.0985	0.0738
Nickel Ni	mg/L	0.0001	0.142	0.126	0.127
Phosphorus P	mg/L	0.003	0.96	2.61	1.03
Potassium K	mg/L	0.003	5.82	4.3	5.15
Selenium Se	mg/L	0.00004	0.0004	0.0681	0.0009
Silicon Si	mg/L	0.02	37.2	25.8	32.6
Silver Ag	mg/L	0.00005	0.0094	0.0056	0.0047
Sodium Na	mg/L	0.01	67.8	36.8	50.2
Strontium Sr	mg/L	0.00002	0.214	0.192	0.191
Sulphur (S)	mg/L	1	6	11	7
Thallium Tl	mg/L	0.000005	0.00031	0.00031	0.00025
Tin Sn	mg/L	0.00006	0.0019	0.0054	0.0008
Titanium Ti	mg/L	0.00005	0.0088	0.0503	0.0145
Uranium U	mg/L	0.000002	0.00746	0.0053	0.00651
Vanadium V	mg/L	0.00001	0.166	0.0964	0.13
Zinc Zn	mg/L	0.002	0.28	0.25	0.35
Zirconium Zr	mg/L	0.002	< 0.02	< 0.02	0.02

Tessier Extraction

Metals Bound to Fe and Mn Oxides Reagent: 15 mL of 0.04M NH2OH. HCl in 25% HOAc					
Sample			**N-SB-05 (10-16.6) Bound to Fe&Mn Oxides**	**N-SB-14 (50-52) Bound to Fe&Mn Oxides**	**Blank**
Reagent volume (mL)			15	15	15
Volume analysed (after wash dilution and preservation) (mL)			32.5	32.5	32.5
Final diluted solution weight (g)			31.22	31.65	33.01
Parameter	**Units**	**RDL**			
Hardness CaCO3	mg/L	0.05	97	1720	< 0.5
Aluminum Al	mg/L	0.001	24.6	28.3	0.02
Antimony Sb	mg/L	0.0009	< 0.009	< 0.009	< 0.009
Arsenic As	mg/L	0.0002	0.012	0.021	< 0.002
Barium Ba	mg/L	0.00002	0.333	0.158	< 0.0008
Beryllium Be	mg/L	0.000007	0.0112	0.00513	< 0.00007
Bismuth Bi	mg/L	0.00001	0.0012	0.0014	< 0.0001
Boron B	mg/L	0.002	0.03	0.06	< 0.02
Cadmium Cd	mg/L	0.000003	0.0003	0.00064	< 0.00003
Calcium Ca	mg/L	0.01	4.5	357	< 0.1
Chromium Cr	mg/L	0.00008	1.07	0.822	0.0055
Cobalt Co	mg/L	0.000004	0.0479	0.0758	0.00004
Copper Cu	mg/L	0.0002	0.369	0.027	0.0013
Iron Fe	mg/L	0.007	106	148	0.073
Lead Pb	mg/L	0.00009	0.111	0.118	0.00043
Lithium Li	mg/L	0.0001	0.079	0.076	0.0058
Magnesium Mg	mg/L	0.001	20.9	201	0.019
Manganese Mn	mg/L	0.00001	0.783	2.78	0.0005
Mercury Hg	ug/L	0.01	0.03	0.01	< 0.01
Molybdenum Mo	mg/L	0.00004	0.0644	0.126	0.00391
Nickel Ni	mg/L	0.0001	0.182	0.172	0.0023
Phosphorus P	mg/L	0.003	0.48	2.03	0.027
Potassium K	mg/L	0.003	4.37	4.81	< 0.009
Selenium Se	mg/L	0.00004	0.0012	0.0017	0.00082
Silicon Si	mg/L	0.02	35.5	29.4	0.03
Silver Ag	mg/L	0.00005	0.0105	0.0006	0.00014
Sodium Na	mg/L	0.01	290	46.5	0.1
Strontium Sr	mg/L	0.00002	0.0319	0.248	0.00026
Sulphur (S)	mg/L	1	2	7	5
Thallium Tl	mg/L	0.000005	0.00012	0.00038	0.00002
Tin Sn	mg/L	0.00006	0.002	0.007	0.00175
Titanium Ti	mg/L	0.00005	0.0065	0.013	0.00067
Uranium U	mg/L	0.000002	0.00445	0.0078	0.00014
Vanadium V	mg/L	0.00001	0.3	0.15	0.00021
Zinc Zn	mg/L	0.002	0.3	0.41	0.033
Zirconium Zr	mg/L	0.002	< 0.02	0.02	0.002

Tessier Extraction

Metals Bound to Organics
Reagent: 3 mL of 0.02 M HNO3 + 5 mL 30% H2O2
+ 5 mL 1.2 M NH4OAc in 20% HNO3

Sample			N-SB-04 (12-18)	N-SB-04 (40-45)	N-SB-02 (10-13)
Reagent volume (mL)			15	15	15
Volume analysed (after wash dilution and preservation) (mL) (Vol. is approximate)			37.5	37.5	37.5
Final diluted solution weight (g)			36.635	37.275	37.4
Parameter	**Units**	**RDL**			
Hardness CaCO3	mg/L	0.05	121	65.4	84.2
Aluminum Al	mg/L	0.001	30.8	20.1	24.2
Antimony Sb	mg/L	0.0009	< 0.009	< 0.009	< 0.009
Arsenic As	mg/L	0.0002	0.011	0.015	0.037
Barium Ba	mg/L	0.00002	0.15	0.053	0.0763
Beryllium Be	mg/L	0.000007	0.00165	0.0007	0.00118
Bismuth Bi	mg/L	0.00001	< 0.0001	< 0.0001	< 0.0001
Boron B	mg/L	0.002	< 0.02	< 0.02	< 0.02
Cadmium Cd	mg/L	0.000003	0.00014	0.00019	0.00123
Calcium Ca	mg/L	0.01	27.8	15.7	18.1
Chromium Cr	mg/L	0.00008	0.173	0.148	0.176
Cobalt Co	mg/L	0.000004	0.0136	0.0155	0.0101
Copper Cu	mg/L	0.0002	0.061	0.164	0.155
Iron Fe	mg/L	0.007	11.3	14.5	13.3
Lead Pb	mg/L	0.00009	0.0291	0.019	0.028
Lithium Li	mg/L	0.0001	0.039	0.032	0.034
Magnesium Mg	mg/L	0.001	12.6	6.38	9.48
Manganese Mn	mg/L	0.00001	0.257	0.221	0.208
Mercury Hg	ug/L	0.01	< 0.01	< 0.01	< 0.01
Molybdenum Mo	mg/L	0.00004	0.089	0.101	0.121
Nickel Ni	mg/L	0.0001	0.048	0.045	0.044
Phosphorus P	mg/L	0.003	10.5	14.1	10.8
Potassium K	mg/L	0.003	1.87	1.34	1.68
Selenium Se	mg/L	0.00004	0.0007	0.0021	0.0046
Silicon Si	mg/L	0.02	18.7	14.5	18
Silver Ag	mg/L	0.00005	0.0064	0.0052	0.0066
Sodium Na	mg/L	0.01	17.7	16.1	16.9
Strontium Sr	mg/L	0.00002	0.0543	0.0518	0.038
Sulphur (S)	mg/L	1	2	6	8
Thallium Tl	mg/L	0.000005	0.00022	0.00022	0.00023
Tin Sn	mg/L	0.00006	0.059	0.22	0.135
Titanium Ti	mg/L	0.00005	0.931	0.93	1.1
Uranium U	mg/L	0.000002	0.00151	0.00152	0.00145
Vanadium V	mg/L	0.00001	0.0997	0.0549	0.0788
Zinc Zn	mg/L	0.002	0.11	0.15	0.3
Zirconium Zr	mg/L	0.002	< 0.02	0.05	0.04

Tessier Extraction

Metals Bound to Organics Reagent: 3 mL of 0.02 M HNO3 + 5 mL 30% H2O2 + 5 mL 1.2 M NH4OAc in 20% HNO3					
Sample			**N-SB-05 (10-16.6)**	**N-SB-14 (50-52)**	**Blank**
Reagent volume (mL)			15	15	15
Volume analysed (after wash dilution and preservation) (mL) (Vol. is approximate)			37.5	37.5	37.5
Final diluted solution weight (g)			36.37	36.84	39.06
Parameter	**Units**	**RDL**			
Hardness CaCO3	mg/L	0.05	34.5	89.5	5.4
Aluminum Al	mg/L	0.001	57.4	26.4	0.073
Antimony Sb	mg/L	0.0009	< 0.009	< 0.009	< 0.0009
Arsenic As	mg/L	0.0002	0.017	0.061	0.0003
Barium Ba	mg/L	0.00002	0.31	0.0667	0.00219
Beryllium Be	mg/L	0.000007	0.0027	0.00111	0.00001
Bismuth Bi	mg/L	0.00001	0.0001	0.0002	0.00001
Boron B	mg/L	0.002	< 0.02	< 0.02	0.008
Cadmium Cd	mg/L	0.000003	0.00021	0.00036	0.00001
Calcium Ca	mg/L	0.01	3.4	20.2	1.54
Chromium Cr	mg/L	0.00008	0.205	0.146	0.0126
Cobalt Co	mg/L	0.000004	0.015	0.0284	0.00035
Copper Cu	mg/L	0.0002	0.076	0.94	0.002
Iron Fe	mg/L	0.007	19.6	37.5	0.07
Lead Pb	mg/L	0.00009	0.0567	0.0417	0.00072
Lithium Li	mg/L	0.0001	0.022	0.041	0.0002
Magnesium Mg	mg/L	0.001	6.35	9.51	0.37
Manganese Mn	mg/L	0.00001	0.202	0.269	0.0016
Mercury Hg	ug/L	0.01	0.08	< 0.01	< 0.01
Molybdenum Mo	mg/L	0.00004	0.106	0.0792	0.00711
Nickel Ni	mg/L	0.0001	0.07	0.075	0.0087
Phosphorus P	mg/L	0.003	9.12	15.6	13.3
Potassium K	mg/L	0.003	1.62	1.38	0.19
Selenium Se	mg/L	0.00004	0.0016	0.0041	0.00106
Silicon Si	mg/L	0.02	21.8	17.5	0.11
Silver Ag	mg/L	0.00005	0.0034	0.0081	0.00018
Sodium Na	mg/L	0.01	20.6	16.7	16.7
Strontium Sr	mg/L	0.00002	0.0218	0.055	0.00848
Sulphur (S)	mg/L	1	2	22	< 1
Thallium Tl	mg/L	0.000005	0.00014	0.00057	< 0.000005
Tin Sn	mg/L	0.00006	0.0516	0.329	7.69
Titanium Ti	mg/L	0.00005	0.56	0.388	0.00257
Uranium U	mg/L	0.000002	0.00087	0.00262	0.00009
Vanadium V	mg/L	0.00001	0.114	0.0591	0.00016
Zinc Zn	mg/L	0.002	0.14	0.22	0.025
Zirconium Zr	mg/L	0.002	0.03	0.1	< 0.002

SGS proposal: IBD
SGS project #: 2267

Sample receipt date: 13-Dec-23
Report date: 18-Apr-23

Version: Final

Metals - Multi-Acid Digestion with ICP-OES/MS Finish

Test Units Method Code	Residual wt g	Aluminum µg/g	Antimony µg/g	Arsenic µg/g	Boron µg/g	Barium µg/g	Beryllium µg/g	Bismuth µg/g	Cadmium µg/g	Calcium µg/g	Chromium µg/g	Cobalt µg/g	Copper µg/g	Iron µg/g	Lead µg/g	Lithium µg/g	Magnesium µg/g
Lower detection		3	0.8	0.5	1	0.01	0.02	0.09	0.02	3	0.5	0.01	0.1	3	0.05	2	3
Sample ID																	
N-SB-04 (12-18)	0.7794	44000	1.10	13	5	390	1.4	0.2	< 0.02	2100	90	8.8	27.0	41000	13	30	5400
N-SB-04 (40-45)	0.7915	32000	< 0.8	11	<1	380	0.9	< 0.09	< 0.02	4400	53	5.7	16.0	24000	10	13	3300
N-SB-02 (10-13)	0.7800	36000	< 0.8	12	<1	370	0.8	0.1	< 0.02	2800	56	4.4	20.0	26000	9	19	3600
N-SB-05 (10-16.6)	0.9525	36000	< 0.8	4.3	<1	310	0.6	0.1	< 0.02	1900	47	4.3	13.0	20000	9	19	2800
N-SB-14 (50-52)	0.7531	38000	< 0.8	8.2	<1	390	0.9	< 0.09	0.02	4100	53	5.3	18.0	21000	8	18	4400

3260 Production Way
Burnaby - British Columbia - V5A 4W4
Phone: 604-638-2349 FAX: 604-444-5486

Test Units Method Code	Manganese µg/g	Molybdenum µg/g	Nickel µg/g	Phosphorus µg/g	Potassium µg/g	Selenium µg/g	Tin µg/g	Silver µg/g	Sodium µg/g	Strontium µg/g	Sulphur µg/g	Thallium µg/g	Titanium µg/g	Uranium µg/g	Vanadium µg/g	Zinc µg/g	Zirconium µg/g
Lower detection	0.1	0.1	0.1	3	3	0.7	6	0.5	3	0.02	3	0.02	0.1	0.002	1	0.7	0.03
Sample ID																	
N-SB-04 (12-18)	210	5.4	34	710	20000	< 0.1	240	< 0.5	8600	97	< 3	0.78	3900	2.11	77	82	392
N-SB-04 (40-45)	230	8.6	19	400	15000	< 0.1	210	< 0.5	12000	130	< 3	0.47	2900	1.44	42	51	270
N-SB-02 (10-13)	150	7.2	22	480	17000	< 0.1	220	< 0.5	7800	98	< 3	0.53	2600	1.54	46	52	293
N-SB-05 (10-16.6)	93	5.2	27	280	13000	< 0.1	190	< 0.5	5100	73	< 3	0.54	2900	1.29	39	50	307
N-SB-14 (50-52)	190	9.5	20	350	17000	< 0.1	220	1	10000	120	< 3	0.47	3200	1.82	52	43	342

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ATTACHMENT 4
SGS X-RAY DIFFRACTION LABORATORY REPORT

Quantitative X-Ray Diffraction by Rietveld Refinement

Report Prepared for:	*Environmental Services*
Project Number/ LIMS No.	*Custom XRD/MI4503-OCT21*
Sample Receipt:	*October 4, 2021*
Sample Analysis:	*October 8, 2021*
Reporting Date:	*November 2, 2021*

Instrument:	BRUKER AXS D8 Advance Diffractometer
Test Conditions:	Co radiation, 35 kV, 40 mA Regular Scanning: Step: 0.02°, Step time: 1s, 2θ range: 3-80°
Interpretations :	PDF2/PDF4 powder diffraction databases issued by the International Center for Diffraction Data (ICDD). DiffracPlus Eva and Topas software.
Detection Limit :	0.5-2%. Strongly dependent on crystallinity.

Contents:

1) Method Summary
2) Quantitative XRD Results
3) XRD Pattern(s)

Kim Gibbs, H.B.Sc., P.Geo.
Senior Mineralogist

Huyun Zhou, Ph.D., P.Geo.
Senior Mineralogist

ACCREDITATION: SGS Minerals Services Lakefield is accredited to the requirements of ISO/IEC 17025 for specific tests as listed on our scope of accreditation, including geochemical, mineralogical and trade mineral tests. To view a list of the accredited methods, please visit the following website and search SGS Canada - Minerals Services - Lakefield: http://palcan.scc.ca/SpecsSearch/GLSearchForm.do.

Method Summary

The Rietveld Method of Mineral Identification by XRD (ME-LR-MIN-MET-MN-D05) method used by SGS Minerals Services is accredited to the requirements of ISO/IEC 17025.

Mineral Identification and Interpretation:

Mineral identification and interpretation involves matching the diffraction pattern of an unknown material to patterns of single-phase reference materials. The reference patterns are compiled by the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD) database and released on software as Powder Diffraction Files (PDF).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds, except when internal standards have been added by request. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data or other additional tests.

Quantitative Rietveld Analysis:

Quantitative Rietveld Analysis is performed by using Topas 4.2 (Bruker AXS), a graphics based profile analysis program built around a non-linear least squares fitting system, to determine the amount of different phases present in a multicomponent sample. Whole pattern analyses are predicated by the fact that the X-ray diffraction pattern is a total sum of both instrumental and specimen factors. Unlike other peak intensity-based methods, the Rietveld method uses a least squares approach to refine a theoretical line profile until it matches the obtained experimental patterns.

Rietveld refinement is completed with a set of minerals specifically identified for the sample. Zero values indicate that the mineral was included in the refinement calculations, but the calculated concentration was less than 0.05wt%. Minerals not identified by the analyst are not included in refinement calculations for specific samples and are indicated with a dash.

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Summary of Rietveld Quantitative Analysis X-Ray Diffraction Results

Mineral/Compound	N-SB-05 (18.0-20.0) OCT4503-01 (wt %)	N-SB-05 (60.0-67.1) OCT4503-02 (wt %)	N-SB-18 (77.5-80.0) OCT4503-03 (wt %)	N-SB-02 (12.5-20.0) OCT4503-04 (wt %)	N-SB-02 (65.0-71.5) OCT4503-05 (wt %)	N-SB-14 OCT4503-06 (wt %)	N-SB-04 (12.0-18.0) OCT4503-07 (wt %)	N-SB-04 OCT4503-08 (wt %)	N-SB-XPW04 (10.0-15.0) OCT4503-09 (wt %)	N-SB-XPW01 (10.0-12.7) OCT4503-10 (wt %)
Quartz	46.0	41.3	32.7	48.9	47.6	48.0	47.3	51.7	22.6	68.7
Albite	8.2	8.8	4.1	8.4	5.2	13.6	9.1	12.7	14.5	10.0
Calcite	20.7	12.9	13.3	3.6	4.9	9.3	11.1	9.7	13.2	0.1
Dolomite	9.5	18.5	27.3	12.7	26.1	6.8	5.0	6.0	-	0.1
Ankerite	3.3	2.3	8.3	2.2	2.6	2.6	4.1	4.4	-	0.0
Microcline	4.5	4.5	4.2	7.6	5.1	6.2	5.4	4.2	-	8.8
Muscovite	5.0	1.6	1.2	8.7	1.0	5.5	10.5	3.1	-	8.5
Diopside	0.9	2.9	2.0	1.7	1.5	2.5	1.0	1.4	15.2	1.4
Biotite	1.8	1.8	0.8	3.5	1.5	1.8	2.4	2.1	-	2.5
Actinolite	-	2.9	2.1	-	-	-	-	2.3	-	-
Chlorite	-	2.6	1.9	2.8	2.7	3.8	4.2	2.3	-	-
Fluorapatite	-	-	2.0	-	1.8	-	-	-	-	-
Perovskite	-	-	-	-	-	-	-	-	8.7	-
Periclase	-	-	-	-	-	-	-	-	1.6	-
Hematite	-	-	-	-	-	-	-	-	3.4	-
Magnetite	-	-	-	-	-	-	-	-	0.1	-
Gehlenite	-	-	-	-	-	-	-	-	13.9	-
Mullite	-	-	-	-	-	-	-	-	3.7	-
Ganophyllite	-	-	-	-	-	-	-	-	3.1	-
TOTAL	100	100	100	100	100	100	100	100	100	100

Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

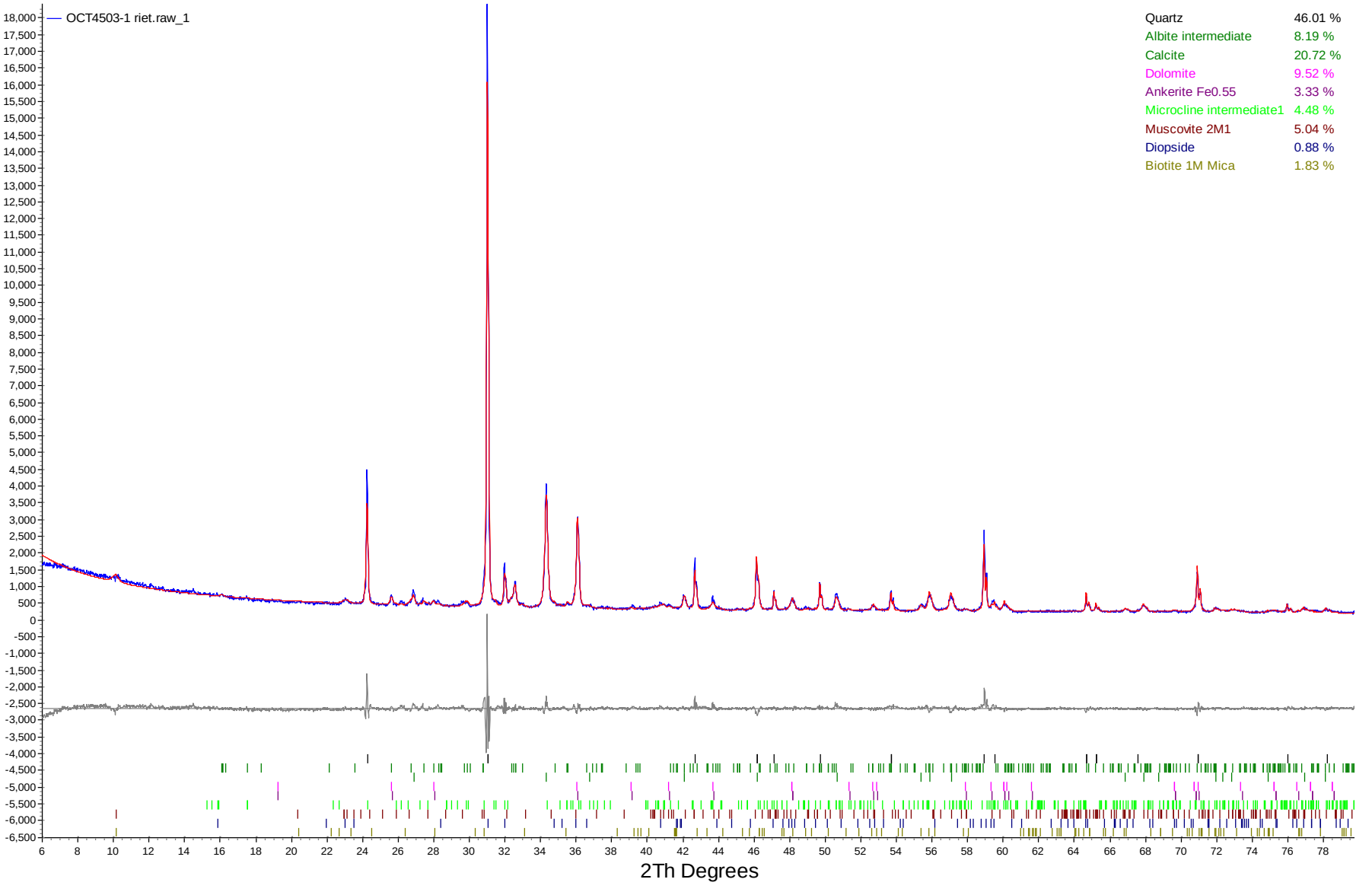
Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

The weight percent quantities indicated have been normalized to a sum of 100%. The quantity of amorphous material has not been determined.

Mineral List

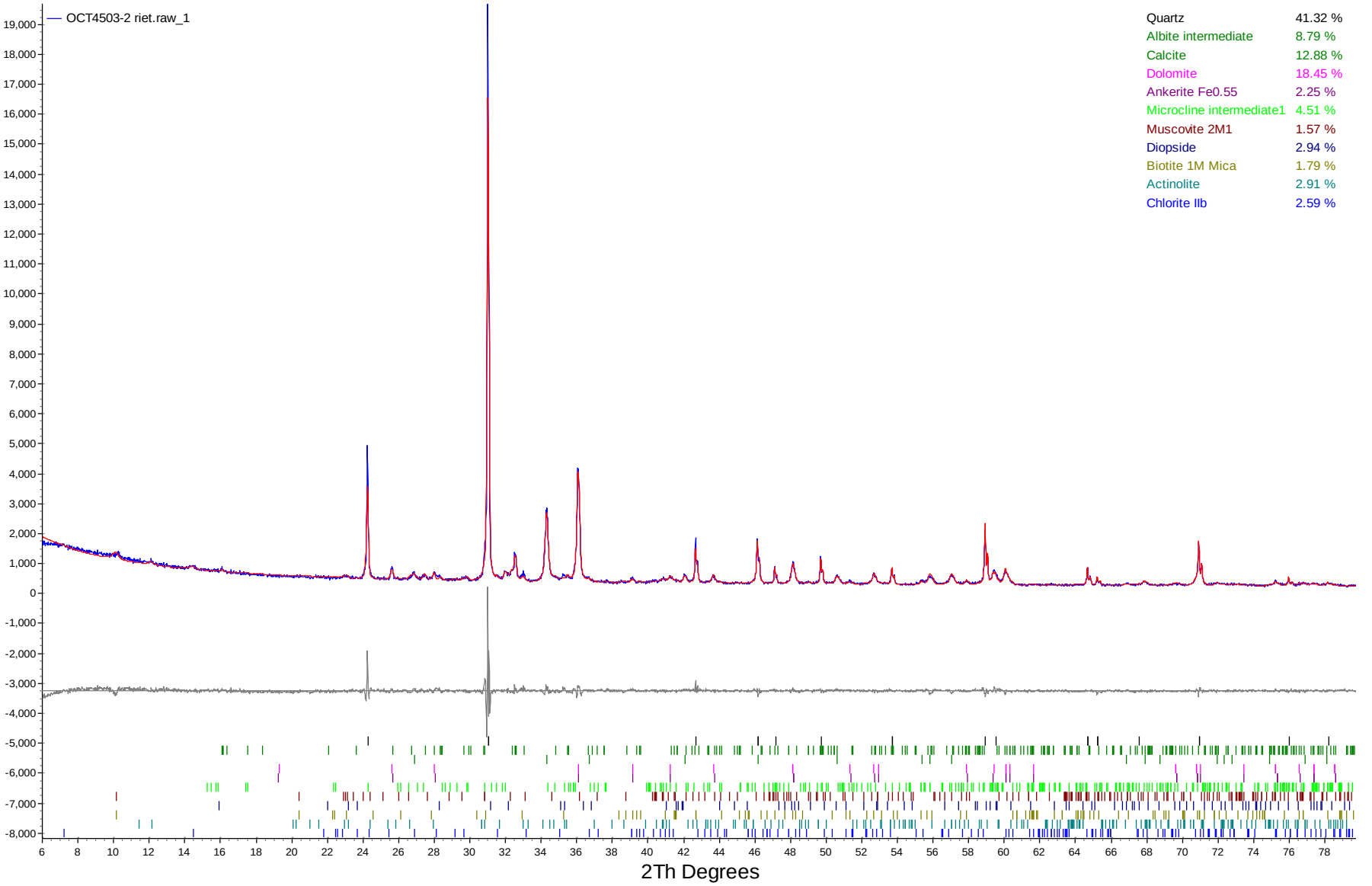
Mineral/Compound	Formula
Quartz	SiO_2
Albite	$NaAlSi_3O_8$
Calcite	$CaCO_3$
Dolomite	$CaMg(CO_3)_2$
Ankerite	$CaFe(CO_3)_2$
Microcline	$KAlSi_3O_8$
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$
Diopside	$CaMgSi_2O_6$
Biotite	$K(Mg,Fe)_3(AlSi_3O_{10})(OH)_2$
Actinolite	$Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$
Chlorite	$(Fe,(Mg,Mn)_5,Al)(Si_3Al)O_{10}(OH)_8$
Fluorapatite	$Ca_5(PO_4)_3F$
Perovskite	$CaTiO_3$
Periclase	MgO
Hematite	Fe2O3
Magnetite	Fe_3O_4
Gehlenite	$Ca_2(Mg_{0.25}Al_{0.75})(Si_{1.25}Al_{0.75}O_7)$
Mullite	$\sim Al_6Si_3O_{15}$
Ganophyllite	$K_{2.16}Mn_{16}Si_{26.9}O_{67.8}(OH)_8$

N-SB-05 (18.0-20.0)



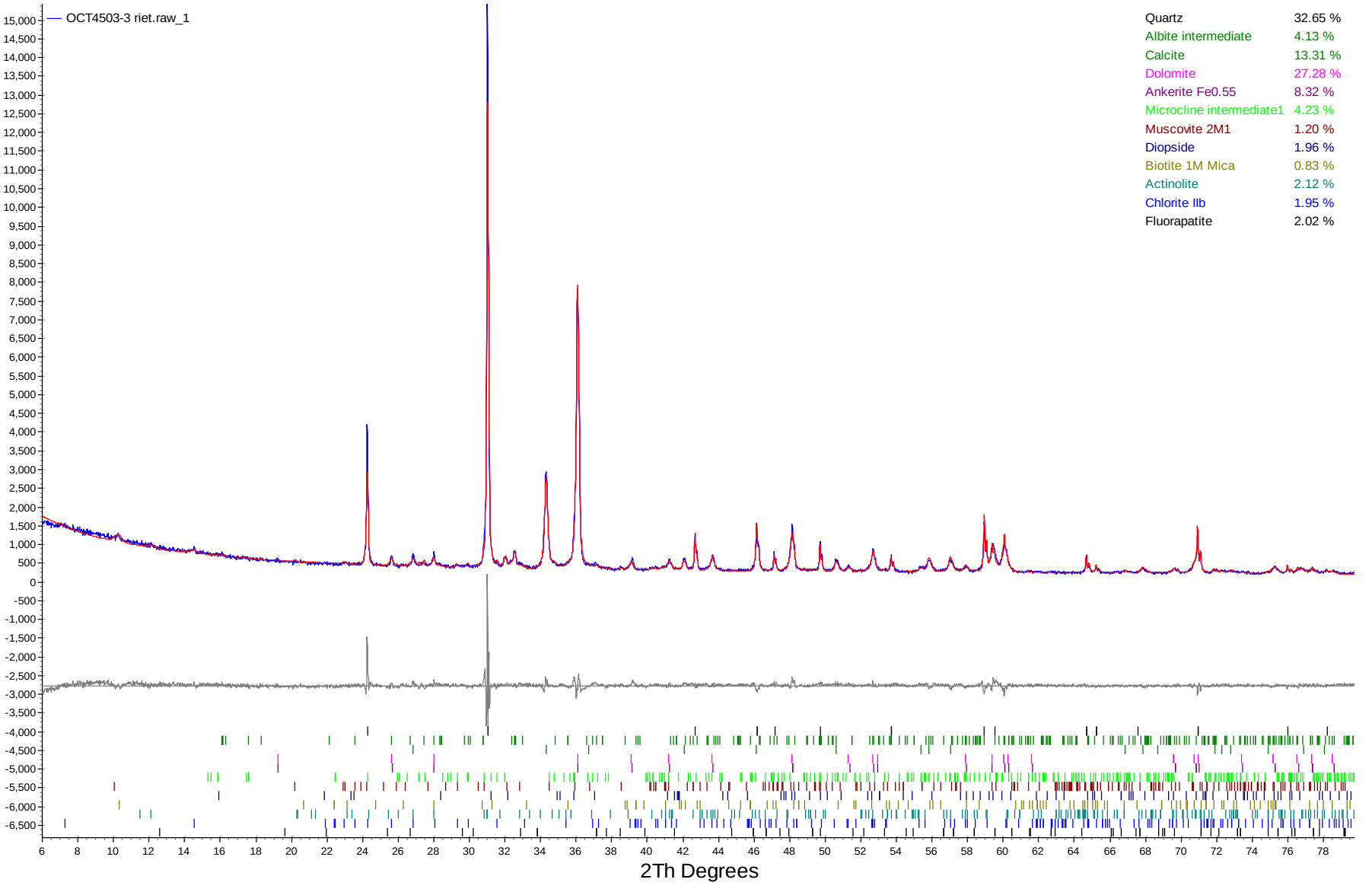
Quartz	46.01 %
Albite intermediate	8.19 %
Calcite	20.72 %
Dolomite	9.52 %
Ankerite Fe0.55	3.33 %
Microcline intermediate1	4.48 %
Muscovite 2M1	5.04 %
Diopside	0.88 %
Biotite 1M Mica	1.83 %

N-SB-05 (60.0-67.1)



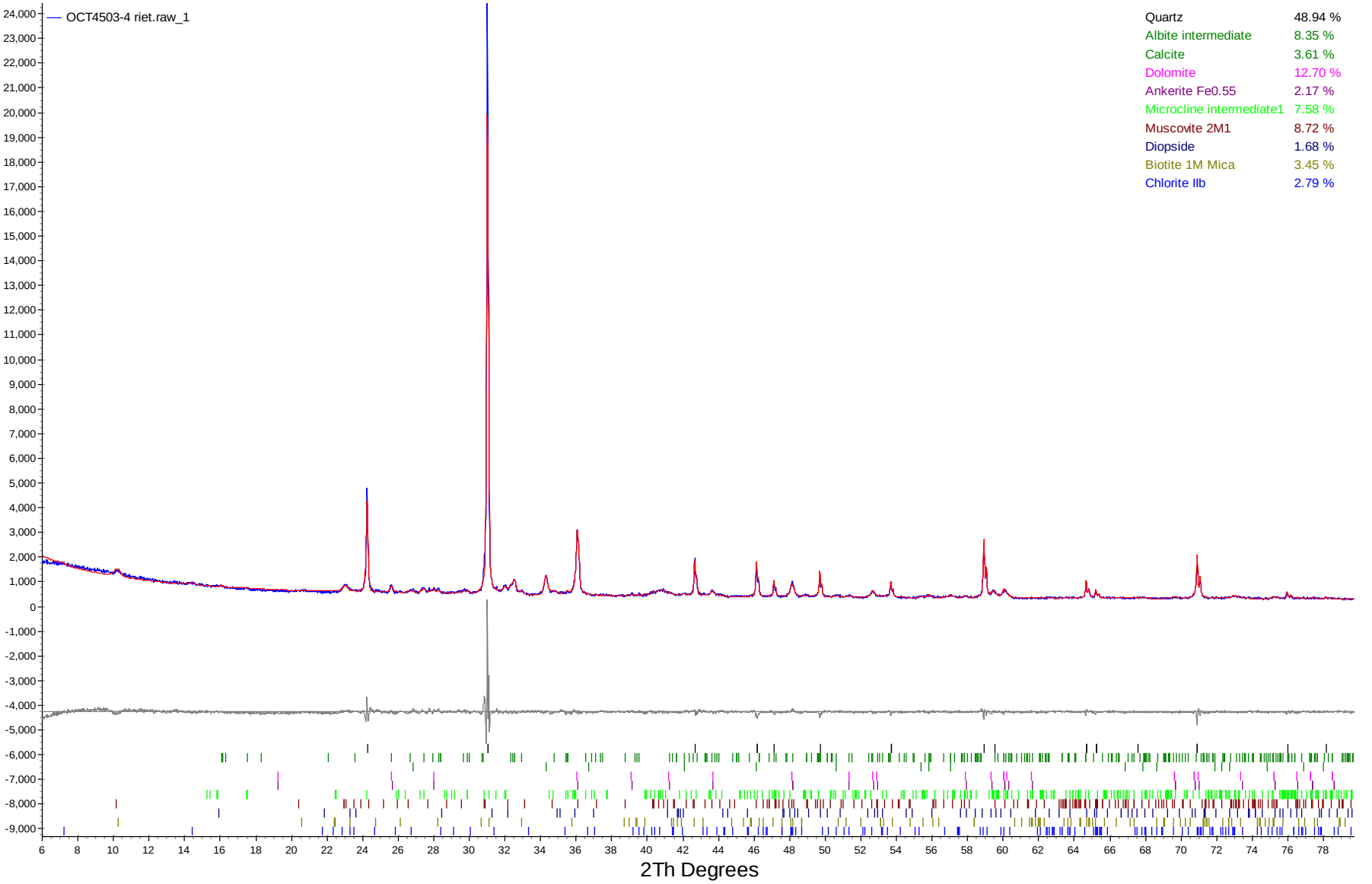
Quartz	41.32 %
Albite intermediate	8.79 %
Calcite	12.88 %
Dolomite	18.45 %
Ankerite Fe0.55	2.25 %
Microcline intermediate1	4.51 %
Muscovite 2M1	1.57 %
Diopside	2.94 %
Biotite 1M Mica	1.79 %
Actinolite	2.91 %
Chlorite IIb	2.59 %

N-SB-18 (77.5-80.0)



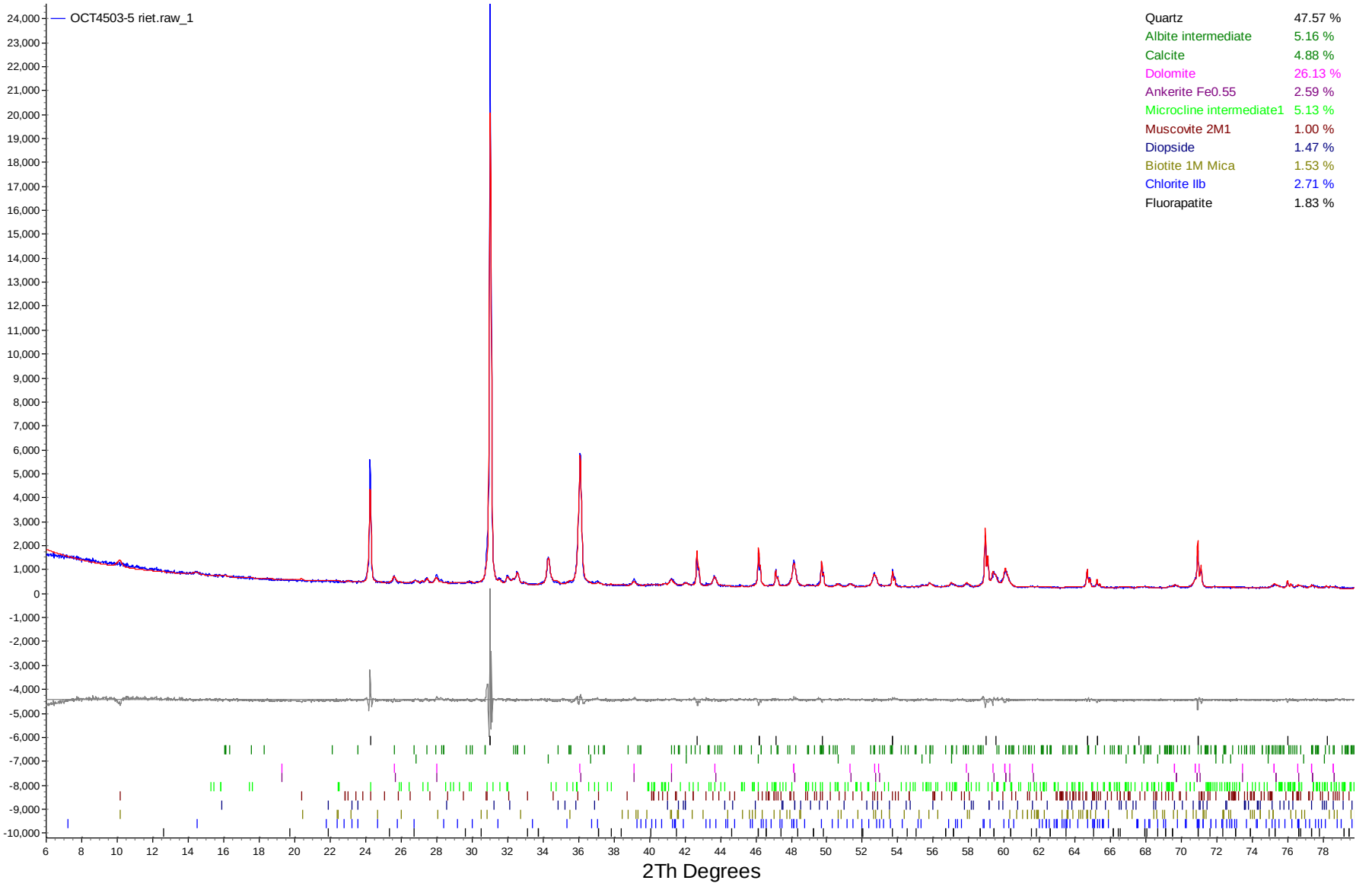
Quartz	32.65 %
Albite intermediate	4.13 %
Calcite	13.31 %
Dolomite	27.28 %
Ankerite Fe0.55	8.32 %
Microcline intermediate1	4.23 %
Muscovite 2M1	1.20 %
Diopside	1.96 %
Biotite 1M Mica	0.83 %
Actinolite	2.12 %
Chlorite IIb	1.95 %
Fluorapatite	2.02 %

N-SB-02 (12.5-20.0)



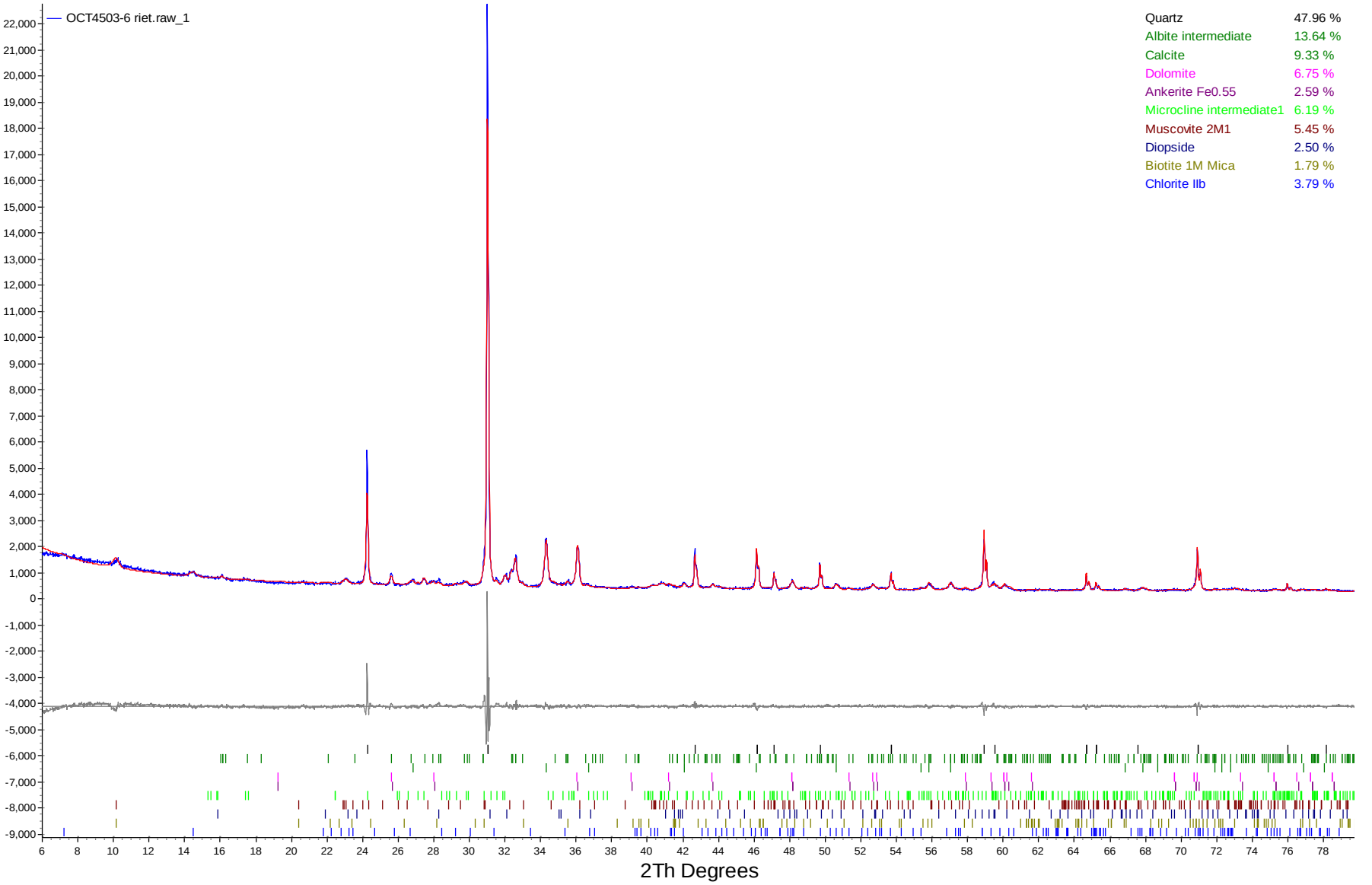
Quartz	48.94 %
Albite intermediate	8.35 %
Calcite	3.61 %
Dolomite	12.70 %
Ankerite Fe0.55	2.17 %
Microcline intermediate1	7.58 %
Muscovite 2M1	8.72 %
Diopside	1.68 %
Biotite 1M Mica	3.45 %
Chlorite IIb	2.79 %

N-SB-02 (65.0-71.5)



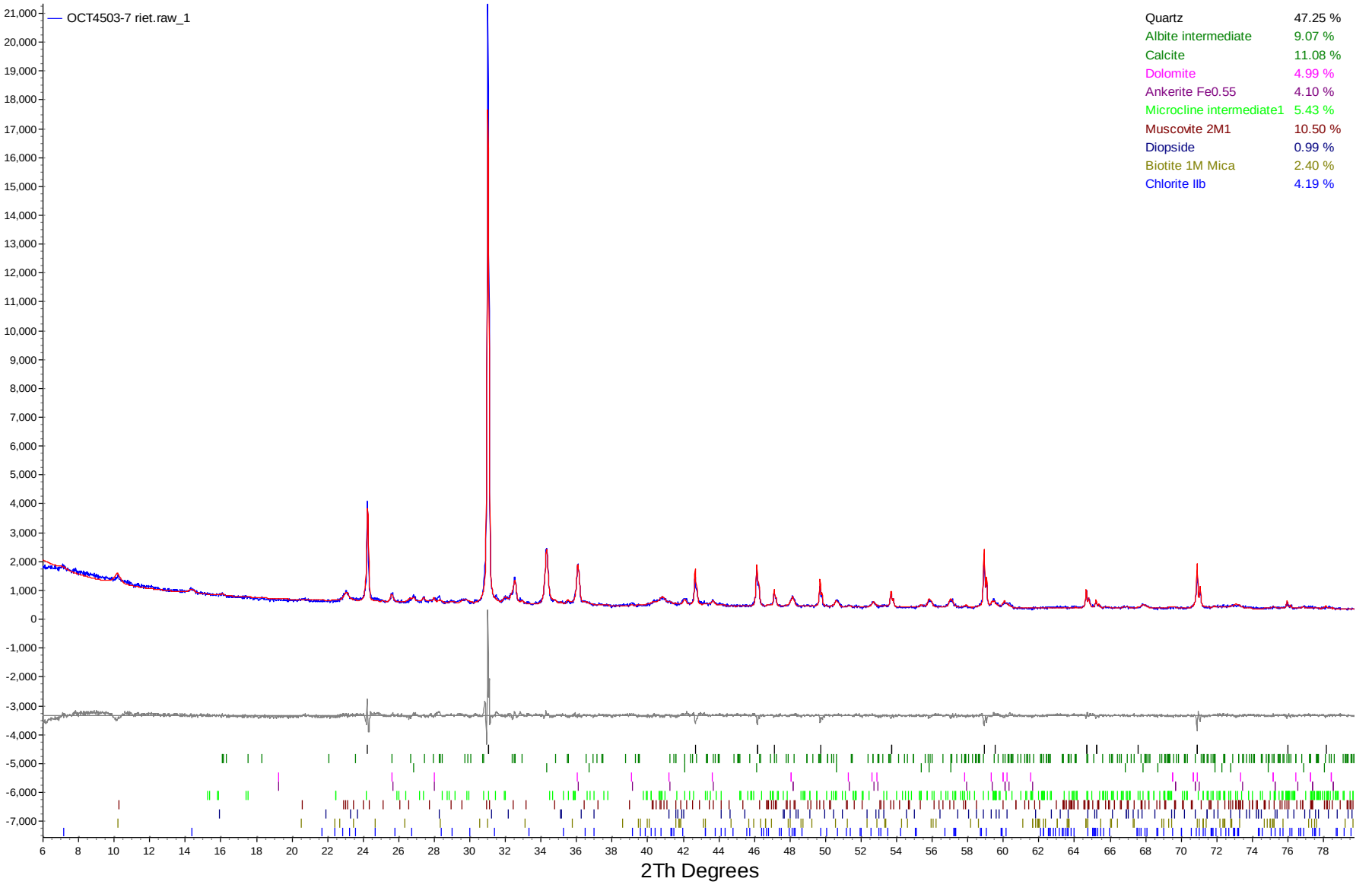
Quartz	47.57 %
Albite intermediate	5.16 %
Calcite	4.88 %
Dolomite	26.13 %
Ankerite Fe0.55	2.59 %
Microcline intermediate1	5.13 %
Muscovite 2M1	1.00 %
Diopside	1.47 %
Biotite 1M Mica	1.53 %
Chlorite IIb	2.71 %
Fluorapatite	1.83 %

N-SB-14



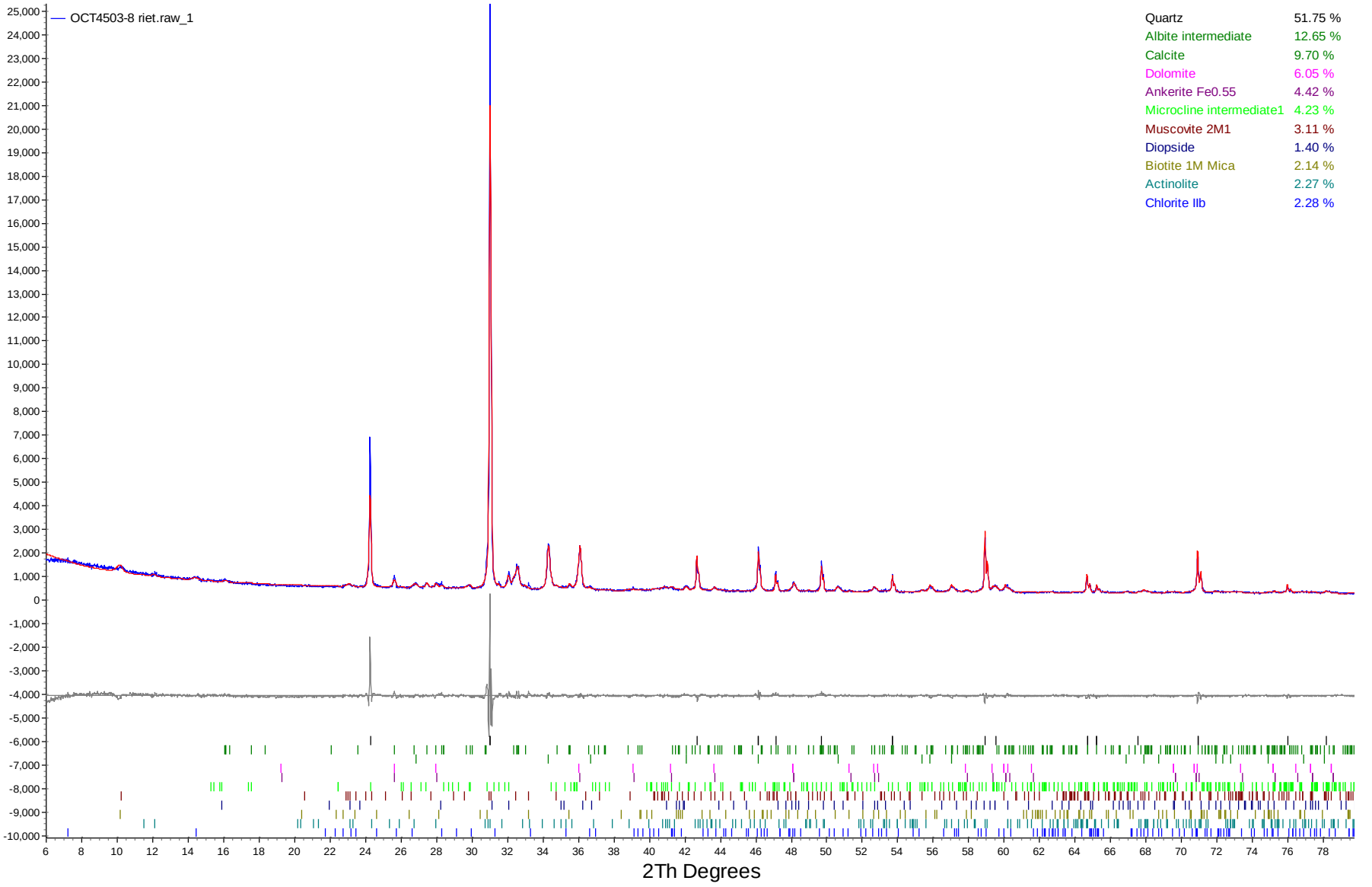
Quartz	47.96 %
Albite intermediate	13.64 %
Calcite	9.33 %
Dolomite	6.75 %
Ankerite Fe0.55	2.59 %
Microcline intermediate1	6.19 %
Muscovite 2M1	5.45 %
Diopside	2.50 %
Biotite 1M Mica	1.79 %
Chlorite IIb	3.79 %

N-SB-04 (12.0-18.0)



Quartz	47.25 %
Albite intermediate	9.07 %
Calcite	11.08 %
Dolomite	4.99 %
Ankerite Fe0.55	4.10 %
Microcline intermediate1	5.43 %
Muscovite 2M1	10.50 %
Diopside	0.99 %
Biotite 1M Mica	2.40 %
Chlorite IIb	4.19 %

N-SB-04



Quartz	51.75 %
Albite intermediate	12.65 %
Calcite	9.70 %
Dolomite	6.05 %
Ankerite Fe0.55	4.42 %
Microcline intermediate1	4.23 %
Muscovite 2M1	3.11 %
Diopside	1.40 %
Biotite 1M Mica	2.14 %
Actinolite	2.27 %
Chlorite IIb	2.28 %

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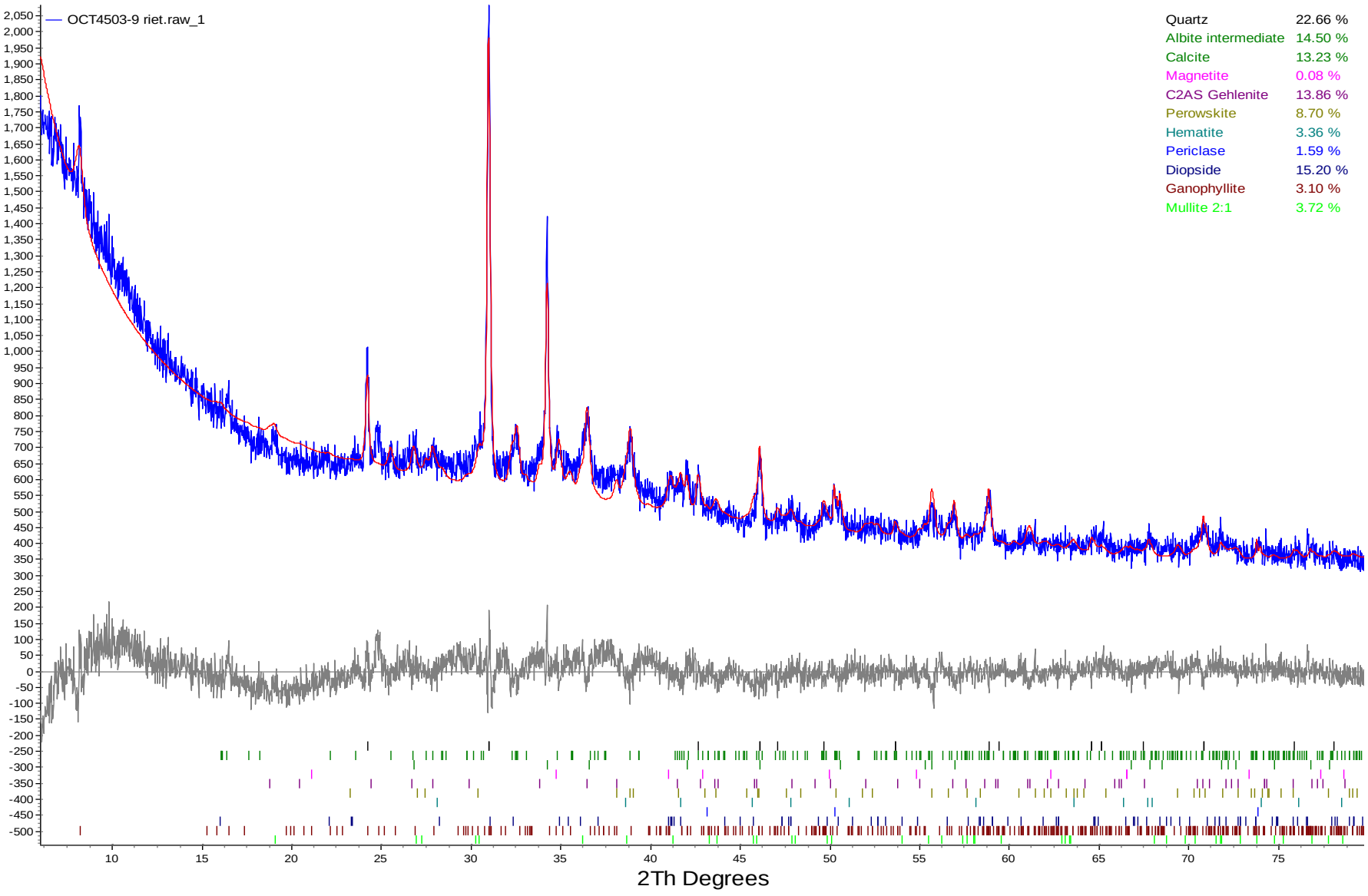
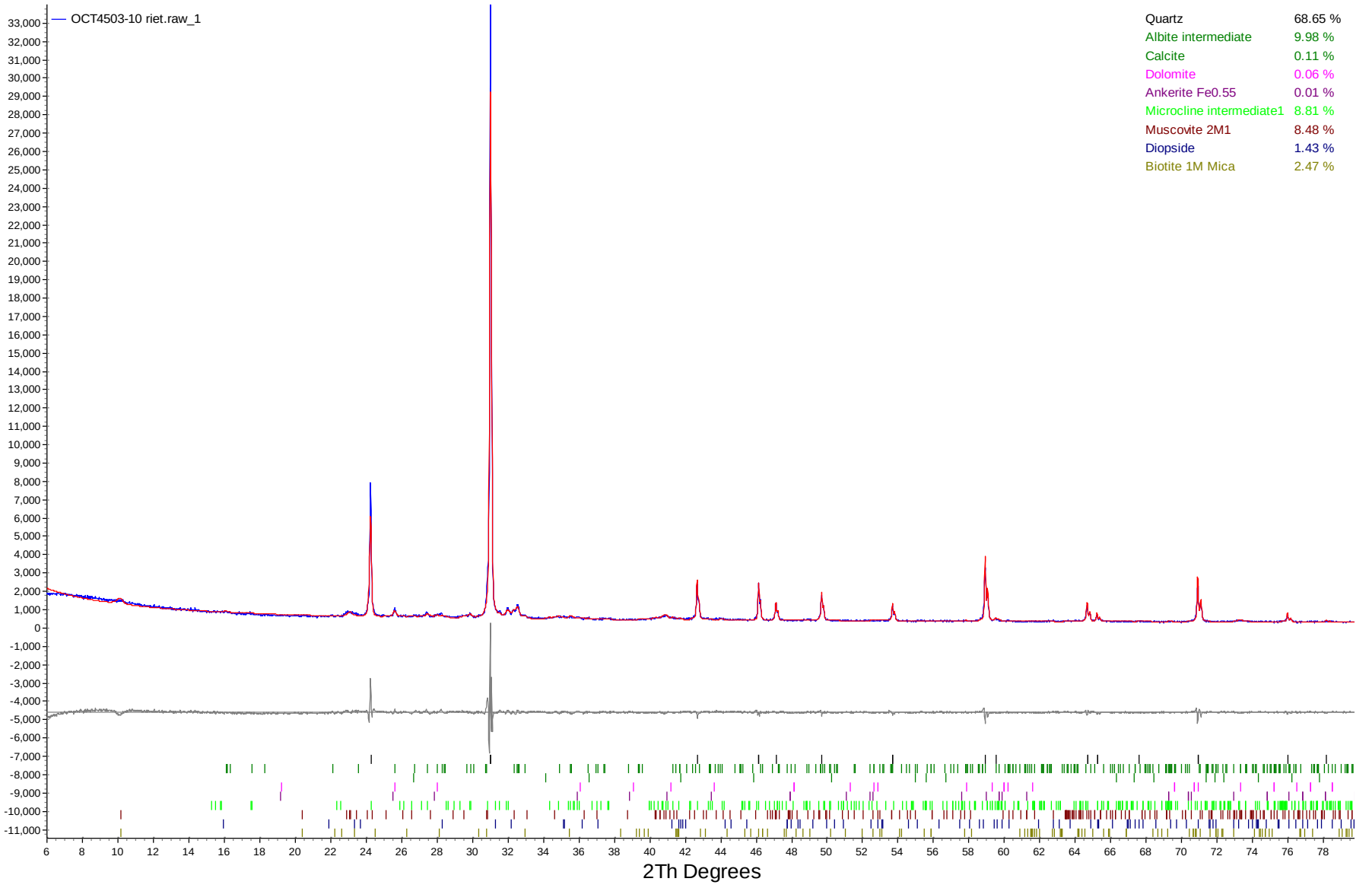
11/02/2021

N-SB-XPW04 (10.0-15.0)



Quartz	22.66 %
Albite intermediate	14.50 %
Calcite	13.23 %
Magnetite	0.08 %
C2AS Gehlenite	13.86 %
Perowskite	8.70 %
Hematite	3.36 %
Periclase	1.59 %
Diopside	15.20 %
Ganophyllite	3.10 %
Mullite 2:1	3.72 %

N-SB-XPW01 (10.0-12.7)



Quartz	68.65 %
Albite intermediate	9.98 %
Calcite	0.11 %
Dolomite	0.06 %
Ankerite Fe0.55	0.01 %
Microcline intermediate1	8.81 %
Muscovite 2M1	8.48 %
Diopside	1.43 %
Biotite 1M Mica	2.47 %

Quantitative X-Ray Diffraction by Rietveld Refinement

Report Prepared for:	*WSP (Golder Associates Inc.)*
Project Number/ LIMS No.	*19465-04/MI7011-NOV22*
Sample Receipt:	*November 2, 2022*
Sample Analysis:	*February 16, 2023*
Reporting Date:	*September 7, 2023*

Instrument:	Panalytical X'pert Pro Diffractometer
Test Conditions:	Co radiation, 40 kV, 45 mA Regular Scanning: Step: 0.033°, Step time:0.15s, 2θ range: 5-80°
Interpretations :	PDF2/PDF4 powder diffraction databases issued by the International Center for Diffraction Data (ICDD). DiffracPlus Eva and Topas software.
Detection Limit :	0.5-2%. Strongly dependent on crystallinity.

Contents:

1) Method Summary
2) Quantitative XRD Results
3) XRD Pattern(s)

Landon Kapusianyk, B.Sc.
Mineralogist

Logan Jameson, M.Sc., P.Geo.
Senior Mineralogist

Method Summary

Mineral Identification and Interpretation:

Mineral identification and interpretation involves matching the diffraction pattern of an unknown material to patterns of single-phase reference materials. The reference patterns are compiled by the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD) database and released on software as Powder Diffraction Files (PDF).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds, except when internal standards have been added by request. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data or other additional tests.

Quantitative Rietveld Analysis:

Quantitative Rietveld Analysis is performed by using Topas 4.2 (Bruker AXS), a graphics based profile analysis program built around a non-linear least squares fitting system, to determine the amount of different phases present in a multicomponent sample. Whole pattern analyses are predicated by the fact that the X-ray diffraction pattern is a total sum of both instrumental and specimen factors. Unlike other peak intensity-based methods, the Rietveld method uses a least squares approach to refine a theoretical line profile until it matches the obtained experimental patterns.

Rietveld refinement is completed with a set of minerals specifically identified for the sample. Zero values indicate that the mineral was included in the refinement calculations, but the calculated concentration was less than 0.05wt%. Minerals not identified by the analyst are not included in refinement calculations for specific samples and are indicated with a dash.

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Member of the SGS Group (SGS SA)

Summary of Rietveld Quantitative Analysis X-Ray Diffraction Results

Mineral/Compound	N-SB-04 (12-18) JAN7011-01 (wt %)	N-SB-04 (40-45) JAN7011-02 (wt %)	N-SB-02 (10-13) JAN7011-03 (wt %)	N-SB-05 (10-16.6) JAN7011-04 (wt %)	N-SB-14 (50-52) JAN7011-05 (wt %)
Quartz	46.1	53.0	53.9	72.8	50.4
Albite	9.7	14.3	9.0	7.7	10.0
Orthoclase	2.3	2.4	3.1	6.6	2.6
Biotite	2.0	0.8	1.6	-	0.3
Muscovite	16.0	8.7	10.4	-	11.1
Chlorite	2.9	2.5	1.5	-	3.7
Calcite	12.9	7.7	7.0	-	9.9
Dolomite	7.0	9.9	11.9	0.9	12.1
Ankerite	1.1	-	1.1		
Actinolite	-	0.8	0.5	-	-
Montmorillonite	-	-	-	12.0	-
TOTAL	100	100	100	100	100

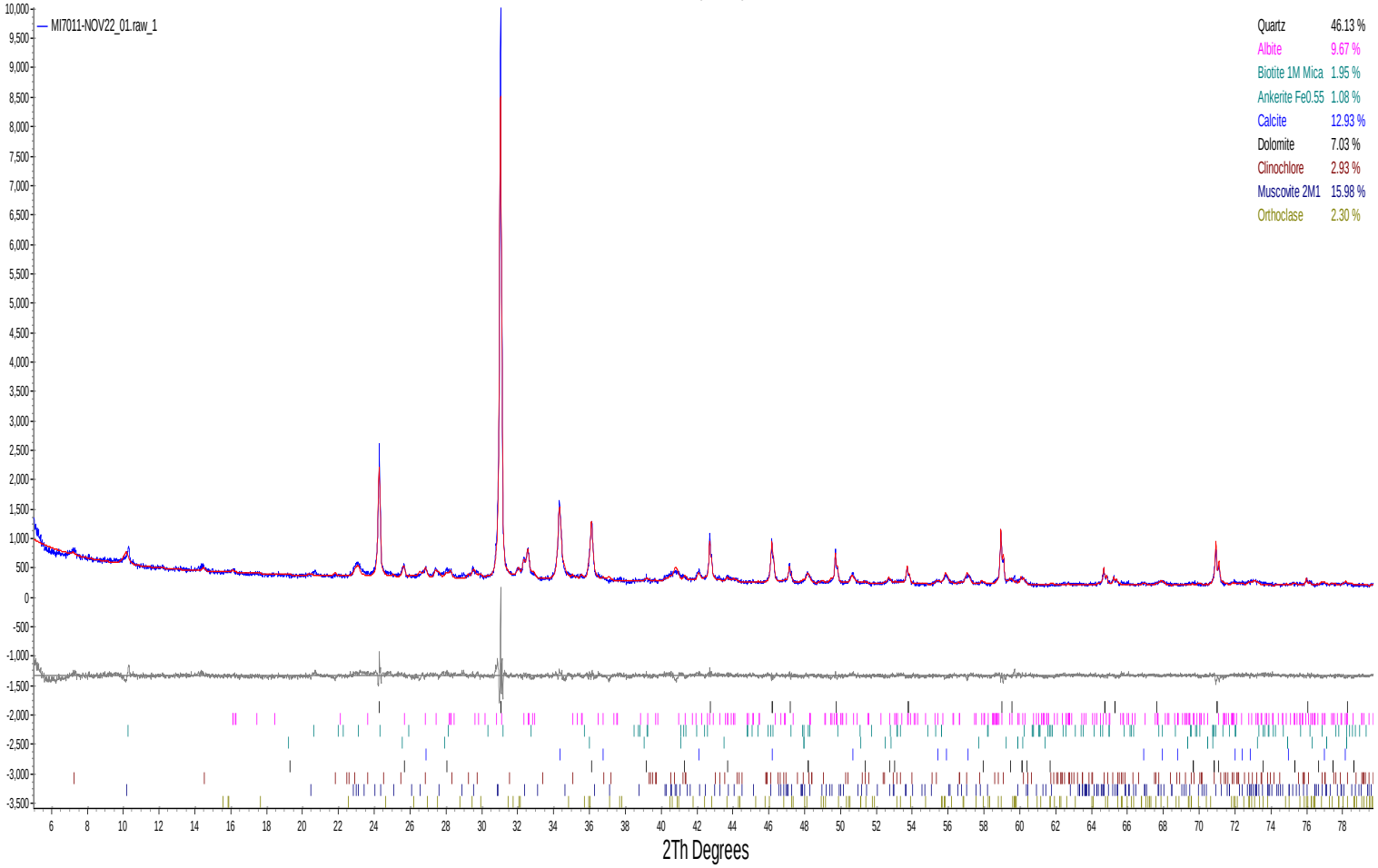
Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

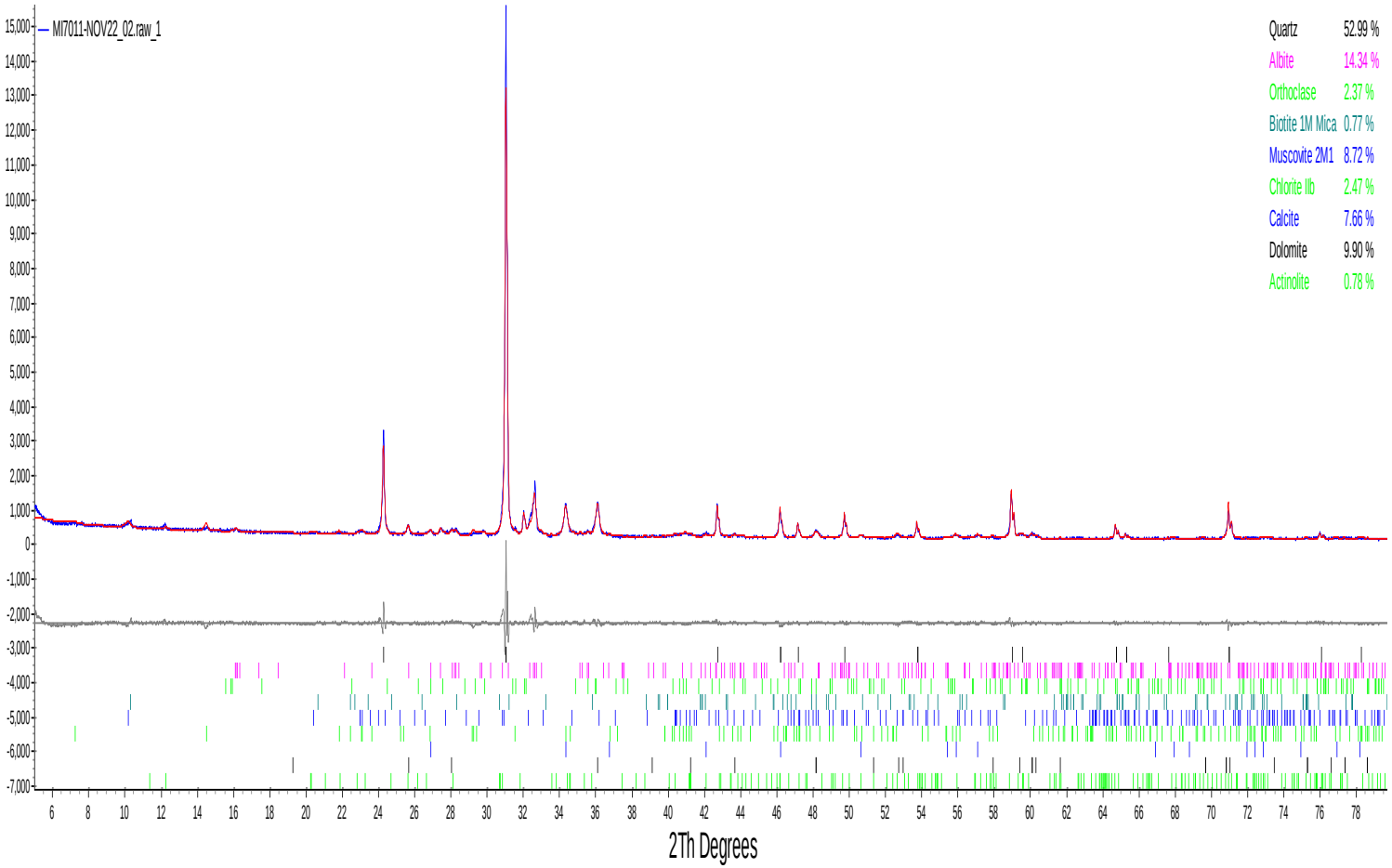
The weight percent quantities indicated have been normalized to a sum of 100%. The quantity of amorphous material has not been determined.

Mineral/Compound	Formula
Quartz	SiO_2
Albite	$NaAlSi_3O_8$
Orthoclase	$KAlSi_3O_8$
Biotite	$K(Mg,Fe)_3(AlSi_3O_{10})(OH)_2$
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$
Chlorite	$(Fe,(Mg,Mn)_5,Al)(Si_3Al)O_{10}(OH)_8$
Calcite	$CaCO_3$
Dolomite	$CaMg(CO_3)_2$
Ankerite	$CaFe(CO_3)_2$
Actinolite	$Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$
Montmorillonite	$(Na,Ca)_{0.3}(Al,Mg)_2Si_4O_{10}(OH)_2 \cdot 10H_2O$

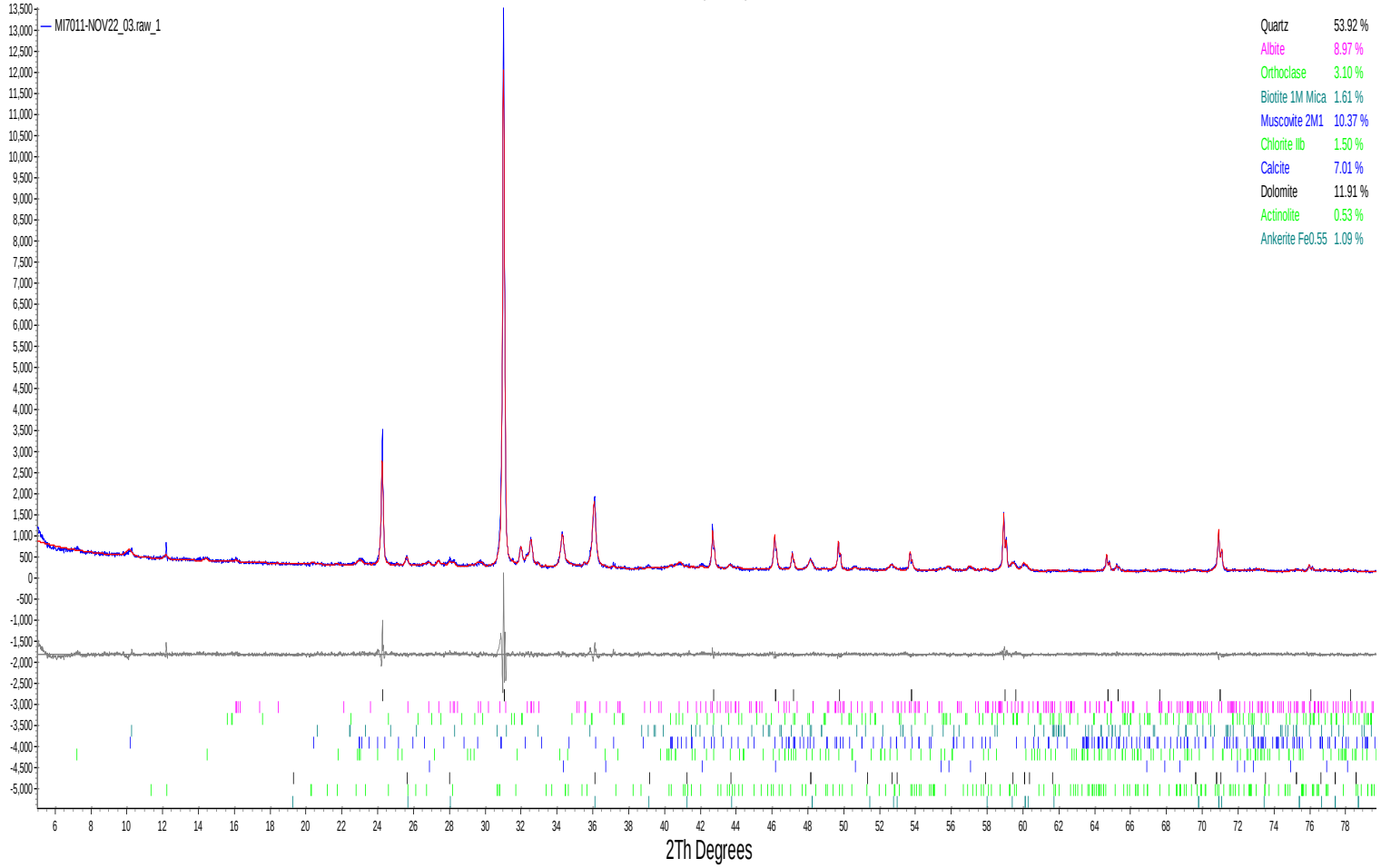
N-SB-04 (12-18)


MI7011-NOV22_01.raw_1
Quartz 46.13 %
Albite 9.67 %
Biotite 1M Mica 1.95 %
Ankerite Fe0.55 1.08 %
Calcite 12.93 %
Dolomite 7.03 %
Clinochlore 2.93 %
Muscovite 2M1 15.98 %
Orthoclase 2.30 %
2Th Degrees

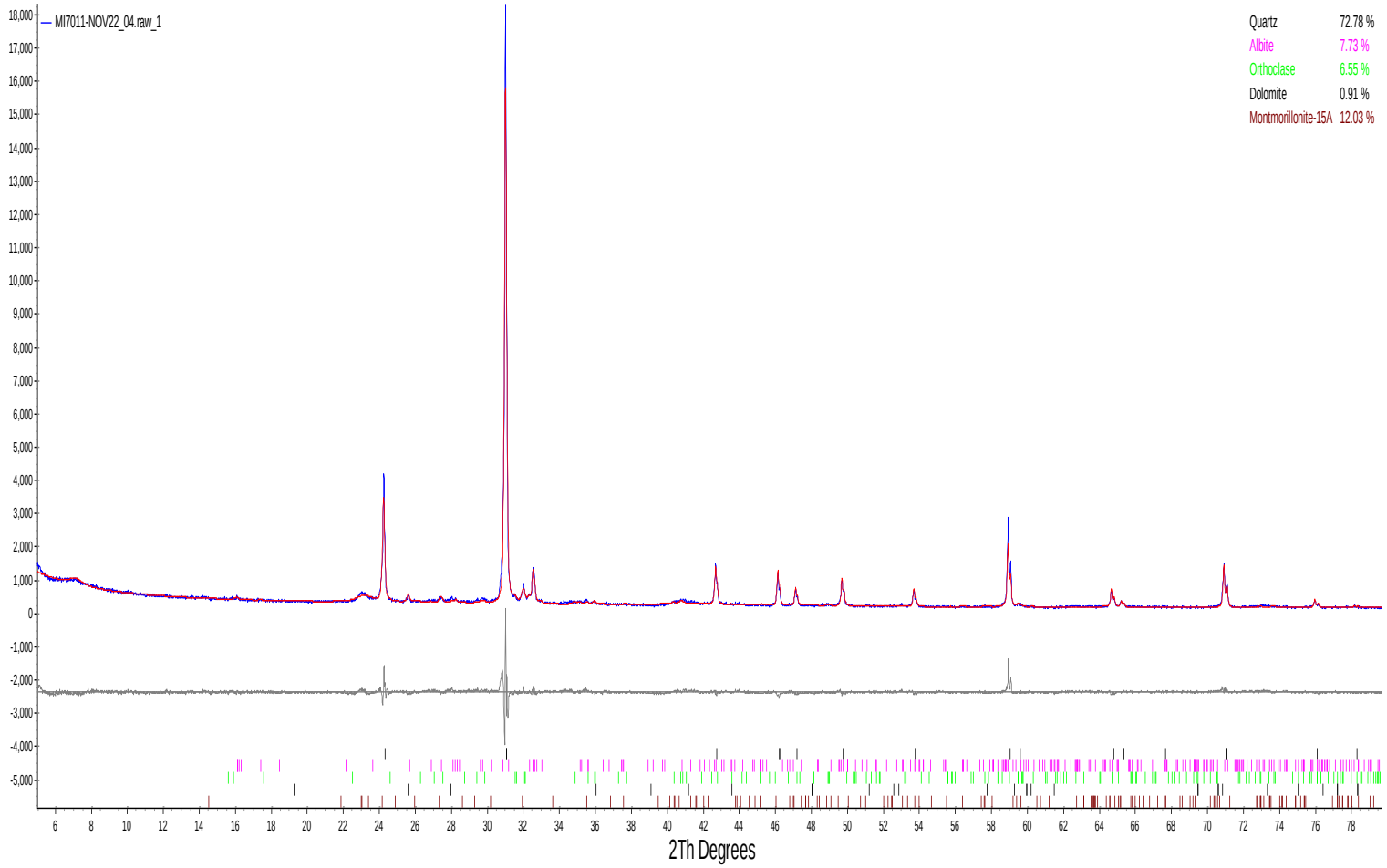
N-SB-04 (40-45)


MI7011-NOV22_02.raw_1
Quartz 52.99 %
Albite 14.34 %
Orthoclase 2.37 %
Biotite 1M Mica 0.77 %
Muscovite 2M1 8.72 %
Chlorite IIb 2.47 %
Calcite 7.66 %
Dolomite 9.90 %
Actinolite 0.78 %
2Th Degrees

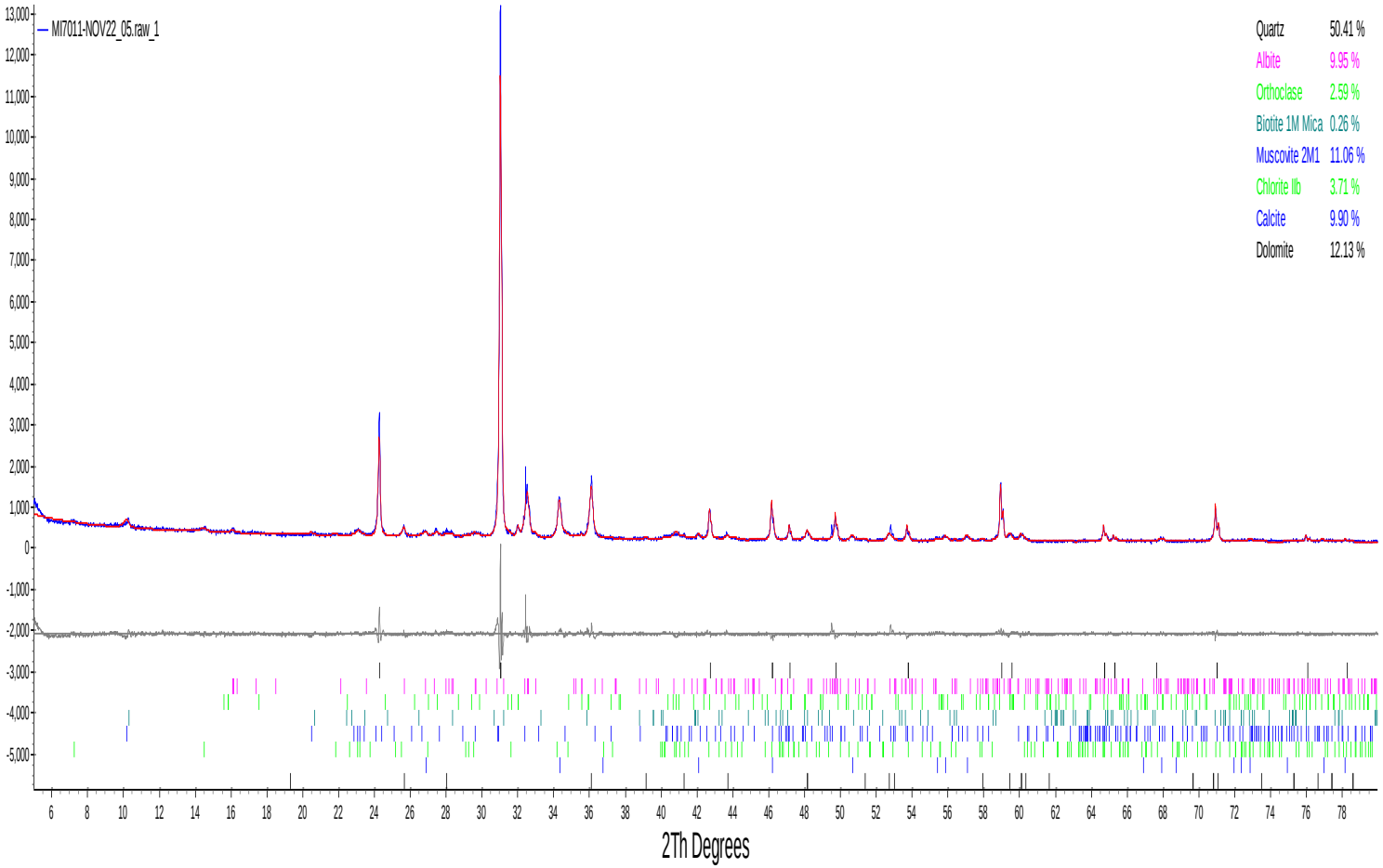
N-SB-02 (10-13)


MI7011-NOV22_03.raw_1
Quartz 53.92 %
Albite 8.97 %
Orthoclase 3.10 %
Biotite 1M Mica 1.61 %
Muscovite 2M1 10.37 %
Chlorite IIb 1.50 %
Calcite 7.01 %
Dolomite 11.91 %
Actinolite 0.53 %
Ankerite Fe0.55 1.09 %
2Th Degrees

N-SB-05 (10-16.6


MI7011-NOV22_04.raw_1
Quartz 72.78 %
Albite 7.73 %
Orthoclase 6.55 %
Dolomite 0.91 %
Montmorillonite-15A 12.03 %
2Th Degrees

N-SB-14 (50-52)


MI7011-NOV22_05.raw_1
Quartz 50.41 %
Albite 9.95 %
Orthoclase 2.59 %
Biotite 1M Mica 0.26 %
Muscovite 2M1 11.06 %
Chlorite IIb 3.71 %
Calcite 9.90 %
Dolomite 12.13 %
2Th Degrees

ATTACHMENT 5
SGS X-RAY FLUORESCENCE (XRF) LABORATORY REPORT

ANALYSIS REPORT BBM23-25016

To F400101 SGS CANADA INC
LAIN GLOSSOP
3260 PRODUCTION WAY
BURNABY V5A 4W4
BC
CANADA

Project	CA20I-00000-211-19465-03	Date Received	13-Dec-2022
Submission Number	19465-03I/ MI7011-NOV22/ 5 Pulps	Date Analysed	05-Jan-2023 - 09-Jan-2023
Number of Samples	5	Date Completed	11-Jan-2023
		SGS Order Number	BBM23-25016

Methods Summary

Number of Sample	Method Code	Description
5	GC_CSA06V	Control grade Total Sulphur and Carbon, IR Combustion
5	G_PHY01V	Loss on ignition (LOI), Furnace, variable wt, variable temp
5	GO_XRF72	Borate Fusion, XRF, Ore Grade

Authorised Signatory

John Chiang
Laboratory Operations Manager

SCC Accredited LAB Accrédité CCN

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WARNING: The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted. The findings report on the samples provided by the client and are not intended for commercial or contractual settlement purposes.

- not analysed | -- element not determined | I.S. insufficient sample | L.N.R. listed not received

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Member of the SGS Group (SGS SA)

Project	CA20I-00000-211-19465-03
Submission Number	19465-03I/ MI7011-NOV22/ 5 Pulps
Number of Samples	5

ANALYSIS REPORT BBM23-25016

Element	@S	LOI	@Al2O3	@CaO	@Cr2O3	@Fe2O3
Method	GC_CSA06V	G_PHY01V	GO_XRF72	GO_XRF72	GO_XRF72	GO_XRF72
Lower Limit	0.01	-10	0.01	0.01	0.01	0.01
Upper Limit	100	100	100	60	5	100
Unit	%	%	%	%	%	%
N-SB-04 (12-18)	0.04	12.8487	10.34	9.54	0.02	4.89
N-SB-04 (40-45)	0.03	10.0880	7.32	8.23	0.04	3.31
N-SB-02 (10-13)	0.04	11.9900	7.26	8.65	0.03	3.47
N-SB-05 (10-16.6)	0.04	5.19844	9.39	0.74	0.03	3.32
N-SB-14 (50-52)	0.14	11.9588	7.99	9.31	0.03	3.43
*Rep N-SB-14 (50-52)	0.14	-	-	-	-	-
*Std GS314-2	2.56	-	-	-	-	-
*Blk BLANK	<0.01	-	-	-	-	-
*Std OREAS 624	13.57	-	-	-	-	-
*Rep N-SB-04 (12-18)	-	12.8387	-	-	-	-
*Blk BLANK	-	-	-	-	-	-
*Std OREAS 70b	-	6.91000	-	-	-	-
*Rep N-SB-04 (12-18)	-	-	10.36	9.60	0.02	4.89
*Std OREAS 751	-	-	15.83	1.04	0.01	2.41
*Blk BLANK	-	-	<0.01	<0.01	<0.01	<0.01

Element	@K2O	@MgO	Mn3O4	@Na2O	@P2O5	@SiO2
Method	GO_XRF72	GO_XRF72	GO_XRF72	GO_XRF72	GO_XRF72	GO_XRF72
Lower Limit	0.01	0.01	0.01	0.01	0.01	0.01
Upper Limit	70	100	100	60	55	100
Unit	%	%	%	%	%	%
N-SB-04 (12-18)	1.97	2.57	0.11	0.90	0.11	56.19
N-SB-04 (40-45)	1.55	2.58	0.07	1.26	0.11	65.37
N-SB-02 (10-13)	1.71	3.33	0.07	0.81	0.08	62.21
N-SB-05 (10-16.6)	1.67	0.74	0.02	0.65	0.03	77.97
N-SB-14 (50-52)	1.68	3.11	0.09	1.06	0.09	60.55
*Rep N-SB-04 (12-18)	1.95	2.56	0.11	0.90	0.11	56.25
*Std OREAS 751	2.92	0.50	0.10	3.40	0.28	71.33
*Blk BLANK	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

- not analysed | -- element not determined | I.S. insufficient sample | L.N.R. listed not received

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Member of the SGS Group (SGS SA)

Project	CA20I-00000-211-19465-03
Submission Number	19465-03I/ MI7011-NOV22/ 5 Pulps
Number of Samples	5

ANALYSIS REPORT BBM23-25016

Element	@TiO2	@V2O5	Sum	Cl
Method	GO_XRF72	GO_XRF72	GO_XRF72	GO_XRF72
Lower Limit	0.01	0.01	0.01	0.01
Upper Limit	100	10	100	30
Unit	%	%	%	%
N-SB-04 (12-18)	0.59	<0.01	87.35	<0.01
N-SB-04 (40-45)	0.45	<0.01	90.41	<0.01
N-SB-02 (10-13)	0.39	<0.01	88.18	<0.01
N-SB-05 (10-16.6)	0.54	0.01	95.20	<0.01
N-SB-14 (50-52)	0.49	0.01	88.23	0.01
*Rep N-SB-04 (12-18)	0.59	0.02	87.46	<0.01
*Std OREAS 751	0.24	<0.01	98.29	0.01
*Blk BLANK	<0.01	<0.01	0.04	<0.01

SGS Canada Minerals Burnaby conforms to the requirements of ISO/IEC17025 for specific tests as listed on their scope of accreditation found at https://www.scc.ca/en/search/laboratories/sgs
Tests and Elements marked with an "@" symbol in the report denote ISO/IEC17025 accreditation.

- not analysed | -- element not determined | I.S. insufficient sample | L.N.R. listed not received

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ATTACHMENT 6
SGS TESCAN INTEGRATED MINERAL ANALYSIS (TIMA) LABORATORY REPORT

TIMA DATA

prepared for:

WSP USA

19465-03
MI7011-NOV22
December 1, 2023

Prepared by:

Margot Aldis
Mineralogist

SGS Canada
3260 Production Way, Burnaby, BC V5A 4W4
Tel. (604) 638-2349 www.sgs.com www.sgs.com/me
Member of the SGS Group (SGS SA)

WSP USA
19465-03
MI7011-NOV22

High Definition Mineralogical Analysis using TIMA (TESCAN Integrated Mineral Analyzer)

Modals

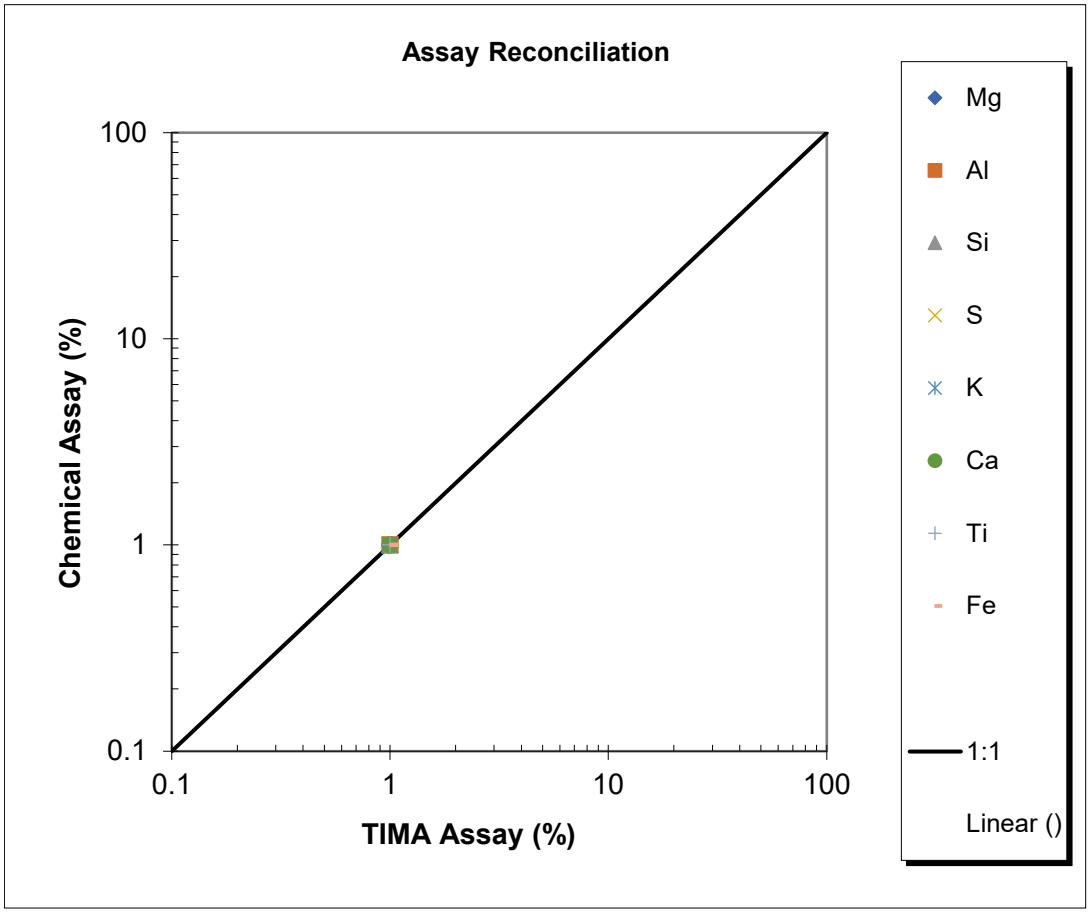
Survey		**19465-03 / MI7011-NOV22**		
Project		**WSP USA**		
Sample		N-SB-04 (12.0-18.0)	N-SB-02 (10.0-13.0)	N-SB-05 (10.0-16.6)
Fraction		As Rec'd	As Rec'd	As Rec'd
Mass % of Size Fraction [%]		100.0	100.0	100.0
Median Particle Size (µm)		90	111	86
		Sample	**Sample**	**Sample**
Mineral Mass (%)	Quartz	37.7	55.1	61.9
	Plagioclase	11.1	9.28	8.12
	K-Feldspar	3.12	5.28	5.32
	Mixed Clays/Micas	21.1	8.41	22.5
	Chlorites	1.86	0.81	0.48
	Other Silicates	0.95	0.85	0.21
	Iron Oxides	0.73	0.96	0.49
	Ti Fe Oxide	0.73	0.45	0.50
	Other Oxides	0.06	0.07	0.08
	Calcite	13.7	7.70	0.23
	Dolomite	8.05	10.5	0.09
	Ankerite	0.55	0.35	0.02
	Sulphides	0.00	0.05	0.01
	Sulphates/Phosphates	0.22	0.14	0.04
	Other	0.09	0.09	0.07
	Total	100.0	100.0	100.0
Mean Grain Size (µm)	Quartz	18	30	20
	Plagioclase	13	16	11
	K-Feldspar	18	23	21
	Mixed Clays/Micas	7	7	8
	Chlorites	7	7	7
	Other Silicates	10	9	14
	Iron Oxides	12	13	19
	Ti Fe Oxide	6	7	7
	Other Oxides	13	11	11
	Calcite	14	19	16
	Dolomite	14	15	13
	Ankerite	6	7	9
	Other Carbonates	0	4	0
	Sulphides	4	11	5
	Sulphates/Phosphates	11	11	8

**The main sulphide in the sulphides group is pyrite.*

WSP USA
19465-03
MI7011-NOV22

High Definition Mineralogical Analysis using TIMA (TESCAN Integrated Mineral Analyzer)

Assay Reconciliation



Sample	N-SB-04 (12.0-18.0)	N-SB-02 (10.0-13.0)	N-SB-05 (10.0-16.6)
Element	**As Rec'd**	**As Rec'd**	**As Rec'd**
Mg TIMA Calculated	1.51	1.70	0.33
Mg Chemical Assay	1.55	2.01	0.45
Al TIMA Calculated	4.92	3.34	4.56
Al Chemical Assay	5.47	3.84	4.97
Si TIMA Calculated	27.0	32.1	38.2
Si Chemical Assay	26.3	29.1	36.4
S TIMA Calculated	0.01	0.03	0.01
S Chemical Assay	0.04	0.04	0.04
K TIMA Calculated	1.54	1.19	1.35
K Chemical Assay	1.64	1.42	1.39
Ca TIMA Calculated	7.89	5.86	0.51
Ca Chemical Assay	6.82	6.18	0.53
Ti TIMA Calculated	0.48	0.31	0.40
Ti Chemical Assay	0.35	0.23	0.32
Fe TIMA Calculated	2.92	1.87	1.78
Fe Chemical Assay	3.42	2.43	2.32

ATTACHMENT 7
SGS ELECTRON MICROPROBE ANALYSIS (EMPA) AND LASER ABLATION-INDUCTIVELY COUPLED PLASMA-MASS SPECTROMETRY (LA-ICP-MS) LAB REPORT

MEMO

To : PJ Nolan; Eric Schneider

Project : 19465-03 Newton Power Plant (MI7011-NOV22)

Company : WSP, on behalf of Vistra Energy

Date : September 11, 2023

Total pages : 5 + Appendices

Re : TIMA Mineralogical Analysis of Soil Samples with supporting EMPA and LA-ICP-MS data focused on Lithium Determination.

This memo summarizes testwork completed by the mineralogy group at SGS Burnaby, BC, Canada, on five samples submitted by WSP. The objective of the testwork was to characterize the mineralogy of samples and determine if any minerals contain low levels of lithium (Li). The analysis was completed using a combination of TIMA-X (TESCAN Integrated Mineral Analyser), XRD analysis (X-Ray Diffraction), EMPA (Electron MicroProbe Analysis) and LA-ICP-MS (Laser Ablation Inductively Coupled Plasma Mass Spectrometry). The modal mineralogy and elemental compositions are reported.

The analysis indicated that the samples were primarily composed of quartz (37.7-61.9%), with the phase of interest being mixed clay/mica species (8.41-22.5%). Moderate abundance of plagioclase (8.12-11.1%) and minor amounts of K-feldspar. Carbonates of calcite and dolomite are present in abundance in two of the samples. The Li concentration within the mixed clay/mica ranged from 3.25 ppm to 502.9 ppm.

1. Sample Preparation

Five samples were provided for the project and submitted to SGS Mineralogy. The samples were received wet and were dried at 30 °C. Dry weight was taken and inventoried, and all information was entered into a Laboratory Information Management System (LIMS) with the assigned number MI7011-NOV22.

Head geochemical assay submission was done on a pulverized subsample. Assays conducted were major elements by Whole Rock Analysis (WRA), including chlorine (Cl) using fusion X-ray Fluorescence (XRF), total S by LECO and trace metals by multi-acid ICP-MS/OES for lithium (Li) and boron (B). A subsample of each sample was submitted for XRD analysis, and a further subsample was submitted to the SGS ARD department for 6-step Tessier Sequential Extraction, to include boron.

Three samples were selected for further mineralogy analysis by TIMA, with EMPA and LA-ICP-MS based on the clay/mica content and lithium values. These selected samples were (N-SB-04 (12-18), N-SB-02 (10-13), and N-SB-05 (10-16.6).

Each sample was de-agglomerated, stage-crushed to a P80 of 150 µm and micro-riffled to obtain a ~2-3 g subsample, which was used to prepare two polished sections per sample.

2. Tessier Leach

The summary of lithium results of the 6-step Tessier Leach test on all five samples. Measured and normalized are given below in Table 1 and Table 2, and the full elemental suite is shown in the results attached.

Table 1: Summary of the Lithium results from the 6-Step Tessier Leach Test

Element	Tessier Leach Step	Unit	N-SB-04 (12-18)	N-SB-04 (40-45)	N-SB-02 (10-13)	N-SB-05 (10-16.6)	N-SB-14 (50-52)
Lithium (Li)	Water Soluble	ppm	0.01	0.01	0.02	0.01	0.01
Lithium (Li)	Exchangable	ppm	0.02	0.01	0.02	0.01	0.01
Lithium (Li)	Bound to carbonates	ppm	0.03	0.02	0.03	0.02	0.03
Lithium (Li)	Bound to Fe&Mn Oxides	ppm	0.11	0.06	0.08	0.08	0.08
Lithium (Li)	Bound in Organics	ppm	0.04	0.03	0.03	0.02	0.04
Lithium (Li)	Residue	ppm	30.0	13.0	19.0	19.0	18.0
Lithium (Li)	Total	ppm	30.2	13.1	19.2	19.1	18.2

Table 2: Normalized Lithium results from the 6-Step Tessier Leach Test

Element	Tessier Leach Step	Unit	N-SB-04 (12-18)	N-SB-04 (40-45)	N-SB-02 (10-13)	N-SB-05 (10-16.6)	N-SB-14 (50-52)
Lithium (Li)	Water Soluble	%	0.05	0.06	0.08	0.05	0.06
Lithium (Li)	Exchangable	%	0.06	0.07	0.08	0.07	0.07
Lithium (Li)	Bound to carbonates	%	0.11	0.18	0.17	0.10	0.17
Lithium (Li)	Bound to Fe&Mn Oxides	%	0.35	0.47	0.44	0.41	0.42
Lithium (Li)	Bound in Organics	%	0.13	0.24	0.18	0.11	0.23
Lithium (Li)	Residue	%	99.3	99.0	99.1	99.3	99.1
Lithium (Li)	Total	%	100.0	100.0	100.0	100.0	100.0

3. MINERALOGY

3.1. X-RAY DIFFRACTION ANALYSIS

The mineral identification and interpretation by XRD involved matching the diffraction pattern of an unknown material to patterns of single-phase reference materials. The reference patterns are compiled by the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD) database and released on software as Powder Diffraction Files (PDF). Quantitative Rietveld analysis is performed by using Topas 4.2 (Bruker AXS).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data and additional mineralogy. The primary mineral was quartz, with notable amounts of muscovite and montmorillonite.

Table 3: Summary of Rietveld Quantitative Analysis X-Ray Diffraction Results

Mineral/Compound	N-SB-04 (12-18) JAN7011-01 (wt %)	N-SB-04 (40-45) JAN7011-02 (wt %)	N-SB-02 (10-13) JAN7011-03 (wt %)	N-SB-05 (10-16.6) JAN7011-04 (wt %)	N-SB-14 (50-52) JAN7011-05 (wt %)
Quartz	46.1	53.0	53.9	72.8	50.4
Albite	9.7	14.3	9.0	7.7	10.0
Orthoclase	2.3	2.4	3.1	6.6	2.6
Biotite	2.0	0.8	1.6	-	0.3
Muscovite	16.0	8.7	10.4	-	11.1
Chlorite	2.9	2.5	1.5	-	3.7
Calcite	12.9	7.7	7.0	-	9.9
Dolomite	7.0	9.9	11.9	0.9	12.1
Ankerite	1.1	-	1.1		
Actinolite	-	0.8	0.5	-	-
Montmorillonite	-	-	-	12.0	-
TOTAL	100	100	100	100	100

3.2. TIMA-X MINERALOGY (ALTERNATIVE AUTOMATED MINERALOGICAL ANALYSIS)

TIMA-X is an acronym for TESCAN Integrated Mineral Analyzer, and it is based on four Energy Dispersive X-ray (EDX) silicon drift detectors (SDD) attached to a TESCAN MIRA (field-emission gun – FEG) platform, which also includes a backscattered electron (BSE) and secondary electron (SE) detectors. The TIMA system utilizes both the EDX and BSE signals to identify minerals at each measurement point (or each homogenous segment of a grain, depending upon the analysis mode). It is optimized to deal with rapidly acquired low-count spectra. These EDX (and BSE) spectra (and BSE data) are compared to entries in a mineral library on a first-match principle to identify the mineral phase. The mineral library is based on theoretical mineral/phase composition or created by the user based on BSE, X-ray spectral windows counts and ratios.

High-Resolution Mapping (THRM), was the selected scan mode. The THRM collects a BSE signal and an X-ray spectrum at a set resolution (3 µm) to map the particles. It collects modal and textural information, such as liberation or exposure analysis of grains of interest.

Three samples were analyzed using TIMA-X for the project. The mineral abundances were determined and shown below in Table 4, with the data report attached. The mineral phase of interest would be mixed clays/micas. These were grouped due to the fine-grained and intergrown nature of the minerals. The abundance of mixed clays/micas ranged from 8.41 % to 22.5% and on average ~17.3%.

Table 4: Modal Mineralogy by TIMA-X (across three selected samples)

Survey		**19465-03 / MI7011-NOV22**		
Project		**WSP USA**		
Sample		**N-SB-04 (12.0-18.0)**	**N-SB-02 (10.0-13.0)**	**N-SB-05 (10.0-16.6)**
Mineral Mass (%)	Quartz	37.7	55.1	61.9
	Plagioclase	11.1	9.28	8.12
	K-Feldspar	3.12	5.28	5.32
	Mixed Clays/Micas	21.1	8.41	22.5
	Chlorites	1.86	0.81	0.48
	Other Silicates	0.95	0.85	0.21
	Iron Oxides	0.73	0.96	0.49
	Ti Fe Oxide	0.73	0.45	0.50
	Other Oxides	0.06	0.07	0.08
	Calcite	13.7	7.70	0.23
	Dolomite	8.05	10.5	0.09
	Ankerite	0.55	0.35	0.02
	Sulphides	0.00	0.05	0.01
	Sulphates/Phosphates	0.22	0.14	0.04
	Other	0.09	0.09	0.07
	Total	100.0	100.0	100.0

3.3. EMPA AND LA-ICP-MS

The polished sections for each sample were submitted for EMPA and LA-ICP-MS at the University of New Brunswick, Microscopy and Microanalysis Facility. Electron Microprobe Analysis (EMPA) with selected minerals of interest (clays and micas) were analyzed to quantify the chemical composition of the major and minor elements. It is well known that many minerals display compositional variations. Therefore, EPMA was necessary to determine the chemistry of the minerals and identify the minerals correctly. LA-ICP-MS was combined with the EPMA to determine the Li content in the clay-sized and mica minerals.

The EMPA data indicated that the lithium concentration across all three samples ranged from 3.25 ppm to 502.9 ppm and averaged at 70.5 ppm. Among the three samples, N-SB-04 (12.0-18.0) showed the highest average Li concentration of 93.3 ppm, followed by N-SB-02 (10-13) at 67.6 ppm and N-SB-05 (10-16.6) at 53.3 ppm.

4. Conclusion

Due to the trace lithium grades and the fine-grained nature of the micas present, gathering a high number of satisfactory elemental data points was challenging, with only 64 viable LA-ICP-MS points out of 126 points selected. The variability of lithium content of the clay/mica grains was notably large, along with mixed EMPA spectra. Only eight grains had a value greater than 100 ppm Li, although sample N-SB-04 (12.0-18.0) had one at 502.9 ppm at point g11. This sample contains muscovite, but due to the high Fe content, this high Li-bearing phase is suspected to be biotite (mica). Sample N-SB-05 (10-16.6) was the only sample to contain montmorillonite by XRD. That did not change the relative abundance of lithium within the samples compared to the muscovite-rich samples. To conclude, the LA-ICP-MS results, in conjunction with the TIMA data, indicated that the primary source of deleterious lithium was within the mixed clay/mica phases.

Refer to the official project report for extended TIMA, EMPA, and LA-ICP-MS data.

WSP-USA (Newton)
19465-03
MI7011-NOV22
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EMPA and LA-ICP-MS Data

N-SB-04 (12.0-18.0)																		
11A	EMPA: Oxide Weight Percentage (%)																LA-ICP-MS	
Pt#	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	MnO	FeO	Rb2O	Cs2O	BaO	Cl	F	Total	Label	LA-ICP #	Mean Li7 (ppm)
1	0.33	0.92	9.79	29.7	2.70	3.73	0.82	0.06	4.23	0.02	0.00	0.69	0.37	0.05	53.3	g1	SGS-19465-3-11A - 1	58.3
2	0.22	2.38	17.2	42.1	2.57	1.38	0.40	0.03	6.34	0.03	0.01	0.55	0.08	0.04	73.3	g2	SGS-19465-3-11A - 2	85.4
3	0.12	1.96	8.27	47.0	0.79	5.01	0.10	0.01	8.46	0.03	0.00	0.15	0.16	0.45	72.2	g3	~~SGS-19465-3-11A - 3~~	N/A
4	0.20	1.92	13.7	38.5	2.45	4.85	0.14	0.00	6.65	0.03	0.00	0.26	0.06	0.09	68.8	g4	SGS-19465-3-11A - 4	80.9
5	0.32	6.83	14.0	30.7	2.05	7.59	0.43	0.15	6.34	0.02	0.01	0.01	0.14	0.06	68.7	g5	SGS-19465-3-11A - 5	74.1
6	0.13	1.39	12.2	36.6	2.22	2.62	1.17	0.08	5.09	0.02	0.02	0.44	0.31	0.00	62.2	g6	SGS-19465-3-11A - 6	49.0
7	0.15	1.04	11.3	47.2	3.61	7.23	0.00	0.06	3.78	0.03	0.00	0.39	0.12	0.08	74.9	g7	~~SGS-19465-3-11A - 7~~	N/A
8	0.21	1.44	14.8	27.6	2.41	0.46	0.43	0.31	19.4	0.03	0.00	0.11	0.14	0.16	67.4	g8	SGS-19465-3-11A - 8	91.0
9	0.24	1.09	12.2	30.5	2.46	5.20	0.43	0.13	7.64	0.02	0.00	0.00	0.09	0.05	59.9	g9	SGS-19465-3-11A - 9	57.2
10	0.92	0.98	18.0	50.9	3.65	1.13	0.00	0.07	3.85	0.04	0.00	0.00	0.13	0.04	79.7	g10	~~SGS-19465-3-11A - 10~~	N/A
11	0.09	5.16	16.9	27.8	0.00	0.86	1.26	0.22	27.7	0.00	0.00	0.00	0.06	0.19	80.1	g11	SGS-19465-3-11A - 11	502.9
12	1.40	0.31	5.42	75.0	0.80	0.25	0.08	0.00	2.22	0.07	0.01	0.71	0.04	0.03	86.3	g12	~~SGS-19465-3-11A - 12~~	N/A
13	0.19	5.82	11.8	23.3	1.66	5.94	0.50	0.00	12.0	0.03	0.00	2.12	0.27	0.07	63.7	g13	SGS-19465-3-11A - 13	52.1
14	0.14	2.96	18.5	55.3	5.00	0.94	0.50	0.00	4.82	0.03	0.01	0.04	0.08	0.15	88.4	g14	SGS-19465-3-11A - 14	56.5
15	0.14	2.20	12.0	25.9	2.47	18.5	0.68	0.00	3.34	0.02	0.00	0.82	0.15	0.02	66.3	g15	~~SGS-19465-3-11A - 15~~	N/A
16	0.14	3.07	8.88	50.1	1.66	3.93	0.00	0.00	3.42	0.04	0.00	0.00	0.10	0.02	71.3	g16	~~SGS-19465-3-11A - 16~~	N/A
17	0.86	1.54	13.2	32.5	2.03	12.8	0.69	0.10	4.70	0.03	0.00	0.24	0.11	0.01	68.8	g17	~~SGS-19465-3-11A - 17~~	N/A
18	0.43	1.91	11.5	50.2	0.90	0.39	0.42	0.03	10.2	0.04	0.01	0.00	0.00	0.16	76.1	g18	SGS-19465-3-11A - 18	50.0
19	0.31	2.06	10.9	36.6	2.50	1.80	0.00	0.00	3.78	0.04	0.00	0.25	0.18	0.04	58.4	g19	SGS-19465-3-11A - 19	55.3
20	0.16	1.61	11.4	51.5	2.12	1.52	0.00	0.00	7.60	0.03	0.03	0.21	0.11	0.09	76.3	g20	~~SGS-19465-3-11A - 20~~	N/A
21	0.37	13.2	5.22	19.3	1.13	18.4	0.00	0.02	1.78	0.00	0.00	0.91	0.12	0.67	60.7	g21	~~SGS-19465-3-11A - 21~~	N/A
22	0.35	2.12	17.8	40.4	2.83	0.62	0.00	0.00	6.13	0.04	0.00	0.00	0.09	0.00	70.4	g22	~~SGS-19465-3-11A - 22~~	N/A
23	0.71	0.00	18.0	60.7	14.9	0.25	0.00	0.00	0.00	0.05	0.00	0.82	0.31	0.00	95.6	g23	SGS-19465-3-11A - 23	3.25
24	0.19	3.31	14.7	37.7	2.73	4.39	0.00	0.00	6.63	0.02	0.00	0.00	0.12	0.05	69.8	g24	SGS-19465-3-11A - 24	58.8
25	0.06	0.09	34.0	39.7	0.07	0.31	0.00	0.00	0.39	0.02	0.01	0.33	0.00	0.11	75.1	g25	~~SGS-19465-3-11A - 25~~	N/A
26	0.13	0.66	6.07	60.5	1.21	2.64	0.00	0.00	2.92	0.05	0.00	0.00	0.14	0.03	74.3	g26	~~SGS-19465-3-11A - 26~~	N/A
27	0.26	1.12	12.0	45.4	2.30	1.43	0.00	0.00	2.81	0.06	0.01	0.00	0.27	0.03	65.6	g27	~~SGS-19465-3-11A - 27~~	N/A
28	0.77	5.84	8.34	37.2	1.07	8.80	0.00	0.00	2.45	0.03	0.00	0.00	0.21	0.11	64.7	g28	~~SGS-19465-3-11A - 28~~	N/A
29	0.32	2.64	16.3	31.1	2.64	8.67	0.26	0.06	7.63	0.01	0.00	0.07	0.21	0.02	69.9	g29	~~SGS-19465-3-11A - 29~~	N/A
30	0.23	2.19	14.9	42.8	1.65	3.58	0.34	0.05	8.82	0.04	0.00	0.00	0.15	0.15	74.8	g30	SGS-19465-3-11A - 30	83.9
31	0.17	1.75	9.38	55.9	1.62	2.36	0.25	0.04	4.06	0.03	0.00	0.11	0.13	0.05	75.8	g31	~~SGS-19465-3-11A - 31~~	N/A
32	0.13	3.24	10.2	40.4	1.92	4.69	0.16	0.11	4.55	0.02	0.00	0.05	0.18	0.19	65.7	g32	~~SGS-19465-3-11A - 32~~	N/A
33	0.16	2.41	11.0	54.7	2.04	4.21	0.58	0.00	4.49	0.02	0.00	0.24	0.09	0.02	79.9	g33	~~SGS-19465-3-11A - 33~~	N/A
34	0.37	1.15	21.5	43.9	4.79	0.69	2.40	0.02	4.37	0.02	0.02	0.37	0.06	0.10	79.7	g34	SGS-19465-3-11A - 34	120.8
35	1.04	1.33	16.5	43.1	3.34	1.16	0.00	0.10	8.82	0.04	0.01	0.00	0.16	0.14	75.7	g35	~~SGS-19465-3-11A - 35~~	N/A
36	0.10	0.64	8.43	77.2	2.30	0.25	0.00	0.00	1.97	0.06	0.00	0.00	0.05	0.11	91.0	g36	~~SGS-19465-3-11A - 36~~	N/A
37	0.97	1.10	10.1	59.0	1.56	2.56	0.39	0.03	3.80	0.04	0.00	0.07	0.17	0.03	79.8	g37	~~SGS-19465-3-11A - 37~~	N/A
38	0.27	1.67	20.8	33.5	3.78	0.76	0.75	0.15	14.1	0.02	0.00	0.12	0.09	0.04	76.0	g38	~~SGS-19465-3-11A - 38~~	N/A
39	0.15	1.59	16.7	38.8	3.44	0.45	0.31	0.21	13.4	0.03	0.01	0.11	0.17	0.13	75.4	g39	SGS-19465-3-11A - 39	68.1
40	0.26	1.16	16.6	28.6	3.50	7.98	0.28	1.43	7.68	0.04	0.00	0.23	0.18	0.12	68.0	g40	SGS-19465-3-11A - 40	117.6
41	0.83	2.12	19.8	48.9	3.80	0.72	0.51	0.07	5.39	0.03	0.01	0.01	0.07	0.06	82.3	g41	SGS-19465-3-11A - 41	114.0
42	0.47	1.84	14.6	50.4	3.32	2.33	1.05	0.03	5.21	0.02	0.00	0.11	0.10	0.04	79.6	g42	SGS-19465-3-11A - 42	86.2
Max	1.40	13.2	34.0	77.2	14.9	18.5	2.40	1.43	27.7	0.07	0.03	2.12	0.37	0.67	95.6	---	---	502.9
Min	0.06	0.00	5.22	19.3	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.3	---	---	3.25
Avg	0.36	2.33	13.7	42.8	2.62	3.89	0.37	0.08	6.40	0.03	0.00	0.25	0.14	0.10	73.0	---	---	93.3

EMPA and LA-ICP-MS Data

N-SB-02 (10.0-13.0)																		
31A	EMPA: Oxide Weight Percentage (%)																LA-ICP-MS	
Pt#	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	MnO	FeO	Rb2O	Cs2O	BaO	Cl	F	Total	Label	LA-ICP #	Mean Li7 (ppm)
43	0.10	7.19	7.40	31.5	1.49	12.8	0.26	0.03	2.32	0.03	0.00	0.11	0.07	0.00	63.4	g1	SGS-19465-3-31A -1	100.9
44	0.36	1.88	14.4	43.7	3.65	2.95	0.72	0.06	3.43	0.04	0.01	0.27	0.08	0.00	71.5	g2	SGS-19465-3-31A -2	32.1
45	0.12	2.26	6.40	46.8	1.28	5.25	0.23	0.03	2.46	0.02	0.00	0.15	0.11	0.00	65.1	g3	~~SGS-19465-3-31A - 3~~	N/A
46	0.25	1.28	11.2	31.4	3.51	6.70	0.17	0.13	4.82	0.02	0.01	0.09	0.13	0.04	59.7	g4	SGS-19465-3-31A - 4	41.2
47	0.15	0.73	5.94	72.4	1.55	2.81	0.12	0.01	1.81	0.05	0.00	0.14	0.08	0.05	85.8	g5	~~SGS-19465-3-31A - 5~~	N/A
48	2.00	1.13	11.5	43.9	1.84	3.14	0.36	0.06	8.93	0.03	0.00	0.12	0.09	0.00	73.1	g6	~~SGS-19465-3-31A - 6~~	N/A
49	0.26	5.02	12.1	35.8	2.22	11.5	0.50	0.09	3.72	0.03	0.00	0.13	0.07	0.23	71.6	g7	SGS-19465-3-31A - 7	196.6
50	0.01	13.1	21.0	23.6	0.00	0.14	0.12	0.14	22.5	0.01	0.00	0.06	0.05	0.11	80.7	g8	SGS-19465-3-31A - 8	67.7
51	0.13	1.98	11.1	34.9	2.77	4.93	0.52	0.05	5.57	0.04	0.00	0.05	0.14	0.10	62.2	g9	SGS-19465-3-31A - 9	56.9
52	0.42	1.45	14.9	50.5	4.71	1.49	0.43	0.03	7.78	0.02	0.01	0.30	0.12	0.07	82.2	g10	SGS-19465-3-31A - 10	64.5
53	1.51	0.01	17.2	59.6	15.3	0.06	0.03	0.03	0.06	0.02	0.00	1.10	0.00	0.00	94.8	g11	SGS-19465-3-31A - 11	N/A
54	1.22	1.77	13.7	40.2	2.57	5.00	0.19	0.29	3.62	0.01	0.01	0.08	0.11	0.10	68.8	g12	SGS-19465-3-31A - 12	76.2
55	0.45	2.37	16.7	31.3	4.47	3.10	0.42	0.05	3.06	0.01	0.00	0.15	0.18	0.06	62.2	g13	~~SGS-19465-3-31A - 13~~	N/A
56	0.18	2.58	7.54	35.7	1.99	5.91	1.27	0.05	0.00	0.02	0.00	0.04	0.09	0.01	55.3	g14	~~SGS-19465-3-31A - 14~~	N/A
57	0.04	14.1	2.86	7.86	0.83	23.9	0.27	0.04	0.00	0.01	0.00	0.00	0.06	0.02	50.0	g15	~~SGS-19465-3-31A - 15~~	N/A
58	0.11	0.85	7.05	56.1	1.55	1.82	0.60	0.03	2.83	0.04	0.01	0.14	0.08	0.00	71.2	g16	~~SGS-19465-3-31A - 16~~	N/A
59	0.43	1.52	12.9	29.3	3.01	2.08	0.55	0.06	2.81	0.01	0.00	0.08	0.15	0.12	52.9	g17	~~SGS-19465-3-31A - 17~~	N/A
60	0.49	2.76	7.51	22.1	3.06	20.8	0.19	0.11	4.11	0.01	0.00	0.03	0.14	0.00	61.3	g18	SGS-19465-3-31A - 18	33.4
61	0.10	8.36	6.72	17.6	1.81	17.5	0.32	0.07	3.44	0.02	0.02	0.10	0.07	0.08	56.2	g19	~~SGS-19465-3-31A - 19~~	N/A
62	0.23	1.76	9.99	38.7	2.13	2.76	0.26	0.07	5.65	0.02	0.02	0.11	0.13	0.01	61.8	g20	SGS-19465-3-31A - 20	44.6
63	0.02	16.6	0.22	1.02	0.11	29.0	0.07	0.56	2.71	0.01	0.00	0.08	0.04	0.00	50.4	g21	~~SGS-19465-3-31A - 21~~	N/A
64	1.62	1.49	14.7	47.9	2.56	3.26	0.79	0.08	3.76	0.04	0.00	0.17	0.16	0.03	76.5	g22	SGS-19465-3-31A - 22	100.6
65	0.15	3.64	10.3	25.5	2.50	10.2	0.40	0.12	4.12	0.01	0.00	0.00	0.07	0.03	57.1	g23	SGS-19465-3-31A - 23	73.5
66	0.15	1.25	9.34	63.4	2.10	1.84	0.23	0.01	2.85	0.04	0.00	0.12	0.15	0.01	81.5	g24	SGS-19465-3-31A - 24	38.2
67	0.22	3.08	24.9	42.4	9.17	1.40	0.18	0.05	1.83	0.03	0.01	0.58	0.04	0.04	84.0	g25	~~SGS-19465-3-31A - 25~~	N/A
68	0.17	3.42	13.3	52.7	2.59	3.38	0.34	0.12	7.69	0.03	0.02	0.12	0.06	0.07	84.0	g26	~~SGS-19465-3-31A - 26~~	N/A
69	0.37	0.00	16.6	60.5	16.6	0.01	0.05	0.00	0.08	0.06	0.00	0.48	0.00	0.03	94.8	g27	~~SGS-19465-3-31A - 27~~	N/A
70	0.10	7.81	6.33	27.4	1.66	13.0	0.18	1.57	4.55	0.00	0.00	0.20	0.10	0.00	62.9	g28	~~SGS-19465-3-31A - 28~~	N/A
71	0.20	1.85	8.20	55.7	1.91	4.23	0.35	0.07	2.90	0.04	0.01	0.09	0.17	0.10	75.8	g29	~~SGS-19465-3-31A - 29~~	N/A
72	0.24	2.62	16.0	38.7	2.82	3.05	0.44	0.03	8.31	0.01	0.00	0.17	0.17	0.13	72.6	g30	SGS-19465-3-31A - 30	37.8
73	1.54	3.67	8.03	44.6	1.29	9.27	0.20	0.09	2.47	0.02	0.00	0.00	0.07	0.10	71.3	g31	SGS-19465-3-31A - 31	160.5
74	0.14	1.16	10.7	55.9	2.52	1.65	0.29	0.02	2.94	0.03	0.00	0.20	0.10	0.00	75.6	g32	~~SGS-19465-3-31A - 32~~	N/A
75	0.15	2.37	9.30	47.2	2.30	3.47	0.38	0.10	7.86	0.04	0.00	0.00	0.06	0.04	73.2	g33	SGS-19465-3-31A - 33	47.0
76	0.13	2.55	10.0	48.0	2.63	4.76	0.29	0.56	5.22	0.02	0.02	0.03	0.11	0.19	74.4	g34	~~SGS-19465-3-31A - 34~~	N/A
77	0.25	1.87	12.3	33.5	2.95	13.0	0.39	0.06	4.50	0.03	0.02	0.01	0.10	0.24	69.1	g35	~~SGS-19465-3-31A - 35~~	N/A
78	1.50	1.21	11.6	36.2	2.20	5.35	0.21	0.05	4.93	0.01	0.01	0.14	0.13	0.03	63.5	g36	~~SGS-19465-3-31A - 36~~	N/A
79	0.22	1.68	11.0	32.1	2.72	8.09	0.53	0.20	9.39	0.01	0.00	0.09	0.04	0.11	66.2	g37	SGS-19465-3-31A - 37	58.5
80	0.33	1.74	12.4	46.8	2.89	1.94	0.45	0.07	6.40	0.02	0.00	0.00	0.07	0.00	73.1	g38	SGS-19465-3-31A - 38	83.4
81	0.48	3.34	9.51	39.6	2.52	6.16	0.24	0.05	7.29	0.03	0.01	0.23	0.07	0.16	69.7	g39	SGS-19465-3-31A - 39	24.8
82	0.26	3.28	9.75	48.3	1.41	3.83	0.60	0.16	6.65	0.02	0.00	0.12	0.10	0.07	74.5	g40	SGS-19465-3-31A - 40	47.8
83	0.77	11.7	6.05	16.3	1.13	19.7	0.14	0.09	2.27	0.01	0.00	0.06	0.07	0.13	58.3	g41	SGS-19465-3-31A - 41	34.0
84	0.10	10.3	8.10	15.9	1.58	14.9	0.22	0.09	7.30	0.02	0.00	0.18	0.09	0.03	58.9	g42	~~SGS-19465-3-31A - 42~~	N/A
Max	2.00	16.6	24.9	72.4	16.6	29.0	1.27	1.57	22.5	0.06	0.02	1.10	0.18	0.24	94.8	---	---	196.6
Min	0.01	0.00	0.22	1.02	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.0	---	---	24.8
Avg	0.42	3.78	10.9	38.9	3.04	7.05	0.35	0.13	4.64	0.02	0.00	0.15	0.09	0.06	69.4	---	---	67.6

EMPA and LA-ICP-MS Data

N-SB-05 (10.0-16.6)																		
41A	EMPA: Oxide Weight Percentage (%)																LA-ICP-MS	
Pt#	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	MnO	FeO	Rb2O	Cs2O	BaO	Cl	F	Total	Label	LA-ICP #	Mean Li7 (ppm)
85	0.09	0.73	9.37	69.4	0.90	0.26	0.43	0.02	3.07	0.04	0.00	0.19	0.09	0.13	84.7	g1	~~SGS-19465-3-41A - 1~~	N/A
86	6.44	0.10	16.9	49.3	1.58	0.83	0.01	0.04	0.22	0.00	0.01	0.07	0.20	0.00	75.7	g2	SGS-19465-3-41A - 2	5.59
87	0.08	0.63	8.00	38.3	2.00	0.65	0.50	0.04	3.74	0.02	0.00	0.12	0.06	0.06	54.1	g3	~~SGS-19465-3-41A - 3~~	N/A
88	0.10	1.16	11.6	56.2	1.16	0.55	0.59	0.03	4.53	0.02	0.01	0.15	0.04	0.08	76.2	g4	SGS-19465-3-41A - 4	44.1
89	0.12	1.06	11.4	50.8	1.48	0.78	0.49	0.06	4.58	0.04	0.00	0.14	0.11	0.32	71.2	g5	SGS-19465-3-41A - 5	51.3
90	0.12	1.42	15.3	53.7	1.65	0.48	0.51	0.02	5.19	0.04	0.02	0.00	0.11	0.16	78.7	g6	SGS-19465-3-41A - 6	72.0
91	0.50	0.88	17.2	53.1	7.54	0.27	0.24	0.01	3.57	0.05	0.00	0.10	0.12	0.03	83.6	g7	SGS-19465-3-41A - 7	66.6
92	0.15	1.29	15.3	47.1	1.69	0.56	0.56	0.03	6.63	0.03	0.00	0.00	0.06	0.17	73.6	g8	SGS-19465-3-41A - 8	49.5
93	0.12	1.50	15.7	55.2	1.49	0.81	0.45	0.04	6.37	0.04	0.00	0.09	0.06	0.07	81.9	g9	~~SGS-19465-3-41A - 9~~	N/A
94	0.19	1.44	17.7	42.5	1.99	1.17	0.56	0.09	6.54	0.04	0.01	0.14	0.03	0.12	72.5	g10	SGS-19465-3-41A - 10	75.3
95	0.17	0.97	14.2	51.0	2.75	0.57	0.96	0.04	5.48	0.02	0.01	0.11	0.02	0.09	76.3	g11	~~SGS-19465-3-41A - 11~~	N/A
96	0.28	1.05	12.1	38.1	1.99	0.84	1.66	0.03	4.33	0.03	0.00	0.14	0.12	0.00	60.7	g12	SGS-19465-3-41A - 12	43.0
97	0.13	1.57	17.2	43.6	2.13	1.37	0.41	0.02	5.67	0.04	0.00	0.18	0.06	0.06	72.4	g13	~~SGS-19465-3-41A - 13~~	N/A
98	0.13	1.01	12.9	51.0	1.52	0.84	0.71	0.09	4.68	0.03	0.00	0.18	0.07	0.09	73.2	g14	SGS-19465-3-41A - 14	57.6
99	0.18	1.28	14.7	41.5	1.48	0.63	0.35	0.05	4.19	0.03	0.01	0.11	0.09	0.02	64.6	g15	~~SGS-19465-3-41A - 15~~	N/A
100	0.19	1.74	17.6	45.0	1.58	0.84	0.44	0.08	9.40	0.02	0.01	0.00	0.08	0.23	77.1	g16	SGS-19465-3-41A - 16	76.7
101	0.22	1.24	17.8	43.7	2.72	0.67	0.41	0.03	5.13	0.02	0.00	0.13	0.07	0.06	72.2	g17	~~SGS-19465-3-41A - 17~~	N/A
102	0.47	1.35	16.5	40.1	2.03	0.67	0.44	0.03	5.02	0.03	0.00	0.18	0.15	0.10	67.0	g18	~~SGS-19465-3-41A - 18~~	N/A
103	0.22	0.81	9.56	68.8	1.80	0.39	0.49	0.04	3.53	0.05	0.01	0.13	0.03	0.10	86.0	g19	~~SGS-19465-3-41A - 19~~	N/A
104	0.29	0.82	16.4	52.1	6.21	0.57	0.53	0.02	4.20	0.05	0.00	0.26	0.06	0.17	81.6	g20	SGS-19465-3-41A - 20	60.2
105	0.18	1.11	12.4	49.4	1.20	0.64	0.69	0.15	4.75	0.03	0.00	0.00	0.08	0.00	70.6	g21	SGS-19465-3-41A - 21	57.0
106	0.13	1.32	9.97	45.4	1.65	0.40	0.40	0.05	5.47	0.05	0.00	0.10	0.09	0.06	65.0	g22	~~SGS-19465-3-41A - 22~~	N/A
107	0.52	1.32	17.4	43.8	1.97	1.04	0.53	0.03	5.67	0.03	0.00	0.04	0.06	0.31	72.6	g23	~~SGS-19465-3-41A - 23~~	N/A
108	0.09	1.26	12.8	42.8	1.42	0.90	0.49	0.02	4.83	0.02	0.00	0.05	0.16	0.25	65.0	g24	~~SGS-19465-3-41A - 24~~	N/A
109	0.17	1.35	14.3	33.8	1.70	0.90	0.61	0.06	7.64	0.03	0.01	0.11	0.06	0.17	60.8	g25	SGS-19465-3-41A - 25	55.3
110	0.21	0.54	6.95	60.9	1.08	0.33	0.16	0.00	2.59	0.04	0.00	0.05	0.05	0.26	73.1	g26	~~SGS-19465-3-41A - 26~~	N/A
111	0.25	0.84	14.1	45.9	4.79	0.43	0.79	0.07	4.31	0.05	0.00	0.17	0.11	0.18	71.9	g27	SGS-19465-3-41A - 27	51.1
112	1.89	0.75	11.0	56.1	0.79	1.45	1.01	0.00	2.74	0.04	0.02	0.04	0.10	0.11	76.0	g28	~~SGS-19465-3-41A - 28~~	N/A
113	0.21	1.60	16.2	39.0	3.99	0.62	0.46	0.04	5.21	0.03	0.00	0.00	0.04	0.27	67.5	g29	~~SGS-19465-3-41A - 29~~	N/A
114	0.15	1.33	17.0	36.8	1.79	0.77	0.82	0.04	5.76	0.09	0.00	0.13	0.06	0.18	64.9	g30	~~SGS-19465-3-41A - 30~~	N/A
115	0.39	0.85	9.11	32.3	1.33	0.78	0.38	0.03	5.44	0.00	0.02	0.06	0.09	0.14	50.8	g31	SGS-19465-3-41A - 31	38.6
116	1.90	1.26	14.4	35.5	1.15	0.90	0.48	0.04	8.14	0.02	0.00	0.05	0.11	0.10	64.0	g32	~~SGS-19465-3-41A - 32~~	N/A
117	0.12	1.10	13.7	45.7	3.70	1.12	1.01	0.02	4.15	0.04	0.00	0.03	0.12	0.05	70.8	g33	SGS-19465-3-41A - 33	62.5
118	0.21	1.09	9.45	24.8	1.33	0.69	0.61	0.02	3.64	0.07	0.01	0.12	0.09	0.21	42.2	g34	~~SGS-19465-3-41A - 34~~	N/A
119	0.60	0.93	12.3	48.7	4.20	0.61	0.26	0.03	4.96	0.02	0.01	0.21	0.10	0.22	73.1	g35	SGS-19465-3-41A - 35	54.4
120	0.22	0.88	12.6	31.8	2.46	1.05	0.39	0.03	6.09	0.02	0.00	0.21	0.02	0.19	55.9	g36	SGS-19465-3-41A - 36	52.4
121	0.11	0.99	9.74	38.5	1.12	0.80	0.82	0.00	12.1	0.04	0.00	0.00	0.03	0.26	64.4	g37	SGS-19465-3-41A - 37	39.4
122	0.24	1.20	13.4	54.5	2.34	0.55	0.31	0.03	4.04	0.05	0.03	0.00	0.06	0.02	76.8	g38	SGS-19465-3-41A - 38	19.8
123	0.31	1.42	16.5	36.9	2.47	0.59	9.13	0.00	4.52	0.01	0.00	0.11	0.05	0.21	72.1	g39	~~SGS-19465-3-41A - 39~~	N/A
124	0.21	0.41	13.7	49.1	9.85	0.31	1.85	0.02	2.18	0.04	0.00	0.09	0.04	0.19	77.9	g40	SGS-19465-3-41A - 40	46.4
125	0.20	2.13	19.3	46.5	1.74	1.18	0.53	0.02	6.12	0.04	0.00	0.08	0.06	0.32	78.0	g41	SGS-19465-3-41A - 41	82.9
126	0.98	1.22	14.4	39.5	1.49	0.72	0.41	0.01	4.65	0.01	0.00	0.08	0.21	0.07	63.7	g42	SGS-19465-3-41A - 42	65.0
Max	6.44	2.13	19.3	69.4	9.85	1.45	9.13	0.15	12.1	0.09	0.03	0.26	0.21	0.32	86.0	---	---	82.9
Min	0.08	0.10	6.95	24.8	0.79	0.26	0.01	0.00	0.22	0.00	0.00	0.00	0.02	0.00	42.2	---	---	5.59
Avg	0.46	1.12	13.8	45.9	2.36	0.73	0.78	0.04	5.02	0.03	0.01	0.10	0.08	0.14	70.5	---	---	53.3

Mica Sheet (In-house)															
	Na2O	**MgO**	**Al2O3**	**SiO2**	**K2O**	**CaO**	**TiO2**	**MnO**	**FeO**	**Rb2O**	**Cs2O**	**BaO**	**Cl**	**F**	**Total**
	0.71	0.77	33.9	45.9	10.2	0.00	0.32	0.05	1.87	0.04	0.00	0.35	0.00	0.14	94.2
	0.75	0.76	34.2	45.9	10.2	0.01	0.23	0.00	1.96	0.04	0.00	0.34	0.01	0.12	94.5
	0.71	0.78	34.0	45.7	10.0	0.02	0.36	0.01	1.94	0.05	0.00	0.00	0.00	0.12	93.7
	0.73	0.76	34.0	45.9	10.2	0.02	0.48	0.01	1.88	0.04	0.00	0.00	0.01	0.13	94.1
Max	0.75	0.78	34.2	45.9	10.2	0.02	0.48	0.05	1.96	0.05	0.00	0.35	0.01	0.14	94.5
Min	0.71	0.76	33.9	45.7	10.0	0.00	0.23	0.00	1.87	0.04	0.00	0.00	0.00	0.12	93.7
Avg	0.72	0.77	34.0	45.8	10.2	0.01	0.35	0.02	1.91	0.04	0.00	0.17	0.01	0.13	94.1
Recommended	0.71	0.76	34.1	45.9	10.2	N/A	0.38	N/A	1.95	N/A	N/A	N/A	N/A	N/A	N/A

ATTACHMENT 8
AQUEOUS DATA

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
CCR	XPW01	Porewater	2/17/2021	pH (field)	SU	12.3
CCR	XPW01	Porewater	3/9/2021	pH (field)	SU	12.4
CCR	XPW01	Porewater	3/30/2021	pH (field)	SU	12.4
CCR	XPW01	Porewater	4/28/2021	pH (field)	SU	12.3
CCR	XPW01	Porewater	7/14/2021	pH (field)	SU	12.2
CCR	XPW01	Porewater	2/23/2022	pH (field)	SU	12.6
CCR	XPW01	Porewater	6/14/2022	pH (field)	SU	12.5
CCR	XPW01	Porewater	8/15/2022	pH (field)	SU	12.1
CCR	XPW01	Porewater	2/1/2023	pH (field)	SU	12.4
CCR	XPW01	Porewater	4/27/2023	pH (field)	SU	12.2
CCR	XPW01	Porewater	7/24/2023	pH (field)	SU	12.7
CCR	XPW01	Porewater	10/10/2023	pH (field)	SU	12.5
CCR	XPW01	Porewater	2/17/2021	Oxidation Reduction Potential	mV	-314
CCR	XPW01	Porewater	3/9/2021	Oxidation Reduction Potential	mV	-296
CCR	XPW01	Porewater	3/30/2021	Oxidation Reduction Potential	mV	-265
CCR	XPW01	Porewater	4/28/2021	Oxidation Reduction Potential	mV	-329
CCR	XPW01	Porewater	7/14/2021	Oxidation Reduction Potential	mV	-345
CCR	XPW01	Porewater	2/23/2022	Oxidation Reduction Potential	mV	-357
CCR	XPW01	Porewater	6/14/2022	Oxidation Reduction Potential	mV	-374
CCR	XPW01	Porewater	8/15/2022	Oxidation Reduction Potential	mV	-342
CCR	XPW01	Porewater	2/1/2023	Oxidation Reduction Potential	mV	-338
CCR	XPW01	Porewater	4/27/2023	Oxidation Reduction Potential	mV	-379
CCR	XPW01	Porewater	7/24/2023	Oxidation Reduction Potential	mV	-290
CCR	XPW01	Porewater	10/10/2023	Oxidation Reduction Potential	mV	-295
CCR	XPW01	Porewater	2/17/2021	Eh	V	-0.12
CCR	XPW01	Porewater	3/9/2021	Eh	V	-0.10
CCR	XPW01	Porewater	3/30/2021	Eh	V	-0.070
CCR	XPW01	Porewater	4/28/2021	Eh	V	-0.13
CCR	XPW01	Porewater	7/14/2021	Eh	V	-0.15
CCR	XPW01	Porewater	2/23/2022	Eh	V	-0.16
CCR	XPW01	Porewater	6/14/2022	Eh	V	-0.18
CCR	XPW01	Porewater	8/15/2022	Eh	V	-0.15
CCR	XPW01	Porewater	2/1/2023	Eh	V	-0.14
CCR	XPW01	Porewater	4/27/2023	Eh	V	-0.19
CCR	XPW01	Porewater	7/24/2023	Eh	V	-0.096
CCR	XPW01	Porewater	10/10/2023	Eh	V	-0.10
CCR	XPW01	Porewater	2/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW01	Porewater	3/9/2021	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW01	Porewater	3/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW01	Porewater	4/28/2021	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW01	Porewater	7/14/2021	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW01	Porewater	2/23/2022	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW01	Porewater	6/14/2022	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW01	Porewater	8/15/2022	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW01	Porewater	2/1/2023	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW01	Porewater	4/27/2023	Alkalinity, bicarbonate	mg/L CaCO3	<10

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
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HSU	Location	Well Type	Date	Parameter	Unit	Result
CCR	XPW01	Porewater	7/24/2023	Alkalinity, bicarbonate	mg/L CaCO3	0
CCR	XPW01	Porewater	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	0
CCR	XPW01	Porewater	2/17/2021	Alkalinity, carbonate	mg/L CaCO3	380
CCR	XPW01	Porewater	3/9/2021	Alkalinity, carbonate	mg/L CaCO3	260
CCR	XPW01	Porewater	3/30/2021	Alkalinity, carbonate	mg/L CaCO3	450
CCR	XPW01	Porewater	4/28/2021	Alkalinity, carbonate	mg/L CaCO3	450
CCR	XPW01	Porewater	7/14/2021	Alkalinity, carbonate	mg/L CaCO3	500
CCR	XPW01	Porewater	2/23/2022	Alkalinity, carbonate	mg/L CaCO3	520
CCR	XPW01	Porewater	6/14/2022	Alkalinity, carbonate	mg/L CaCO3	500
CCR	XPW01	Porewater	8/15/2022	Alkalinity, carbonate	mg/L CaCO3	500
CCR	XPW01	Porewater	2/1/2023	Alkalinity, carbonate	mg/L CaCO3	580
CCR	XPW01	Porewater	4/27/2023	Alkalinity, carbonate	mg/L CaCO3	700
CCR	XPW01	Porewater	7/24/2023	Alkalinity, carbonate	mg/L CaCO3	799
CCR	XPW01	Porewater	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	700
CCR	XPW01	Porewater	2/17/2021	Barium, total	mg/L	0.0350
CCR	XPW01	Porewater	3/9/2021	Barium, total	mg/L	0.140
CCR	XPW01	Porewater	3/30/2021	Barium, total	mg/L	0.0640
CCR	XPW01	Porewater	4/28/2021	Barium, total	mg/L	0.460
CCR	XPW01	Porewater	7/14/2021	Barium, total	mg/L	0.0390
CCR	XPW01	Porewater	7/24/2023	Barium, total	mg/L	0.0448
CCR	XPW01	Porewater	10/10/2023	Barium, total	mg/L	0.0652
CCR	XPW01	Porewater	2/17/2021	Calcium, total	mg/L	62.0
CCR	XPW01	Porewater	3/9/2021	Calcium, total	mg/L	63.0
CCR	XPW01	Porewater	3/30/2021	Calcium, total	mg/L	54.0
CCR	XPW01	Porewater	4/28/2021	Calcium, total	mg/L	61.0
CCR	XPW01	Porewater	7/14/2021	Calcium, total	mg/L	31.0
CCR	XPW01	Porewater	2/23/2022	Calcium, total	mg/L	33.0
CCR	XPW01	Porewater	6/14/2022	Calcium, total	mg/L	20.0
CCR	XPW01	Porewater	8/15/2022	Calcium, total	mg/L	28.0
CCR	XPW01	Porewater	2/1/2023	Calcium, total	mg/L	24.0
CCR	XPW01	Porewater	4/27/2023	Calcium, total	mg/L	36.0
CCR	XPW01	Porewater	7/24/2023	Calcium, total	mg/L	10.3
CCR	XPW01	Porewater	10/10/2023	Calcium, total	mg/L	12.4
CCR	XPW01	Porewater	2/17/2021	Chloride, total	mg/L	49.0
CCR	XPW01	Porewater	3/9/2021	Chloride, total	mg/L	38.0
CCR	XPW01	Porewater	3/30/2021	Chloride, total	mg/L	32.0
CCR	XPW01	Porewater	4/28/2021	Chloride, total	mg/L	33.0
CCR	XPW01	Porewater	7/14/2021	Chloride, total	mg/L	27.0
CCR	XPW01	Porewater	2/23/2022	Chloride, total	mg/L	25.0
CCR	XPW01	Porewater	6/14/2022	Chloride, total	mg/L	14.0
CCR	XPW01	Porewater	8/15/2022	Chloride, total	mg/L	11.0
CCR	XPW01	Porewater	2/1/2023	Chloride, total	mg/L	9.70
CCR	XPW01	Porewater	4/27/2023	Chloride, total	mg/L	8.10
CCR	XPW01	Porewater	7/24/2023	Chloride, total	mg/L	44.0
CCR	XPW01	Porewater	10/10/2023	Chloride, total	mg/L	50.0
CCR	XPW01	Porewater	4/27/2023	Ferrous Iron, dissolved	mg/L	0.510

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Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
CCR	XPW01	Porewater	7/24/2023	Ferrous Iron, dissolved	mg/L	0.571
CCR	XPW01	Porewater	4/27/2023	Iron, dissolved	mg/L	0.0420
CCR	XPW01	Porewater	7/24/2023	Iron, dissolved	mg/L	0.0699
CCR	XPW01	Porewater	2/17/2021	Lithium, total	mg/L	0.110
CCR	XPW01	Porewater	3/9/2021	Lithium, total	mg/L	0.130
CCR	XPW01	Porewater	3/30/2021	Lithium, total	mg/L	0.140
CCR	XPW01	Porewater	4/28/2021	Lithium, total	mg/L	0.0740
CCR	XPW01	Porewater	7/14/2021	Lithium, total	mg/L	0.150
CCR	XPW01	Porewater	7/24/2023	Lithium, total	mg/L	0.0545
CCR	XPW01	Porewater	10/10/2023	Lithium, total	mg/L	0.0580
CCR	XPW01	Porewater	2/17/2021	Magnesium, total	mg/L	0.160
CCR	XPW01	Porewater	3/9/2021	Magnesium, total	mg/L	0.810
CCR	XPW01	Porewater	3/30/2021	Magnesium, total	mg/L	0.320
CCR	XPW01	Porewater	4/28/2021	Magnesium, total	mg/L	2.70
CCR	XPW01	Porewater	7/14/2021	Magnesium, total	mg/L	0.790
CCR	XPW01	Porewater	2/23/2022	Magnesium, total	mg/L	0.980
CCR	XPW01	Porewater	6/14/2022	Magnesium, total	mg/L	0.420
CCR	XPW01	Porewater	8/15/2022	Magnesium, total	mg/L	3.80
CCR	XPW01	Porewater	2/1/2023	Magnesium, total	mg/L	3.30
CCR	XPW01	Porewater	4/27/2023	Magnesium, total	mg/L	8.70
CCR	XPW01	Porewater	7/24/2023	Magnesium, total	mg/L	0.343
CCR	XPW01	Porewater	10/10/2023	Magnesium, total	mg/L	1.08
CCR	XPW01	Porewater	4/27/2023	Manganese, dissolved	mg/L	<0.00023
CCR	XPW01	Porewater	7/24/2023	Manganese, dissolved	mg/L	<0.0008
CCR	XPW01	Porewater	7/24/2023	Phosphate, dissolved	mg/L	0.301
CCR	XPW01	Porewater	2/17/2021	Potassium, total	mg/L	160
CCR	XPW01	Porewater	3/9/2021	Potassium, total	mg/L	150
CCR	XPW01	Porewater	3/30/2021	Potassium, total	mg/L	130
CCR	XPW01	Porewater	4/28/2021	Potassium, total	mg/L	130
CCR	XPW01	Porewater	7/14/2021	Potassium, total	mg/L	98.0
CCR	XPW01	Porewater	2/23/2022	Potassium, total	mg/L	96.0
CCR	XPW01	Porewater	6/14/2022	Potassium, total	mg/L	64.0
CCR	XPW01	Porewater	8/15/2022	Potassium, total	mg/L	74.0
CCR	XPW01	Porewater	2/1/2023	Potassium, total	mg/L	57.0
CCR	XPW01	Porewater	4/27/2023	Potassium, total	mg/L	47.0
CCR	XPW01	Porewater	7/24/2023	Potassium, total	mg/L	42.4
CCR	XPW01	Porewater	10/10/2023	Potassium, total	mg/L	46.9
CCR	XPW01	Porewater	4/27/2023	Silicon, dissolved	mg/L	74.0
CCR	XPW01	Porewater	7/24/2023	Silicon, dissolved	mg/L	75.1
CCR	XPW01	Porewater	2/17/2021	Sodium, total	mg/L	9,600
CCR	XPW01	Porewater	3/9/2021	Sodium, total	mg/L	8,000
CCR	XPW01	Porewater	3/30/2021	Sodium, total	mg/L	6,700
CCR	XPW01	Porewater	4/28/2021	Sodium, total	mg/L	7,000
CCR	XPW01	Porewater	7/14/2021	Sodium, total	mg/L	5,700
CCR	XPW01	Porewater	2/23/2022	Sodium, total	mg/L	4,900
CCR	XPW01	Porewater	6/14/2022	Sodium, total	mg/L	3,400

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
CCR	XPW01	Porewater	8/15/2022	Sodium, total	mg/L	3,800
CCR	XPW01	Porewater	2/1/2023	Sodium, total	mg/L	2,600
CCR	XPW01	Porewater	4/27/2023	Sodium, total	mg/L	2,400
CCR	XPW01	Porewater	7/24/2023	Sodium, total	mg/L	2,050
CCR	XPW01	Porewater	10/10/2023	Sodium, total	mg/L	2,110
CCR	XPW01	Porewater	2/17/2021	Sulfate, total	mg/L	19,000
CCR	XPW01	Porewater	3/9/2021	Sulfate, total	mg/L	14,000
CCR	XPW01	Porewater	3/30/2021	Sulfate, total	mg/L	19,000
CCR	XPW01	Porewater	4/28/2021	Sulfate, total	mg/L	12,000
CCR	XPW01	Porewater	7/14/2021	Sulfate, total	mg/L	11,000
CCR	XPW01	Porewater	2/23/2022	Sulfate, total	mg/L	9,300
CCR	XPW01	Porewater	6/14/2022	Sulfate, total	mg/L	6,100
CCR	XPW01	Porewater	8/15/2022	Sulfate, total	mg/L	5,900
CCR	XPW01	Porewater	2/1/2023	Sulfate, total	mg/L	4,200
CCR	XPW01	Porewater	4/27/2023	Sulfate, total	mg/L	2,900
CCR	XPW01	Porewater	7/24/2023	Sulfate, total	mg/L	2,530
CCR	XPW01	Porewater	10/10/2023	Sulfate, total	mg/L	2,720
CCR	XPW01	Porewater	2/17/2021	Total Dissolved Solids	mg/L	27,000
CCR	XPW01	Porewater	3/9/2021	Total Dissolved Solids	mg/L	24,000
CCR	XPW01	Porewater	3/30/2021	Total Dissolved Solids	mg/L	24,000
CCR	XPW01	Porewater	4/28/2021	Total Dissolved Solids	mg/L	14,000
CCR	XPW01	Porewater	7/14/2021	Total Dissolved Solids	mg/L	17,000
CCR	XPW01	Porewater	2/23/2022	Total Dissolved Solids	mg/L	15,000
CCR	XPW01	Porewater	6/14/2022	Total Dissolved Solids	mg/L	11,000
CCR	XPW01	Porewater	8/15/2022	Total Dissolved Solids	mg/L	10,000
CCR	XPW01	Porewater	2/1/2023	Total Dissolved Solids	mg/L	3,400
CCR	XPW01	Porewater	4/27/2023	Total Dissolved Solids	mg/L	6,900
CCR	XPW01	Porewater	7/24/2023	Total Dissolved Solids	mg/L	6,110
CCR	XPW01	Porewater	10/10/2023	Total Dissolved Solids	mg/L	6,500
CCR	XPW02	Porewater	2/17/2021	pH (field)	SU	8.6
CCR	XPW02	Porewater	3/9/2021	pH (field)	SU	9.2
CCR	XPW02	Porewater	3/30/2021	pH (field)	SU	8.9
CCR	XPW02	Porewater	4/28/2021	pH (field)	SU	9.9
CCR	XPW02	Porewater	7/14/2021	pH (field)	SU	9.7
CCR	XPW02	Porewater	2/23/2022	pH (field)	SU	9.5
CCR	XPW02	Porewater	6/14/2022	pH (field)	SU	10.1
CCR	XPW02	Porewater	8/15/2022	pH (field)	SU	9.7
CCR	XPW02	Porewater	2/1/2023	pH (field)	SU	10.1
CCR	XPW02	Porewater	4/27/2023	pH (field)	SU	9.6
CCR	XPW02	Porewater	7/24/2023	pH (field)	SU	9.5
CCR	XPW02	Porewater	10/10/2023	pH (field)	SU	9.7
CCR	XPW02	Porewater	2/17/2021	Oxidation Reduction Potential	mV	-169
CCR	XPW02	Porewater	3/9/2021	Oxidation Reduction Potential	mV	-209
CCR	XPW02	Porewater	3/30/2021	Oxidation Reduction Potential	mV	-142
CCR	XPW02	Porewater	4/28/2021	Oxidation Reduction Potential	mV	-259
CCR	XPW02	Porewater	7/14/2021	Oxidation Reduction Potential	mV	-266

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
CCR	XPW02	Porewater	2/23/2022	Oxidation Reduction Potential	mV	-233
CCR	XPW02	Porewater	6/14/2022	Oxidation Reduction Potential	mV	-262
CCR	XPW02	Porewater	8/15/2022	Oxidation Reduction Potential	mV	-231
CCR	XPW02	Porewater	2/1/2023	Oxidation Reduction Potential	mV	-79.0
CCR	XPW02	Porewater	4/27/2023	Oxidation Reduction Potential	mV	-237
CCR	XPW02	Porewater	7/24/2023	Oxidation Reduction Potential	mV	-106
CCR	XPW02	Porewater	10/10/2023	Oxidation Reduction Potential	mV	-102
CCR	XPW02	Porewater	2/17/2021	Eh	V	0.032
CCR	XPW02	Porewater	3/9/2021	Eh	V	-0.014
CCR	XPW02	Porewater	3/30/2021	Eh	V	0.051
CCR	XPW02	Porewater	4/28/2021	Eh	V	-0.065
CCR	XPW02	Porewater	7/14/2021	Eh	V	-0.073
CCR	XPW02	Porewater	2/23/2022	Eh	V	-0.033
CCR	XPW02	Porewater	6/14/2022	Eh	V	-0.070
CCR	XPW02	Porewater	8/15/2022	Eh	V	-0.039
CCR	XPW02	Porewater	2/1/2023	Eh	V	0.12
CCR	XPW02	Porewater	4/27/2023	Eh	V	-0.043
CCR	XPW02	Porewater	7/24/2023	Eh	V	0.088
CCR	XPW02	Porewater	10/10/2023	Eh	V	0.092
CCR	XPW02	Porewater	2/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	42.0
CCR	XPW02	Porewater	3/9/2021	Alkalinity, bicarbonate	mg/L CaCO3	12.0
CCR	XPW02	Porewater	3/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	15.0
CCR	XPW02	Porewater	4/28/2021	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW02	Porewater	7/14/2021	Alkalinity, bicarbonate	mg/L CaCO3	15.0
CCR	XPW02	Porewater	2/23/2022	Alkalinity, bicarbonate	mg/L CaCO3	2.00
CCR	XPW02	Porewater	6/14/2022	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW02	Porewater	8/15/2022	Alkalinity, bicarbonate	mg/L CaCO3	10.0
CCR	XPW02	Porewater	2/1/2023	Alkalinity, bicarbonate	mg/L CaCO3	25.0
CCR	XPW02	Porewater	4/27/2023	Alkalinity, bicarbonate	mg/L CaCO3	12.0
CCR	XPW02	Porewater	7/24/2023	Alkalinity, bicarbonate	mg/L CaCO3	23.0
CCR	XPW02	Porewater	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	16.0
CCR	XPW02	Porewater	2/17/2021	Alkalinity, carbonate	mg/L CaCO3	20.0
CCR	XPW02	Porewater	3/9/2021	Alkalinity, carbonate	mg/L CaCO3	35.0
CCR	XPW02	Porewater	3/30/2021	Alkalinity, carbonate	mg/L CaCO3	25.0
CCR	XPW02	Porewater	4/28/2021	Alkalinity, carbonate	mg/L CaCO3	45.0
CCR	XPW02	Porewater	7/14/2021	Alkalinity, carbonate	mg/L CaCO3	25.0
CCR	XPW02	Porewater	2/23/2022	Alkalinity, carbonate	mg/L CaCO3	37.0
CCR	XPW02	Porewater	6/14/2022	Alkalinity, carbonate	mg/L CaCO3	45.0
CCR	XPW02	Porewater	8/15/2022	Alkalinity, carbonate	mg/L CaCO3	30.0
CCR	XPW02	Porewater	2/1/2023	Alkalinity, carbonate	mg/L CaCO3	20.0
CCR	XPW02	Porewater	4/27/2023	Alkalinity, carbonate	mg/L CaCO3	35.0
CCR	XPW02	Porewater	7/24/2023	Alkalinity, carbonate	mg/L CaCO3	24.0
CCR	XPW02	Porewater	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	27.0
CCR	XPW02	Porewater	2/17/2021	Barium, total	mg/L	0.0170
CCR	XPW02	Porewater	3/9/2021	Barium, total	mg/L	0.0240
CCR	XPW02	Porewater	3/30/2021	Barium, total	mg/L	0.0500

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
CCR	XPW02	Porewater	4/28/2021	Barium, total	mg/L	0.0420
CCR	XPW02	Porewater	7/14/2021	Barium, total	mg/L	0.0250
CCR	XPW02	Porewater	7/24/2023	Barium, total	mg/L	0.0138
CCR	XPW02	Porewater	10/10/2023	Barium, total	mg/L	0.0781
CCR	XPW02	Porewater	2/17/2021	Calcium, total	mg/L	15.0
CCR	XPW02	Porewater	3/9/2021	Calcium, total	mg/L	20.0
CCR	XPW02	Porewater	3/30/2021	Calcium, total	mg/L	22.0
CCR	XPW02	Porewater	4/28/2021	Calcium, total	mg/L	25.0
CCR	XPW02	Porewater	7/14/2021	Calcium, total	mg/L	21.0
CCR	XPW02	Porewater	2/23/2022	Calcium, total	mg/L	40.0
CCR	XPW02	Porewater	6/14/2022	Calcium, total	mg/L	30.0
CCR	XPW02	Porewater	8/15/2022	Calcium, total	mg/L	29.0
CCR	XPW02	Porewater	2/1/2023	Calcium, total	mg/L	31.0
CCR	XPW02	Porewater	4/27/2023	Calcium, total	mg/L	23.0
CCR	XPW02	Porewater	7/24/2023	Calcium, total	mg/L	27.6
CCR	XPW02	Porewater	10/10/2023	Calcium, total	mg/L	37.2
CCR	XPW02	Porewater	2/17/2021	Chloride, total	mg/L	10.0
CCR	XPW02	Porewater	3/9/2021	Chloride, total	mg/L	9.60
CCR	XPW02	Porewater	3/30/2021	Chloride, total	mg/L	9.90
CCR	XPW02	Porewater	4/28/2021	Chloride, total	mg/L	9.70
CCR	XPW02	Porewater	7/14/2021	Chloride, total	mg/L	10.0
CCR	XPW02	Porewater	2/23/2022	Chloride, total	mg/L	12.0
CCR	XPW02	Porewater	6/14/2022	Chloride, total	mg/L	8.60
CCR	XPW02	Porewater	8/15/2022	Chloride, total	mg/L	8.90
CCR	XPW02	Porewater	2/1/2023	Chloride, total	mg/L	8.40
CCR	XPW02	Porewater	4/27/2023	Chloride, total	mg/L	8.80
CCR	XPW02	Porewater	7/24/2023	Chloride, total	mg/L	16.0
CCR	XPW02	Porewater	10/10/2023	Chloride, total	mg/L	16.0
CCR	XPW02	Porewater	4/27/2023	Ferrous Iron, dissolved	mg/L	<0.02
CCR	XPW02	Porewater	7/24/2023	Ferrous Iron, dissolved	mg/L	0.193
CCR	XPW02	Porewater	4/27/2023	Iron, dissolved	mg/L	0.000910
CCR	XPW02	Porewater	7/24/2023	Iron, dissolved	mg/L	0.0348
CCR	XPW02	Porewater	2/17/2021	Lithium, total	mg/L	<0.0099
CCR	XPW02	Porewater	3/9/2021	Lithium, total	mg/L	<0.0099
CCR	XPW02	Porewater	3/30/2021	Lithium, total	mg/L	0.0260
CCR	XPW02	Porewater	4/28/2021	Lithium, total	mg/L	0.0230
CCR	XPW02	Porewater	7/14/2021	Lithium, total	mg/L	0.0280
CCR	XPW02	Porewater	7/24/2023	Lithium, total	mg/L	0.0207
CCR	XPW02	Porewater	10/10/2023	Lithium, total	mg/L	0.0308
CCR	XPW02	Porewater	2/17/2021	Magnesium, total	mg/L	0.300
CCR	XPW02	Porewater	3/9/2021	Magnesium, total	mg/L	0.330
CCR	XPW02	Porewater	3/30/2021	Magnesium, total	mg/L	0.490
CCR	XPW02	Porewater	4/28/2021	Magnesium, total	mg/L	0.550
CCR	XPW02	Porewater	7/14/2021	Magnesium, total	mg/L	0.340
CCR	XPW02	Porewater	2/23/2022	Magnesium, total	mg/L	1.20
CCR	XPW02	Porewater	6/14/2022	Magnesium, total	mg/L	0.280

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
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HSU	Location	Well Type	Date	Parameter	Unit	Result
CCR	XPW02	Porewater	8/15/2022	Magnesium, total	mg/L	0.370
CCR	XPW02	Porewater	2/1/2023	Magnesium, total	mg/L	1.40
CCR	XPW02	Porewater	4/27/2023	Magnesium, total	mg/L	<0.011
CCR	XPW02	Porewater	7/24/2023	Magnesium, total	mg/L	0.202
CCR	XPW02	Porewater	10/10/2023	Magnesium, total	mg/L	0.668
CCR	XPW02	Porewater	4/27/2023	Manganese, dissolved	mg/L	0.000520
CCR	XPW02	Porewater	7/24/2023	Manganese, dissolved	mg/L	0.00150
CCR	XPW02	Porewater	7/24/2023	Phosphate, dissolved	mg/L	0.316
CCR	XPW02	Porewater	2/17/2021	Potassium, total	mg/L	15.0
CCR	XPW02	Porewater	3/9/2021	Potassium, total	mg/L	16.0
CCR	XPW02	Porewater	3/30/2021	Potassium, total	mg/L	16.0
CCR	XPW02	Porewater	4/28/2021	Potassium, total	mg/L	16.0
CCR	XPW02	Porewater	7/14/2021	Potassium, total	mg/L	16.0
CCR	XPW02	Porewater	2/23/2022	Potassium, total	mg/L	18.0
CCR	XPW02	Porewater	6/14/2022	Potassium, total	mg/L	16.0
CCR	XPW02	Porewater	8/15/2022	Potassium, total	mg/L	15.0
CCR	XPW02	Porewater	2/1/2023	Potassium, total	mg/L	16.0
CCR	XPW02	Porewater	4/27/2023	Potassium, total	mg/L	14.0
CCR	XPW02	Porewater	7/24/2023	Potassium, total	mg/L	16.4
CCR	XPW02	Porewater	10/10/2023	Potassium, total	mg/L	19.4
CCR	XPW02	Porewater	4/27/2023	Silicon, dissolved	mg/L	4.40
CCR	XPW02	Porewater	7/24/2023	Silicon, dissolved	mg/L	3.90
CCR	XPW02	Porewater	2/17/2021	Sodium, total	mg/L	77.0
CCR	XPW02	Porewater	3/9/2021	Sodium, total	mg/L	72.0
CCR	XPW02	Porewater	3/30/2021	Sodium, total	mg/L	69.0
CCR	XPW02	Porewater	4/28/2021	Sodium, total	mg/L	77.0
CCR	XPW02	Porewater	7/14/2021	Sodium, total	mg/L	73.0
CCR	XPW02	Porewater	2/23/2022	Sodium, total	mg/L	70.0
CCR	XPW02	Porewater	6/14/2022	Sodium, total	mg/L	61.0
CCR	XPW02	Porewater	8/15/2022	Sodium, total	mg/L	65.0
CCR	XPW02	Porewater	2/1/2023	Sodium, total	mg/L	70.0
CCR	XPW02	Porewater	4/27/2023	Sodium, total	mg/L	64.0
CCR	XPW02	Porewater	7/24/2023	Sodium, total	mg/L	69.1
CCR	XPW02	Porewater	10/10/2023	Sodium, total	mg/L	74.9
CCR	XPW02	Porewater	2/17/2021	Sulfate, total	mg/L	160
CCR	XPW02	Porewater	3/9/2021	Sulfate, total	mg/L	150
CCR	XPW02	Porewater	3/30/2021	Sulfate, total	mg/L	160
CCR	XPW02	Porewater	4/28/2021	Sulfate, total	mg/L	190
CCR	XPW02	Porewater	7/14/2021	Sulfate, total	mg/L	160
CCR	XPW02	Porewater	2/23/2022	Sulfate, total	mg/L	210
CCR	XPW02	Porewater	6/14/2022	Sulfate, total	mg/L	170
CCR	XPW02	Porewater	8/15/2022	Sulfate, total	mg/L	160
CCR	XPW02	Porewater	2/1/2023	Sulfate, total	mg/L	150
CCR	XPW02	Porewater	4/27/2023	Sulfate, total	mg/L	150
CCR	XPW02	Porewater	7/24/2023	Sulfate, total	mg/L	213
CCR	XPW02	Porewater	10/10/2023	Sulfate, total	mg/L	239

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
CCR	XPW02	Porewater	2/17/2021	Total Dissolved Solids	mg/L	310
CCR	XPW02	Porewater	3/9/2021	Total Dissolved Solids	mg/L	320
CCR	XPW02	Porewater	3/30/2021	Total Dissolved Solids	mg/L	300
CCR	XPW02	Porewater	4/28/2021	Total Dissolved Solids	mg/L	380
CCR	XPW02	Porewater	7/14/2021	Total Dissolved Solids	mg/L	360
CCR	XPW02	Porewater	2/23/2022	Total Dissolved Solids	mg/L	360
CCR	XPW02	Porewater	6/14/2022	Total Dissolved Solids	mg/L	400
CCR	XPW02	Porewater	8/15/2022	Total Dissolved Solids	mg/L	360
CCR	XPW02	Porewater	2/1/2023	Total Dissolved Solids	mg/L	320
CCR	XPW02	Porewater	4/27/2023	Total Dissolved Solids	mg/L	290
CCR	XPW02	Porewater	7/24/2023	Total Dissolved Solids	mg/L	360
CCR	XPW02	Porewater	10/10/2023	Total Dissolved Solids	mg/L	404
CCR	XPW03	Porewater	2/17/2021	pH (field)	SU	10.9
CCR	XPW03	Porewater	3/9/2021	pH (field)	SU	10.8
CCR	XPW03	Porewater	3/30/2021	pH (field)	SU	10.2
CCR	XPW03	Porewater	4/28/2021	pH (field)	SU	11.3
CCR	XPW03	Porewater	7/14/2021	pH (field)	SU	11.2
CCR	XPW03	Porewater	2/23/2022	pH (field)	SU	11.3
CCR	XPW03	Porewater	6/15/2022	pH (field)	SU	11.3
CCR	XPW03	Porewater	8/16/2022	pH (field)	SU	11.2
CCR	XPW03	Porewater	2/2/2023	pH (field)	SU	11.8
CCR	XPW03	Porewater	4/27/2023	pH (field)	SU	11.5
CCR	XPW03	Porewater	7/26/2023	pH (field)	SU	11.5
CCR	XPW03	Porewater	10/10/2023	pH (field)	SU	11.8
CCR	XPW03	Porewater	2/17/2021	Oxidation Reduction Potential	mV	-255
CCR	XPW03	Porewater	3/9/2021	Oxidation Reduction Potential	mV	-224
CCR	XPW03	Porewater	3/30/2021	Oxidation Reduction Potential	mV	-126
CCR	XPW03	Porewater	4/28/2021	Oxidation Reduction Potential	mV	-244
CCR	XPW03	Porewater	7/14/2021	Oxidation Reduction Potential	mV	-241
CCR	XPW03	Porewater	2/23/2022	Oxidation Reduction Potential	mV	-210
CCR	XPW03	Porewater	6/15/2022	Oxidation Reduction Potential	mV	-264
CCR	XPW03	Porewater	8/16/2022	Oxidation Reduction Potential	mV	-205
CCR	XPW03	Porewater	2/2/2023	Oxidation Reduction Potential	mV	-186
CCR	XPW03	Porewater	4/27/2023	Oxidation Reduction Potential	mV	-273
CCR	XPW03	Porewater	7/26/2023	Oxidation Reduction Potential	mV	-75.0
CCR	XPW03	Porewater	10/10/2023	Oxidation Reduction Potential	mV	-168
CCR	XPW03	Porewater	2/17/2021	Eh	V	-0.058
CCR	XPW03	Porewater	3/9/2021	Eh	V	-0.030
CCR	XPW03	Porewater	3/30/2021	Eh	V	0.068
CCR	XPW03	Porewater	4/28/2021	Eh	V	-0.051
CCR	XPW03	Porewater	7/14/2021	Eh	V	-0.049
CCR	XPW03	Porewater	2/23/2022	Eh	V	-0.013
CCR	XPW03	Porewater	6/15/2022	Eh	V	-0.071
CCR	XPW03	Porewater	8/16/2022	Eh	V	-0.013
CCR	XPW03	Porewater	2/2/2023	Eh	V	0.0094
CCR	XPW03	Porewater	4/27/2023	Eh	V	-0.079

Attachment 8. Aqueous Data
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HSU	Location	Well Type	Date	Parameter	Unit	Result
CCR	XPW03	Porewater	7/26/2023	Eh	V	0.12
CCR	XPW03	Porewater	10/10/2023	Eh	V	0.026
CCR	XPW03	Porewater	2/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW03	Porewater	3/9/2021	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW03	Porewater	3/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW03	Porewater	4/28/2021	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW03	Porewater	7/14/2021	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW03	Porewater	2/23/2022	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW03	Porewater	6/15/2022	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW03	Porewater	8/16/2022	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW03	Porewater	2/2/2023	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW03	Porewater	4/27/2023	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW03	Porewater	7/26/2023	Alkalinity, bicarbonate	mg/L CaCO3	0
CCR	XPW03	Porewater	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	0
CCR	XPW03	Porewater	2/17/2021	Alkalinity, carbonate	mg/L CaCO3	75.0
CCR	XPW03	Porewater	3/9/2021	Alkalinity, carbonate	mg/L CaCO3	55.0
CCR	XPW03	Porewater	3/30/2021	Alkalinity, carbonate	mg/L CaCO3	50.0
CCR	XPW03	Porewater	4/28/2021	Alkalinity, carbonate	mg/L CaCO3	75.0
CCR	XPW03	Porewater	7/14/2021	Alkalinity, carbonate	mg/L CaCO3	50.0
CCR	XPW03	Porewater	2/23/2022	Alkalinity, carbonate	mg/L CaCO3	85.0
CCR	XPW03	Porewater	6/15/2022	Alkalinity, carbonate	mg/L CaCO3	65.0
CCR	XPW03	Porewater	8/16/2022	Alkalinity, carbonate	mg/L CaCO3	150
CCR	XPW03	Porewater	2/2/2023	Alkalinity, carbonate	mg/L CaCO3	180
CCR	XPW03	Porewater	4/27/2023	Alkalinity, carbonate	mg/L CaCO3	200
CCR	XPW03	Porewater	7/26/2023	Alkalinity, carbonate	mg/L CaCO3	175
CCR	XPW03	Porewater	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	140
CCR	XPW03	Porewater	2/17/2021	Barium, total	mg/L	0.0690
CCR	XPW03	Porewater	3/9/2021	Barium, total	mg/L	0.110
CCR	XPW03	Porewater	3/30/2021	Barium, total	mg/L	0.0880
CCR	XPW03	Porewater	4/28/2021	Barium, total	mg/L	0.370
CCR	XPW03	Porewater	7/14/2021	Barium, total	mg/L	0.440
CCR	XPW03	Porewater	7/26/2023	Barium, total	mg/L	0.0603
CCR	XPW03	Porewater	10/10/2023	Barium, total	mg/L	0.0618
CCR	XPW03	Porewater	2/17/2021	Calcium, total	mg/L	42.0
CCR	XPW03	Porewater	3/9/2021	Calcium, total	mg/L	47.0
CCR	XPW03	Porewater	3/30/2021	Calcium, total	mg/L	44.0
CCR	XPW03	Porewater	4/28/2021	Calcium, total	mg/L	55.0
CCR	XPW03	Porewater	7/14/2021	Calcium, total	mg/L	72.0
CCR	XPW03	Porewater	2/23/2022	Calcium, total	mg/L	33.0
CCR	XPW03	Porewater	6/15/2022	Calcium, total	mg/L	35.0
CCR	XPW03	Porewater	8/16/2022	Calcium, total	mg/L	30.0
CCR	XPW03	Porewater	2/2/2023	Calcium, total	mg/L	37.0
CCR	XPW03	Porewater	4/27/2023	Calcium, total	mg/L	26.0
CCR	XPW03	Porewater	7/26/2023	Calcium, total	mg/L	22.8
CCR	XPW03	Porewater	10/10/2023	Calcium, total	mg/L	24.8
CCR	XPW03	Porewater	2/17/2021	Chloride, total	mg/L	14.0

Attachment 8. Aqueous Data
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HSU	Location	Well Type	Date	Parameter	Unit	Result
CCR	XPW03	Porewater	3/9/2021	Chloride, total	mg/L	9.20
CCR	XPW03	Porewater	3/30/2021	Chloride, total	mg/L	13.0
CCR	XPW03	Porewater	4/28/2021	Chloride, total	mg/L	11.0
CCR	XPW03	Porewater	7/14/2021	Chloride, total	mg/L	11.0
CCR	XPW03	Porewater	2/23/2022	Chloride, total	mg/L	13.0
CCR	XPW03	Porewater	6/15/2022	Chloride, total	mg/L	11.0
CCR	XPW03	Porewater	8/16/2022	Chloride, total	mg/L	11.0
CCR	XPW03	Porewater	2/2/2023	Chloride, total	mg/L	9.60
CCR	XPW03	Porewater	4/27/2023	Chloride, total	mg/L	9.70
CCR	XPW03	Porewater	7/26/2023	Chloride, total	mg/L	21.0
CCR	XPW03	Porewater	10/10/2023	Chloride, total	mg/L	21.0
CCR	XPW03	Porewater	4/27/2023	Ferrous Iron, dissolved	mg/L	<0.02
CCR	XPW03	Porewater	7/26/2023	Ferrous Iron, dissolved	mg/L	3.24
CCR	XPW03	Porewater	4/27/2023	Iron, dissolved	mg/L	0.00670
CCR	XPW03	Porewater	7/26/2023	Iron, dissolved	mg/L	0.0120
CCR	XPW03	Porewater	2/17/2021	Lithium, total	mg/L	0.0320
CCR	XPW03	Porewater	3/9/2021	Lithium, total	mg/L	0.0240
CCR	XPW03	Porewater	3/30/2021	Lithium, total	mg/L	0.0250
CCR	XPW03	Porewater	4/28/2021	Lithium, total	mg/L	0.0290
CCR	XPW03	Porewater	7/14/2021	Lithium, total	mg/L	0.0400
CCR	XPW03	Porewater	7/26/2023	Lithium, total	mg/L	0.121
CCR	XPW03	Porewater	10/10/2023	Lithium, total	mg/L	0.0324
CCR	XPW03	Porewater	2/17/2021	Magnesium, total	mg/L	<0.017
CCR	XPW03	Porewater	3/9/2021	Magnesium, total	mg/L	0.440
CCR	XPW03	Porewater	3/30/2021	Magnesium, total	mg/L	0.160
CCR	XPW03	Porewater	4/28/2021	Magnesium, total	mg/L	2.10
CCR	XPW03	Porewater	7/14/2021	Magnesium, total	mg/L	2.50
CCR	XPW03	Porewater	2/23/2022	Magnesium, total	mg/L	0.410
CCR	XPW03	Porewater	6/15/2022	Magnesium, total	mg/L	0.240
CCR	XPW03	Porewater	8/16/2022	Magnesium, total	mg/L	0.530
CCR	XPW03	Porewater	2/2/2023	Magnesium, total	mg/L	2.70
CCR	XPW03	Porewater	4/27/2023	Magnesium, total	mg/L	<0.011
CCR	XPW03	Porewater	7/26/2023	Magnesium, total	mg/L	0.134
CCR	XPW03	Porewater	10/10/2023	Magnesium, total	mg/L	0.103
CCR	XPW03	Porewater	4/27/2023	Manganese, dissolved	mg/L	<0.00023
CCR	XPW03	Porewater	7/26/2023	Manganese, dissolved	mg/L	<0.0008
CCR	XPW03	Porewater	7/26/2023	Phosphate, dissolved	mg/L	<0.005
CCR	XPW03	Porewater	2/17/2021	Potassium, total	mg/L	18.0
CCR	XPW03	Porewater	3/9/2021	Potassium, total	mg/L	15.0
CCR	XPW03	Porewater	3/30/2021	Potassium, total	mg/L	11.0
CCR	XPW03	Porewater	4/28/2021	Potassium, total	mg/L	17.0
CCR	XPW03	Porewater	7/14/2021	Potassium, total	mg/L	18.0
CCR	XPW03	Porewater	2/23/2022	Potassium, total	mg/L	15.0
CCR	XPW03	Porewater	6/15/2022	Potassium, total	mg/L	14.0
CCR	XPW03	Porewater	8/16/2022	Potassium, total	mg/L	14.0
CCR	XPW03	Porewater	2/2/2023	Potassium, total	mg/L	18.0

Attachment 8. Aqueous Data
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HSU	Location	Well Type	Date	Parameter	Unit	Result
CCR	XPW03	Porewater	4/27/2023	Potassium, total	mg/L	18.0
CCR	XPW03	Porewater	7/26/2023	Potassium, total	mg/L	22.5
CCR	XPW03	Porewater	10/10/2023	Potassium, total	mg/L	23.2
CCR	XPW03	Porewater	4/27/2023	Silicon, dissolved	mg/L	14.0
CCR	XPW03	Porewater	7/26/2023	Silicon, dissolved	mg/L	10.8
CCR	XPW03	Porewater	2/17/2021	Sodium, total	mg/L	63.0
CCR	XPW03	Porewater	3/9/2021	Sodium, total	mg/L	58.0
CCR	XPW03	Porewater	3/30/2021	Sodium, total	mg/L	38.0
CCR	XPW03	Porewater	4/28/2021	Sodium, total	mg/L	55.0
CCR	XPW03	Porewater	7/14/2021	Sodium, total	mg/L	55.0
CCR	XPW03	Porewater	2/23/2022	Sodium, total	mg/L	110
CCR	XPW03	Porewater	6/15/2022	Sodium, total	mg/L	100
CCR	XPW03	Porewater	8/16/2022	Sodium, total	mg/L	160
CCR	XPW03	Porewater	2/2/2023	Sodium, total	mg/L	230
CCR	XPW03	Porewater	4/27/2023	Sodium, total	mg/L	190
CCR	XPW03	Porewater	7/26/2023	Sodium, total	mg/L	190
CCR	XPW03	Porewater	10/10/2023	Sodium, total	mg/L	206
CCR	XPW03	Porewater	2/17/2021	Sulfate, total	mg/L	92.0
CCR	XPW03	Porewater	3/9/2021	Sulfate, total	mg/L	93.0
CCR	XPW03	Porewater	3/30/2021	Sulfate, total	mg/L	94.0
CCR	XPW03	Porewater	4/28/2021	Sulfate, total	mg/L	96.0
CCR	XPW03	Porewater	7/14/2021	Sulfate, total	mg/L	120
CCR	XPW03	Porewater	2/23/2022	Sulfate, total	mg/L	130
CCR	XPW03	Porewater	6/15/2022	Sulfate, total	mg/L	150
CCR	XPW03	Porewater	8/16/2022	Sulfate, total	mg/L	180
CCR	XPW03	Porewater	2/2/2023	Sulfate, total	mg/L	98.0
CCR	XPW03	Porewater	4/27/2023	Sulfate, total	mg/L	120
CCR	XPW03	Porewater	7/26/2023	Sulfate, total	mg/L	138
CCR	XPW03	Porewater	10/10/2023	Sulfate, total	mg/L	132
CCR	XPW03	Porewater	2/17/2021	Total Dissolved Solids	mg/L	310
CCR	XPW03	Porewater	3/9/2021	Total Dissolved Solids	mg/L	330
CCR	XPW03	Porewater	3/30/2021	Total Dissolved Solids	mg/L	270
CCR	XPW03	Porewater	4/28/2021	Total Dissolved Solids	mg/L	340
CCR	XPW03	Porewater	7/14/2021	Total Dissolved Solids	mg/L	360
CCR	XPW03	Porewater	2/23/2022	Total Dissolved Solids	mg/L	420
CCR	XPW03	Porewater	6/15/2022	Total Dissolved Solids	mg/L	490
CCR	XPW03	Porewater	8/16/2022	Total Dissolved Solids	mg/L	590
CCR	XPW03	Porewater	2/2/2023	Total Dissolved Solids	mg/L	780
CCR	XPW03	Porewater	4/27/2023	Total Dissolved Solids	mg/L	620
CCR	XPW03	Porewater	7/26/2023	Total Dissolved Solids	mg/L	664
CCR	XPW03	Porewater	10/10/2023	Total Dissolved Solids	mg/L	712
CCR	XPW04	Porewater	2/17/2021	pH (field)	SU	10.8
CCR	XPW04	Porewater	3/9/2021	pH (field)	SU	10.0
CCR	XPW04	Porewater	3/29/2021	pH (field)	SU	9.1
CCR	XPW04	Porewater	4/28/2021	pH (field)	SU	11.5
CCR	XPW04	Porewater	7/14/2021	pH (field)	SU	10.0

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HSU	Location	Well Type	Date	Parameter	Unit	Result
CCR	XPW04	Porewater	2/23/2022	pH (field)	SU	9.5
CCR	XPW04	Porewater	6/15/2022	pH (field)	SU	11.8
CCR	XPW04	Porewater	8/16/2022	pH (field)	SU	11.4
CCR	XPW04	Porewater	2/1/2023	pH (field)	SU	11.6
CCR	XPW04	Porewater	4/28/2023	pH (field)	SU	11.6
CCR	XPW04	Porewater	7/24/2023	pH (field)	SU	12.5
CCR	XPW04	Porewater	10/10/2023	pH (field)	SU	12.0
CCR	XPW04	Porewater	2/17/2021	Oxidation Reduction Potential	mV	-291
CCR	XPW04	Porewater	3/9/2021	Oxidation Reduction Potential	mV	-336
CCR	XPW04	Porewater	3/29/2021	Oxidation Reduction Potential	mV	-304
CCR	XPW04	Porewater	4/28/2021	Oxidation Reduction Potential	mV	-296
CCR	XPW04	Porewater	7/14/2021	Oxidation Reduction Potential	mV	-312
CCR	XPW04	Porewater	2/23/2022	Oxidation Reduction Potential	mV	-315
CCR	XPW04	Porewater	6/15/2022	Oxidation Reduction Potential	mV	-332
CCR	XPW04	Porewater	8/16/2022	Oxidation Reduction Potential	mV	-296
CCR	XPW04	Porewater	2/1/2023	Oxidation Reduction Potential	mV	-165
CCR	XPW04	Porewater	4/28/2023	Oxidation Reduction Potential	mV	-255
CCR	XPW04	Porewater	7/24/2023	Oxidation Reduction Potential	mV	-226
CCR	XPW04	Porewater	10/10/2023	Oxidation Reduction Potential	mV	-219
CCR	XPW04	Porewater	2/17/2021	Eh	V	-0.093
CCR	XPW04	Porewater	3/9/2021	Eh	V	-0.14
CCR	XPW04	Porewater	3/29/2021	Eh	V	-0.11
CCR	XPW04	Porewater	4/28/2021	Eh	V	-0.10
CCR	XPW04	Porewater	7/14/2021	Eh	V	-0.12
CCR	XPW04	Porewater	2/23/2022	Eh	V	-0.12
CCR	XPW04	Porewater	6/15/2022	Eh	V	-0.14
CCR	XPW04	Porewater	8/16/2022	Eh	V	-0.10
CCR	XPW04	Porewater	2/1/2023	Eh	V	0.031
CCR	XPW04	Porewater	4/28/2023	Eh	V	-0.060
CCR	XPW04	Porewater	7/24/2023	Eh	V	-0.032
CCR	XPW04	Porewater	10/10/2023	Eh	V	-0.025
CCR	XPW04	Porewater	2/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW04	Porewater	3/9/2021	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW04	Porewater	3/29/2021	Alkalinity, bicarbonate	mg/L CaCO3	52.0
CCR	XPW04	Porewater	4/28/2021	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW04	Porewater	7/14/2021	Alkalinity, bicarbonate	mg/L CaCO3	38.0
CCR	XPW04	Porewater	2/23/2022	Alkalinity, bicarbonate	mg/L CaCO3	80.0
CCR	XPW04	Porewater	6/15/2022	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW04	Porewater	8/16/2022	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW04	Porewater	2/1/2023	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW04	Porewater	4/28/2023	Alkalinity, bicarbonate	mg/L CaCO3	<10
CCR	XPW04	Porewater	7/24/2023	Alkalinity, bicarbonate	mg/L CaCO3	0
CCR	XPW04	Porewater	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	0
CCR	XPW04	Porewater	2/17/2021	Alkalinity, carbonate	mg/L CaCO3	150
CCR	XPW04	Porewater	3/9/2021	Alkalinity, carbonate	mg/L CaCO3	130
CCR	XPW04	Porewater	3/29/2021	Alkalinity, carbonate	mg/L CaCO3	70.0

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HSU	Location	Well Type	Date	Parameter	Unit	Result
CCR	XPW04	Porewater	4/28/2021	Alkalinity, carbonate	mg/L CaCO3	120
CCR	XPW04	Porewater	7/14/2021	Alkalinity, carbonate	mg/L CaCO3	120
CCR	XPW04	Porewater	2/23/2022	Alkalinity, carbonate	mg/L CaCO3	60.0
CCR	XPW04	Porewater	6/15/2022	Alkalinity, carbonate	mg/L CaCO3	150
CCR	XPW04	Porewater	8/16/2022	Alkalinity, carbonate	mg/L CaCO3	150
CCR	XPW04	Porewater	2/1/2023	Alkalinity, carbonate	mg/L CaCO3	150
CCR	XPW04	Porewater	4/28/2023	Alkalinity, carbonate	mg/L CaCO3	220
CCR	XPW04	Porewater	7/24/2023	Alkalinity, carbonate	mg/L CaCO3	296
CCR	XPW04	Porewater	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	164
CCR	XPW04	Porewater	2/17/2021	Barium, total	mg/L	0.130
CCR	XPW04	Porewater	3/9/2021	Barium, total	mg/L	0.150
CCR	XPW04	Porewater	3/29/2021	Barium, total	mg/L	0.300
CCR	XPW04	Porewater	4/28/2021	Barium, total	mg/L	0.220
CCR	XPW04	Porewater	7/14/2021	Barium, total	mg/L	0.0890
CCR	XPW04	Porewater	7/24/2023	Barium, total	mg/L	0.0749
CCR	XPW04	Porewater	10/10/2023	Barium, total	mg/L	0.114
CCR	XPW04	Porewater	2/17/2021	Calcium, total	mg/L	80.0
CCR	XPW04	Porewater	3/9/2021	Calcium, total	mg/L	65.0
CCR	XPW04	Porewater	3/29/2021	Calcium, total	mg/L	53.0
CCR	XPW04	Porewater	4/28/2021	Calcium, total	mg/L	120
CCR	XPW04	Porewater	7/14/2021	Calcium, total	mg/L	60.0
CCR	XPW04	Porewater	2/23/2022	Calcium, total	mg/L	68.0
CCR	XPW04	Porewater	6/15/2022	Calcium, total	mg/L	120
CCR	XPW04	Porewater	8/16/2022	Calcium, total	mg/L	120
CCR	XPW04	Porewater	2/1/2023	Calcium, total	mg/L	130
CCR	XPW04	Porewater	4/28/2023	Calcium, total	mg/L	100
CCR	XPW04	Porewater	7/24/2023	Calcium, total	mg/L	76.3
CCR	XPW04	Porewater	10/10/2023	Calcium, total	mg/L	122
CCR	XPW04	Porewater	2/17/2021	Chloride, total	mg/L	62.0
CCR	XPW04	Porewater	3/9/2021	Chloride, total	mg/L	34.0
CCR	XPW04	Porewater	3/29/2021	Chloride, total	mg/L	31.0
CCR	XPW04	Porewater	4/28/2021	Chloride, total	mg/L	37.0
CCR	XPW04	Porewater	7/14/2021	Chloride, total	mg/L	34.0
CCR	XPW04	Porewater	2/23/2022	Chloride, total	mg/L	30.0
CCR	XPW04	Porewater	6/15/2022	Chloride, total	mg/L	50.0
CCR	XPW04	Porewater	8/16/2022	Chloride, total	mg/L	54.0
CCR	XPW04	Porewater	2/1/2023	Chloride, total	mg/L	46.0
CCR	XPW04	Porewater	4/28/2023	Chloride, total	mg/L	59.0
CCR	XPW04	Porewater	7/24/2023	Chloride, total	mg/L	186
CCR	XPW04	Porewater	10/10/2023	Chloride, total	mg/L	148
CCR	XPW04	Porewater	4/28/2023	Ferrous Iron, dissolved	mg/L	0.370
CCR	XPW04	Porewater	7/24/2023	Ferrous Iron, dissolved	mg/L	0.127
CCR	XPW04	Porewater	4/28/2023	Iron, dissolved	mg/L	<0.014
CCR	XPW04	Porewater	7/24/2023	Iron, dissolved	mg/L	<0.04
CCR	XPW04	Porewater	2/17/2021	Lithium, total	mg/L	0.0210
CCR	XPW04	Porewater	3/9/2021	Lithium, total	mg/L	<0.0099

Attachment 8. Aqueous Data
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HSU	Location	Well Type	Date	Parameter	Unit	Result
CCR	XPW04	Porewater	3/29/2021	Lithium, total	mg/L	<0.0099
CCR	XPW04	Porewater	4/28/2021	Lithium, total	mg/L	0.0200
CCR	XPW04	Porewater	7/14/2021	Lithium, total	mg/L	<0.0099
CCR	XPW04	Porewater	7/24/2023	Lithium, total	mg/L	0.0324
CCR	XPW04	Porewater	10/10/2023	Lithium, total	mg/L	0.0260
CCR	XPW04	Porewater	2/17/2021	Magnesium, total	mg/L	0.890
CCR	XPW04	Porewater	3/9/2021	Magnesium, total	mg/L	1.40
CCR	XPW04	Porewater	3/29/2021	Magnesium, total	mg/L	2.40
CCR	XPW04	Porewater	4/28/2021	Magnesium, total	mg/L	0.700
CCR	XPW04	Porewater	7/14/2021	Magnesium, total	mg/L	0.830
CCR	XPW04	Porewater	2/23/2022	Magnesium, total	mg/L	1.70
CCR	XPW04	Porewater	6/15/2022	Magnesium, total	mg/L	0.250
CCR	XPW04	Porewater	8/16/2022	Magnesium, total	mg/L	0.140
CCR	XPW04	Porewater	2/1/2023	Magnesium, total	mg/L	0.430
CCR	XPW04	Porewater	4/28/2023	Magnesium, total	mg/L	0.500
CCR	XPW04	Porewater	7/24/2023	Magnesium, total	mg/L	0.275
CCR	XPW04	Porewater	10/10/2023	Magnesium, total	mg/L	0.586
CCR	XPW04	Porewater	4/28/2023	Manganese, dissolved	mg/L	<0.0046
CCR	XPW04	Porewater	7/24/2023	Manganese, dissolved	mg/L	0.00320
CCR	XPW04	Porewater	7/24/2023	Phosphate, dissolved	mg/L	0.169
CCR	XPW04	Porewater	2/17/2021	Potassium, total	mg/L	44.0
CCR	XPW04	Porewater	3/9/2021	Potassium, total	mg/L	34.0
CCR	XPW04	Porewater	3/29/2021	Potassium, total	mg/L	24.0
CCR	XPW04	Porewater	4/28/2021	Potassium, total	mg/L	62.0
CCR	XPW04	Porewater	7/14/2021	Potassium, total	mg/L	34.0
CCR	XPW04	Porewater	2/23/2022	Potassium, total	mg/L	34.0
CCR	XPW04	Porewater	6/15/2022	Potassium, total	mg/L	84.0
CCR	XPW04	Porewater	8/16/2022	Potassium, total	mg/L	87.0
CCR	XPW04	Porewater	2/1/2023	Potassium, total	mg/L	90.0
CCR	XPW04	Porewater	4/28/2023	Potassium, total	mg/L	89.0
CCR	XPW04	Porewater	7/24/2023	Potassium, total	mg/L	88.6
CCR	XPW04	Porewater	10/10/2023	Potassium, total	mg/L	93.7
CCR	XPW04	Porewater	4/28/2023	Silicon, dissolved	mg/L	24.0
CCR	XPW04	Porewater	7/24/2023	Silicon, dissolved	mg/L	37.7
CCR	XPW04	Porewater	2/17/2021	Sodium, total	mg/L	1,100
CCR	XPW04	Porewater	3/9/2021	Sodium, total	mg/L	740
CCR	XPW04	Porewater	3/29/2021	Sodium, total	mg/L	260
CCR	XPW04	Porewater	4/28/2021	Sodium, total	mg/L	1,800
CCR	XPW04	Porewater	7/14/2021	Sodium, total	mg/L	680
CCR	XPW04	Porewater	2/23/2022	Sodium, total	mg/L	700
CCR	XPW04	Porewater	6/15/2022	Sodium, total	mg/L	3,400
CCR	XPW04	Porewater	8/16/2022	Sodium, total	mg/L	4,000
CCR	XPW04	Porewater	2/1/2023	Sodium, total	mg/L	3,700
CCR	XPW04	Porewater	4/28/2023	Sodium, total	mg/L	4,700
CCR	XPW04	Porewater	7/24/2023	Sodium, total	mg/L	4,560
CCR	XPW04	Porewater	10/10/2023	Sodium, total	mg/L	4,080

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HSU	Location	Well Type	Date	Parameter	Unit	Result
CCR	XPW04	Porewater	2/17/2021	Sulfate, total	mg/L	2,200
CCR	XPW04	Porewater	3/9/2021	Sulfate, total	mg/L	1,400
CCR	XPW04	Porewater	3/29/2021	Sulfate, total	mg/L	600
CCR	XPW04	Porewater	4/28/2021	Sulfate, total	mg/L	3,800
CCR	XPW04	Porewater	7/14/2021	Sulfate, total	mg/L	1,600
CCR	XPW04	Porewater	2/23/2022	Sulfate, total	mg/L	1,800
CCR	XPW04	Porewater	6/15/2022	Sulfate, total	mg/L	7,500
CCR	XPW04	Porewater	8/16/2022	Sulfate, total	mg/L	4,000
CCR	XPW04	Porewater	2/1/2023	Sulfate, total	mg/L	6,200
CCR	XPW04	Porewater	4/28/2023	Sulfate, total	mg/L	9,500
CCR	XPW04	Porewater	7/24/2023	Sulfate, total	mg/L	9,420
CCR	XPW04	Porewater	10/10/2023	Sulfate, total	mg/L	9,130
CCR	XPW04	Porewater	2/17/2021	Total Dissolved Solids	mg/L	3,500
CCR	XPW04	Porewater	3/9/2021	Total Dissolved Solids	mg/L	2,200
CCR	XPW04	Porewater	3/29/2021	Total Dissolved Solids	mg/L	1,100
CCR	XPW04	Porewater	4/28/2021	Total Dissolved Solids	mg/L	6,100
CCR	XPW04	Porewater	7/14/2021	Total Dissolved Solids	mg/L	2,700
CCR	XPW04	Porewater	2/23/2022	Total Dissolved Solids	mg/L	2,900
CCR	XPW04	Porewater	6/15/2022	Total Dissolved Solids	mg/L	11,000
CCR	XPW04	Porewater	8/16/2022	Total Dissolved Solids	mg/L	9,500
CCR	XPW04	Porewater	2/1/2023	Total Dissolved Solids	mg/L	11,000
CCR	XPW04	Porewater	4/28/2023	Total Dissolved Solids	mg/L	14,000
CCR	XPW04	Porewater	7/24/2023	Total Dissolved Solids	mg/L	16,600
CCR	XPW04	Porewater	10/10/2023	Total Dissolved Solids	mg/L	14,000
UA	APW05	B	12/15/2015	pH (field)	SU	7.5
UA	APW05	B	1/20/2016	pH (field)	SU	7.5
UA	APW05	B	4/27/2016	pH (field)	SU	7.7
UA	APW05	B	8/1/2016	pH (field)	SU	7.5
UA	APW05	B	10/25/2016	pH (field)	SU	7.6
UA	APW05	B	1/23/2017	pH (field)	SU	7.4
UA	APW05	B	4/24/2017	pH (field)	SU	7.0
UA	APW05	B	6/13/2017	pH (field)	SU	7.1
UA	APW05	B	11/17/2017	pH (field)	SU	6.9
UA	APW05	B	5/18/2018	pH (field)	SU	7.1
UA	APW05	B	8/17/2018	pH (field)	SU	7.0
UA	APW05	B	11/9/2018	pH (field)	SU	7.0
UA	APW05	B	2/22/2019	pH (field)	SU	6.9
UA	APW05	B	8/22/2019	pH (field)	SU	7.0
UA	APW05	B	2/4/2020	pH (field)	SU	7.5
UA	APW05	B	6/11/2020	pH (field)	SU	7.4
UA	APW05	B	7/28/2020	pH (field)	SU	7.7
UA	APW05	B	2/9/2021	pH (field)	SU	7.6
UA	APW05	B	2/17/2021	pH (field)	SU	7.2
UA	APW05	B	3/10/2021	pH (field)	SU	7.7
UA	APW05	B	3/30/2021	pH (field)	SU	7.2
UA	APW05	B	4/28/2021	pH (field)	SU	7.5

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW05	B	5/25/2021	pH (field)	SU	7.5
UA	APW05	B	6/17/2021	pH (field)	SU	7.7
UA	APW05	B	6/30/2021	pH (field)	SU	7.6
UA	APW05	B	7/15/2021	pH (field)	SU	7.8
UA	APW05	B	11/10/2021	pH (field)	SU	7.5
UA	APW05	B	2/22/2022	pH (field)	SU	7.7
UA	APW05	B	6/15/2022	pH (field)	SU	7.5
UA	APW05	B	8/16/2022	pH (field)	SU	7.3
UA	APW05	B	3/14/2023	pH (field)	SU	7.6
UA	APW05	B	4/27/2023	pH (field)	SU	7.1
UA	APW05	B	7/24/2023	pH (field)	SU	8.0
UA	APW05	B	10/10/2023	pH (field)	SU	7.4
UA	APW05	B	12/15/2015	Oxidation Reduction Potential	mV	-57.0
UA	APW05	B	1/20/2016	Oxidation Reduction Potential	mV	-51.0
UA	APW05	B	4/27/2016	Oxidation Reduction Potential	mV	27.0
UA	APW05	B	8/1/2016	Oxidation Reduction Potential	mV	-64.0
UA	APW05	B	10/25/2016	Oxidation Reduction Potential	mV	-83.0
UA	APW05	B	1/23/2017	Oxidation Reduction Potential	mV	-143
UA	APW05	B	4/24/2017	Oxidation Reduction Potential	mV	-101
UA	APW05	B	6/13/2017	Oxidation Reduction Potential	mV	-88.0
UA	APW05	B	11/17/2017	Oxidation Reduction Potential	mV	-60.0
UA	APW05	B	5/18/2018	Oxidation Reduction Potential	mV	-61.0
UA	APW05	B	8/17/2018	Oxidation Reduction Potential	mV	-69.0
UA	APW05	B	11/9/2018	Oxidation Reduction Potential	mV	-56.0
UA	APW05	B	2/22/2019	Oxidation Reduction Potential	mV	-60.0
UA	APW05	B	8/22/2019	Oxidation Reduction Potential	mV	-60.0
UA	APW05	B	2/4/2020	Oxidation Reduction Potential	mV	-119
UA	APW05	B	6/11/2020	Oxidation Reduction Potential	mV	-124
UA	APW05	B	7/28/2020	Oxidation Reduction Potential	mV	-146
UA	APW05	B	2/9/2021	Oxidation Reduction Potential	mV	-129
UA	APW05	B	2/17/2021	Oxidation Reduction Potential	mV	192
UA	APW05	B	3/10/2021	Oxidation Reduction Potential	mV	-129
UA	APW05	B	3/30/2021	Oxidation Reduction Potential	mV	-71.9
UA	APW05	B	4/28/2021	Oxidation Reduction Potential	mV	-65.0
UA	APW05	B	5/25/2021	Oxidation Reduction Potential	mV	61.8
UA	APW05	B	6/17/2021	Oxidation Reduction Potential	mV	-150
UA	APW05	B	6/30/2021	Oxidation Reduction Potential	mV	-160
UA	APW05	B	7/15/2021	Oxidation Reduction Potential	mV	-140
UA	APW05	B	11/10/2021	Oxidation Reduction Potential	mV	-114
UA	APW05	B	2/22/2022	Oxidation Reduction Potential	mV	-69.9
UA	APW05	B	6/15/2022	Oxidation Reduction Potential	mV	-138
UA	APW05	B	8/16/2022	Oxidation Reduction Potential	mV	-106
UA	APW05	B	4/27/2023	Oxidation Reduction Potential	mV	-124
UA	APW05	B	7/24/2023	Oxidation Reduction Potential	mV	-88.0
UA	APW05	B	10/10/2023	Oxidation Reduction Potential	mV	-134
UA	APW05	B	12/15/2015	Eh	V	0.14

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW05	B	1/20/2016	Eh	V	0.15
UA	APW05	B	4/27/2016	Eh	V	0.22
UA	APW05	B	8/1/2016	Eh	V	0.13
UA	APW05	B	10/25/2016	Eh	V	0.11
UA	APW05	B	1/23/2017	Eh	V	0.053
UA	APW05	B	4/24/2017	Eh	V	0.093
UA	APW05	B	6/13/2017	Eh	V	0.11
UA	APW05	B	11/17/2017	Eh	V	0.14
UA	APW05	B	5/18/2018	Eh	V	0.13
UA	APW05	B	8/17/2018	Eh	V	0.13
UA	APW05	B	11/9/2018	Eh	V	0.14
UA	APW05	B	2/22/2019	Eh	V	0.14
UA	APW05	B	8/22/2019	Eh	V	0.13
UA	APW05	B	2/4/2020	Eh	V	0.079
UA	APW05	B	6/11/2020	Eh	V	0.072
UA	APW05	B	7/28/2020	Eh	V	0.047
UA	APW05	B	2/9/2021	Eh	V	0.069
UA	APW05	B	2/17/2021	Eh	V	0.39
UA	APW05	B	3/10/2021	Eh	V	0.067
UA	APW05	B	3/30/2021	Eh	V	0.12
UA	APW05	B	4/28/2021	Eh	V	0.13
UA	APW05	B	5/25/2021	Eh	V	0.26
UA	APW05	B	6/17/2021	Eh	V	0.043
UA	APW05	B	6/30/2021	Eh	V	0.033
UA	APW05	B	7/15/2021	Eh	V	0.054
UA	APW05	B	11/10/2021	Eh	V	0.080
UA	APW05	B	2/22/2022	Eh	V	0.13
UA	APW05	B	6/15/2022	Eh	V	0.055
UA	APW05	B	8/16/2022	Eh	V	0.087
UA	APW05	B	4/27/2023	Eh	V	0.072
UA	APW05	B	7/24/2023	Eh	V	0.11
UA	APW05	B	10/10/2023	Eh	V	0.061
UA	APW05	B	6/13/2017	Alkalinity, bicarbonate	mg/L CaCO3	520
UA	APW05	B	8/17/2018	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW05	B	2/4/2020	Alkalinity, bicarbonate	mg/L CaCO3	490
UA	APW05	B	7/28/2020	Alkalinity, bicarbonate	mg/L CaCO3	440
UA	APW05	B	2/9/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW05	B	2/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	450
UA	APW05	B	3/10/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW05	B	3/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW05	B	4/28/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW05	B	5/25/2021	Alkalinity, bicarbonate	mg/L CaCO3	390
UA	APW05	B	6/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	480
UA	APW05	B	6/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW05	B	7/15/2021	Alkalinity, bicarbonate	mg/L CaCO3	480
UA	APW05	B	11/10/2021	Alkalinity, bicarbonate	mg/L CaCO3	450

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW05	B	2/22/2022	Alkalinity, bicarbonate	mg/L CaCO3	440
UA	APW05	B	6/15/2022	Alkalinity, bicarbonate	mg/L CaCO3	450
UA	APW05	B	8/16/2022	Alkalinity, bicarbonate	mg/L CaCO3	420
UA	APW05	B	3/14/2023	Alkalinity, bicarbonate	mg/L CaCO3	480
UA	APW05	B	4/27/2023	Alkalinity, bicarbonate	mg/L CaCO3	480
UA	APW05	B	7/24/2023	Alkalinity, bicarbonate	mg/L CaCO3	474
UA	APW05	B	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	486
UA	APW05	B	6/13/2017	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	8/17/2018	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	2/4/2020	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	7/28/2020	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	2/9/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	2/17/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	3/10/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	3/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	4/28/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	5/25/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	6/17/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	6/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	7/15/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	11/10/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	2/22/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	6/15/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	8/16/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	3/14/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	4/27/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	7/24/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW05	B	12/15/2015	Barium, total	mg/L	0.190
UA	APW05	B	1/20/2016	Barium, total	mg/L	0.190
UA	APW05	B	4/27/2016	Barium, total	mg/L	0.240
UA	APW05	B	8/1/2016	Barium, total	mg/L	0.210
UA	APW05	B	10/25/2016	Barium, total	mg/L	0.220
UA	APW05	B	1/23/2017	Barium, total	mg/L	0.210
UA	APW05	B	4/24/2017	Barium, total	mg/L	0.200
UA	APW05	B	6/13/2017	Barium, total	mg/L	0.230
UA	APW05	B	2/17/2021	Barium, total	mg/L	0.220
UA	APW05	B	3/10/2021	Barium, total	mg/L	0.240
UA	APW05	B	3/30/2021	Barium, total	mg/L	0.270
UA	APW05	B	4/28/2021	Barium, total	mg/L	0.240
UA	APW05	B	5/25/2021	Barium, total	mg/L	0.240
UA	APW05	B	6/17/2021	Barium, total	mg/L	0.250
UA	APW05	B	6/30/2021	Barium, total	mg/L	0.250
UA	APW05	B	7/15/2021	Barium, total	mg/L	0.250
UA	APW05	B	6/15/2022	Barium, total	mg/L	0.250
UA	APW05	B	8/16/2022	Barium, total	mg/L	0.260

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW05	B	3/14/2023	Barium, total	mg/L	0.280
UA	APW05	B	4/27/2023	Barium, total	mg/L	0.250
UA	APW05	B	7/24/2023	Barium, total	mg/L	0.312
UA	APW05	B	10/10/2023	Barium, total	mg/L	0.333
UA	APW05	B	12/15/2015	Calcium, total	mg/L	51.0
UA	APW05	B	1/20/2016	Calcium, total	mg/L	52.0
UA	APW05	B	4/27/2016	Calcium, total	mg/L	71.0
UA	APW05	B	8/1/2016	Calcium, total	mg/L	49.0
UA	APW05	B	10/25/2016	Calcium, total	mg/L	50.0
UA	APW05	B	1/23/2017	Calcium, total	mg/L	45.0
UA	APW05	B	4/24/2017	Calcium, total	mg/L	44.0
UA	APW05	B	6/13/2017	Calcium, total	mg/L	48.0
UA	APW05	B	11/17/2017	Calcium, total	mg/L	51.0
UA	APW05	B	5/18/2018	Calcium, total	mg/L	48.0
UA	APW05	B	8/17/2018	Calcium, total	mg/L	54.0
UA	APW05	B	11/9/2018	Calcium, total	mg/L	50.0
UA	APW05	B	2/22/2019	Calcium, total	mg/L	50.0
UA	APW05	B	8/22/2019	Calcium, total	mg/L	49.0
UA	APW05	B	2/4/2020	Calcium, total	mg/L	51.0
UA	APW05	B	7/28/2020	Calcium, total	mg/L	53.0
UA	APW05	B	2/9/2021	Calcium, total	mg/L	54.0
UA	APW05	B	2/17/2021	Calcium, total	mg/L	49.0
UA	APW05	B	3/10/2021	Calcium, total	mg/L	55.0
UA	APW05	B	3/30/2021	Calcium, total	mg/L	54.0
UA	APW05	B	4/28/2021	Calcium, total	mg/L	52.0
UA	APW05	B	5/25/2021	Calcium, total	mg/L	54.0
UA	APW05	B	6/17/2021	Calcium, total	mg/L	58.0
UA	APW05	B	6/30/2021	Calcium, total	mg/L	52.0
UA	APW05	B	7/15/2021	Calcium, total	mg/L	51.0
UA	APW05	B	11/10/2021	Calcium, total	mg/L	54.0
UA	APW05	B	2/22/2022	Calcium, total	mg/L	51.0
UA	APW05	B	6/15/2022	Calcium, total	mg/L	51.0
UA	APW05	B	8/16/2022	Calcium, total	mg/L	54.0
UA	APW05	B	3/14/2023	Calcium, total	mg/L	56.0
UA	APW05	B	4/27/2023	Calcium, total	mg/L	49.0
UA	APW05	B	7/24/2023	Calcium, total	mg/L	50.4
UA	APW05	B	10/10/2023	Calcium, total	mg/L	52.8
UA	APW05	B	12/15/2015	Chloride, total	mg/L	48.0
UA	APW05	B	1/20/2016	Chloride, total	mg/L	50.0
UA	APW05	B	4/27/2016	Chloride, total	mg/L	58.0
UA	APW05	B	8/1/2016	Chloride, total	mg/L	52.0
UA	APW05	B	10/25/2016	Chloride, total	mg/L	50.0
UA	APW05	B	1/23/2017	Chloride, total	mg/L	50.0
UA	APW05	B	4/24/2017	Chloride, total	mg/L	46.0
UA	APW05	B	6/13/2017	Chloride, total	mg/L	47.0
UA	APW05	B	11/17/2017	Chloride, total	mg/L	43.0

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW05	B	5/18/2018	Chloride, total	mg/L	48.0
UA	APW05	B	8/17/2018	Chloride, total	mg/L	56.0
UA	APW05	B	11/9/2018	Chloride, total	mg/L	51.0
UA	APW05	B	2/22/2019	Chloride, total	mg/L	48.0
UA	APW05	B	8/22/2019	Chloride, total	mg/L	50.0
UA	APW05	B	2/4/2020	Chloride, total	mg/L	54.0
UA	APW05	B	7/28/2020	Chloride, total	mg/L	52.0
UA	APW05	B	2/9/2021	Chloride, total	mg/L	50.0
UA	APW05	B	2/17/2021	Chloride, total	mg/L	52.0
UA	APW05	B	3/10/2021	Chloride, total	mg/L	48.0
UA	APW05	B	3/30/2021	Chloride, total	mg/L	49.0
UA	APW05	B	4/28/2021	Chloride, total	mg/L	51.0
UA	APW05	B	5/25/2021	Chloride, total	mg/L	48.0
UA	APW05	B	6/17/2021	Chloride, total	mg/L	50.0
UA	APW05	B	6/30/2021	Chloride, total	mg/L	51.0
UA	APW05	B	7/15/2021	Chloride, total	mg/L	52.0
UA	APW05	B	11/10/2021	Chloride, total	mg/L	62.0
UA	APW05	B	2/22/2022	Chloride, total	mg/L	50.0
UA	APW05	B	6/15/2022	Chloride, total	mg/L	45.0
UA	APW05	B	8/16/2022	Chloride, total	mg/L	46.0
UA	APW05	B	3/14/2023	Chloride, total	mg/L	44.0
UA	APW05	B	4/27/2023	Chloride, total	mg/L	46.0
UA	APW05	B	7/24/2023	Chloride, total	mg/L	46.0
UA	APW05	B	10/10/2023	Chloride, total	mg/L	46.0
UA	APW05	B	4/27/2023	Ferrous Iron, dissolved	mg/L	1.20
UA	APW05	B	7/24/2023	Ferrous Iron, dissolved	mg/L	0.999
UA	APW05	B	4/27/2023	Iron, dissolved	mg/L	1.10
UA	APW05	B	7/24/2023	Iron, dissolved	mg/L	1.31
UA	APW05	B	12/15/2015	Lithium, total	mg/L	0.0230
UA	APW05	B	1/20/2016	Lithium, total	mg/L	0.0170
UA	APW05	B	4/27/2016	Lithium, total	mg/L	0.0200
UA	APW05	B	8/1/2016	Lithium, total	mg/L	0.0160
UA	APW05	B	10/25/2016	Lithium, total	mg/L	0.0150
UA	APW05	B	1/23/2017	Lithium, total	mg/L	0.0130
UA	APW05	B	4/24/2017	Lithium, total	mg/L	0.0150
UA	APW05	B	6/13/2017	Lithium, total	mg/L	0.0140
UA	APW05	B	2/17/2021	Lithium, total	mg/L	<0.0099
UA	APW05	B	3/10/2021	Lithium, total	mg/L	<0.0099
UA	APW05	B	3/30/2021	Lithium, total	mg/L	<0.0099
UA	APW05	B	4/28/2021	Lithium, total	mg/L	<0.0099
UA	APW05	B	5/25/2021	Lithium, total	mg/L	<0.0099
UA	APW05	B	6/17/2021	Lithium, total	mg/L	<0.0099
UA	APW05	B	6/30/2021	Lithium, total	mg/L	<0.0099
UA	APW05	B	7/15/2021	Lithium, total	mg/L	<0.0099
UA	APW05	B	6/15/2022	Lithium, total	mg/L	<0.005
UA	APW05	B	8/16/2022	Lithium, total	mg/L	0.00840

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW05	B	3/14/2023	Lithium, total	mg/L	0.00940
UA	APW05	B	4/27/2023	Lithium, total	mg/L	0.00870
UA	APW05	B	7/24/2023	Lithium, total	mg/L	0.00880
UA	APW05	B	10/10/2023	Lithium, total	mg/L	0.00900
UA	APW05	B	6/13/2017	Magnesium, total	mg/L	23.0
UA	APW05	B	8/17/2018	Magnesium, total	mg/L	27.0
UA	APW05	B	2/4/2020	Magnesium, total	mg/L	27.0
UA	APW05	B	7/28/2020	Magnesium, total	mg/L	29.0
UA	APW05	B	2/9/2021	Magnesium, total	mg/L	29.0
UA	APW05	B	2/17/2021	Magnesium, total	mg/L	28.0
UA	APW05	B	3/10/2021	Magnesium, total	mg/L	29.0
UA	APW05	B	3/30/2021	Magnesium, total	mg/L	26.0
UA	APW05	B	4/28/2021	Magnesium, total	mg/L	29.0
UA	APW05	B	5/25/2021	Magnesium, total	mg/L	28.0
UA	APW05	B	6/17/2021	Magnesium, total	mg/L	31.0
UA	APW05	B	6/30/2021	Magnesium, total	mg/L	30.0
UA	APW05	B	7/15/2021	Magnesium, total	mg/L	28.0
UA	APW05	B	11/10/2021	Magnesium, total	mg/L	29.0
UA	APW05	B	2/22/2022	Magnesium, total	mg/L	29.0
UA	APW05	B	6/15/2022	Magnesium, total	mg/L	28.0
UA	APW05	B	8/16/2022	Magnesium, total	mg/L	29.0
UA	APW05	B	3/14/2023	Magnesium, total	mg/L	33.0
UA	APW05	B	4/27/2023	Magnesium, total	mg/L	26.0
UA	APW05	B	7/24/2023	Magnesium, total	mg/L	25.4
UA	APW05	B	10/10/2023	Magnesium, total	mg/L	27.2
UA	APW05	B	4/27/2023	Manganese, dissolved	mg/L	0.0400
UA	APW05	B	7/24/2023	Manganese, dissolved	mg/L	0.0275
UA	APW05	B	7/24/2023	Phosphate, dissolved	mg/L	0.414
UA	APW05	B	6/13/2017	Potassium, total	mg/L	2.80
UA	APW05	B	8/17/2018	Potassium, total	mg/L	2.70
UA	APW05	B	2/4/2020	Potassium, total	mg/L	1.80
UA	APW05	B	7/28/2020	Potassium, total	mg/L	1.60
UA	APW05	B	2/9/2021	Potassium, total	mg/L	1.90
UA	APW05	B	2/17/2021	Potassium, total	mg/L	2.10
UA	APW05	B	3/10/2021	Potassium, total	mg/L	1.70
UA	APW05	B	3/30/2021	Potassium, total	mg/L	1.50
UA	APW05	B	4/28/2021	Potassium, total	mg/L	1.50
UA	APW05	B	5/25/2021	Potassium, total	mg/L	1.60
UA	APW05	B	6/17/2021	Potassium, total	mg/L	1.60
UA	APW05	B	6/30/2021	Potassium, total	mg/L	1.60
UA	APW05	B	7/15/2021	Potassium, total	mg/L	1.50
UA	APW05	B	11/10/2021	Potassium, total	mg/L	1.50
UA	APW05	B	2/22/2022	Potassium, total	mg/L	1.60
UA	APW05	B	6/15/2022	Potassium, total	mg/L	1.50
UA	APW05	B	8/16/2022	Potassium, total	mg/L	1.70
UA	APW05	B	3/14/2023	Potassium, total	mg/L	1.70

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
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Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW05	B	4/27/2023	Potassium, total	mg/L	1.40
UA	APW05	B	7/24/2023	Potassium, total	mg/L	1.55
UA	APW05	B	10/10/2023	Potassium, total	mg/L	1.52
UA	APW05	B	4/27/2023	Silicon, dissolved	mg/L	6.20
UA	APW05	B	7/24/2023	Silicon, dissolved	mg/L	5.63
UA	APW05	B	6/13/2017	Sodium, total	mg/L	130
UA	APW05	B	8/17/2018	Sodium, total	mg/L	130
UA	APW05	B	2/4/2020	Sodium, total	mg/L	140
UA	APW05	B	7/28/2020	Sodium, total	mg/L	140
UA	APW05	B	2/9/2021	Sodium, total	mg/L	130
UA	APW05	B	2/17/2021	Sodium, total	mg/L	140
UA	APW05	B	3/10/2021	Sodium, total	mg/L	130
UA	APW05	B	3/30/2021	Sodium, total	mg/L	120
UA	APW05	B	4/28/2021	Sodium, total	mg/L	140
UA	APW05	B	5/25/2021	Sodium, total	mg/L	130
UA	APW05	B	6/17/2021	Sodium, total	mg/L	140
UA	APW05	B	6/30/2021	Sodium, total	mg/L	140
UA	APW05	B	7/15/2021	Sodium, total	mg/L	130
UA	APW05	B	11/10/2021	Sodium, total	mg/L	130
UA	APW05	B	2/22/2022	Sodium, total	mg/L	140
UA	APW05	B	6/15/2022	Sodium, total	mg/L	120
UA	APW05	B	8/16/2022	Sodium, total	mg/L	140
UA	APW05	B	3/14/2023	Sodium, total	mg/L	160
UA	APW05	B	4/27/2023	Sodium, total	mg/L	130
UA	APW05	B	7/24/2023	Sodium, total	mg/L	128
UA	APW05	B	10/10/2023	Sodium, total	mg/L	130
UA	APW05	B	12/15/2015	Sulfate, total	mg/L	15.0
UA	APW05	B	1/20/2016	Sulfate, total	mg/L	15.0
UA	APW05	B	4/27/2016	Sulfate, total	mg/L	14.0
UA	APW05	B	8/1/2016	Sulfate, total	mg/L	1.80
UA	APW05	B	10/25/2016	Sulfate, total	mg/L	<0.12
UA	APW05	B	1/23/2017	Sulfate, total	mg/L	<0.12
UA	APW05	B	4/24/2017	Sulfate, total	mg/L	1.20
UA	APW05	B	6/13/2017	Sulfate, total	mg/L	<0.12
UA	APW05	B	11/17/2017	Sulfate, total	mg/L	<0.12
UA	APW05	B	5/18/2018	Sulfate, total	mg/L	2.10
UA	APW05	B	8/17/2018	Sulfate, total	mg/L	1.40
UA	APW05	B	11/9/2018	Sulfate, total	mg/L	5.10
UA	APW05	B	2/22/2019	Sulfate, total	mg/L	3.50
UA	APW05	B	8/22/2019	Sulfate, total	mg/L	2.30
UA	APW05	B	2/4/2020	Sulfate, total	mg/L	2.30
UA	APW05	B	7/28/2020	Sulfate, total	mg/L	1.80
UA	APW05	B	2/9/2021	Sulfate, total	mg/L	1.30
UA	APW05	B	2/17/2021	Sulfate, total	mg/L	3.30
UA	APW05	B	3/10/2021	Sulfate, total	mg/L	1.30
UA	APW05	B	3/30/2021	Sulfate, total	mg/L	1.30

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW05	B	4/28/2021	Sulfate, total	mg/L	1.10
UA	APW05	B	5/25/2021	Sulfate, total	mg/L	1.00
UA	APW05	B	6/17/2021	Sulfate, total	mg/L	<0.18
UA	APW05	B	6/30/2021	Sulfate, total	mg/L	1.00
UA	APW05	B	7/15/2021	Sulfate, total	mg/L	1.10
UA	APW05	B	11/10/2021	Sulfate, total	mg/L	<0.18
UA	APW05	B	2/22/2022	Sulfate, total	mg/L	<0.18
UA	APW05	B	6/15/2022	Sulfate, total	mg/L	<0.18
UA	APW05	B	8/16/2022	Sulfate, total	mg/L	0.690
UA	APW05	B	3/14/2023	Sulfate, total	mg/L	1.10
UA	APW05	B	4/27/2023	Sulfate, total	mg/L	0.970
UA	APW05	B	7/24/2023	Sulfate, total	mg/L	10.0
UA	APW05	B	10/10/2023	Sulfate, total	mg/L	8.00
UA	APW05	B	12/15/2015	Total Dissolved Solids	mg/L	560
UA	APW05	B	1/20/2016	Total Dissolved Solids	mg/L	510
UA	APW05	B	4/27/2016	Total Dissolved Solids	mg/L	520
UA	APW05	B	8/1/2016	Total Dissolved Solids	mg/L	500
UA	APW05	B	10/25/2016	Total Dissolved Solids	mg/L	1,000
UA	APW05	B	1/23/2017	Total Dissolved Solids	mg/L	550
UA	APW05	B	4/24/2017	Total Dissolved Solids	mg/L	600
UA	APW05	B	6/13/2017	Total Dissolved Solids	mg/L	540
UA	APW05	B	11/17/2017	Total Dissolved Solids	mg/L	480
UA	APW05	B	5/18/2018	Total Dissolved Solids	mg/L	480
UA	APW05	B	11/9/2018	Total Dissolved Solids	mg/L	500
UA	APW05	B	2/22/2019	Total Dissolved Solids	mg/L	600
UA	APW05	B	8/22/2019	Total Dissolved Solids	mg/L	530
UA	APW05	B	2/4/2020	Total Dissolved Solids	mg/L	600
UA	APW05	B	7/28/2020	Total Dissolved Solids	mg/L	530
UA	APW05	B	2/9/2021	Total Dissolved Solids	mg/L	560
UA	APW05	B	2/17/2021	Total Dissolved Solids	mg/L	510
UA	APW05	B	3/10/2021	Total Dissolved Solids	mg/L	530
UA	APW05	B	3/30/2021	Total Dissolved Solids	mg/L	560
UA	APW05	B	4/28/2021	Total Dissolved Solids	mg/L	570
UA	APW05	B	5/25/2021	Total Dissolved Solids	mg/L	570
UA	APW05	B	6/17/2021	Total Dissolved Solids	mg/L	560
UA	APW05	B	6/30/2021	Total Dissolved Solids	mg/L	470
UA	APW05	B	7/15/2021	Total Dissolved Solids	mg/L	560
UA	APW05	B	11/10/2021	Total Dissolved Solids	mg/L	510
UA	APW05	B	2/22/2022	Total Dissolved Solids	mg/L	470
UA	APW05	B	6/15/2022	Total Dissolved Solids	mg/L	590
UA	APW05	B	8/16/2022	Total Dissolved Solids	mg/L	580
UA	APW05	B	3/14/2023	Total Dissolved Solids	mg/L	490
UA	APW05	B	4/27/2023	Total Dissolved Solids	mg/L	560
UA	APW05	B	7/24/2023	Total Dissolved Solids	mg/L	550
UA	APW05	B	10/10/2023	Total Dissolved Solids	mg/L	562
UA	APW06	B	12/15/2015	pH (field)	SU	7.5

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW06	B	1/20/2016	pH (field)	SU	7.4
UA	APW06	B	4/27/2016	pH (field)	SU	6.5
UA	APW06	B	8/1/2016	pH (field)	SU	7.4
UA	APW06	B	10/25/2016	pH (field)	SU	7.5
UA	APW06	B	1/23/2017	pH (field)	SU	6.9
UA	APW06	B	4/24/2017	pH (field)	SU	7.2
UA	APW06	B	6/13/2017	pH (field)	SU	7.1
UA	APW06	B	11/17/2017	pH (field)	SU	7.2
UA	APW06	B	5/18/2018	pH (field)	SU	7.3
UA	APW06	B	8/17/2018	pH (field)	SU	7.3
UA	APW06	B	11/9/2018	pH (field)	SU	7.2
UA	APW06	B	2/22/2019	pH (field)	SU	7.3
UA	APW06	B	8/23/2019	pH (field)	SU	7.3
UA	APW06	B	2/4/2020	pH (field)	SU	7.5
UA	APW06	B	6/11/2020	pH (field)	SU	7.4
UA	APW06	B	7/28/2020	pH (field)	SU	7.8
UA	APW06	B	2/9/2021	pH (field)	SU	7.6
UA	APW06	B	2/17/2021	pH (field)	SU	6.4
UA	APW06	B	3/10/2021	pH (field)	SU	7.7
UA	APW06	B	3/30/2021	pH (field)	SU	7.1
UA	APW06	B	4/29/2021	pH (field)	SU	7.7
UA	APW06	B	5/25/2021	pH (field)	SU	7.7
UA	APW06	B	6/16/2021	pH (field)	SU	7.7
UA	APW06	B	6/30/2021	pH (field)	SU	7.6
UA	APW06	B	7/15/2021	pH (field)	SU	7.5
UA	APW06	B	11/10/2021	pH (field)	SU	7.5
UA	APW06	B	2/22/2022	pH (field)	SU	7.6
UA	APW06	B	6/14/2022	pH (field)	SU	7.5
UA	APW06	B	8/17/2022	pH (field)	SU	7.5
UA	APW06	B	3/15/2023	pH (field)	SU	7.5
UA	APW06	B	4/26/2023	pH (field)	SU	7.3
UA	APW06	B	7/25/2023	pH (field)	SU	7.7
UA	APW06	B	10/10/2023	pH (field)	SU	7.1
UA	APW06	B	12/15/2015	Oxidation Reduction Potential	mV	-5.00
UA	APW06	B	1/20/2016	Oxidation Reduction Potential	mV	58.0
UA	APW06	B	4/27/2016	Oxidation Reduction Potential	mV	-61.0
UA	APW06	B	8/1/2016	Oxidation Reduction Potential	mV	-80.0
UA	APW06	B	10/25/2016	Oxidation Reduction Potential	mV	-73.0
UA	APW06	B	1/23/2017	Oxidation Reduction Potential	mV	-109
UA	APW06	B	4/24/2017	Oxidation Reduction Potential	mV	-94.0
UA	APW06	B	6/13/2017	Oxidation Reduction Potential	mV	-83.0
UA	APW06	B	11/17/2017	Oxidation Reduction Potential	mV	-79.0
UA	APW06	B	5/18/2018	Oxidation Reduction Potential	mV	-67.0
UA	APW06	B	8/17/2018	Oxidation Reduction Potential	mV	-73.0
UA	APW06	B	11/9/2018	Oxidation Reduction Potential	mV	-82.0
UA	APW06	B	2/22/2019	Oxidation Reduction Potential	mV	-71.0

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW06	B	8/23/2019	Oxidation Reduction Potential	mV	-58.0
UA	APW06	B	2/4/2020	Oxidation Reduction Potential	mV	-125
UA	APW06	B	6/11/2020	Oxidation Reduction Potential	mV	-125
UA	APW06	B	7/28/2020	Oxidation Reduction Potential	mV	-164
UA	APW06	B	2/9/2021	Oxidation Reduction Potential	mV	-110
UA	APW06	B	2/17/2021	Oxidation Reduction Potential	mV	-41.0
UA	APW06	B	3/10/2021	Oxidation Reduction Potential	mV	-131
UA	APW06	B	3/30/2021	Oxidation Reduction Potential	mV	-69.7
UA	APW06	B	4/29/2021	Oxidation Reduction Potential	mV	-130
UA	APW06	B	5/25/2021	Oxidation Reduction Potential	mV	-138
UA	APW06	B	6/16/2021	Oxidation Reduction Potential	mV	-127
UA	APW06	B	6/30/2021	Oxidation Reduction Potential	mV	-120
UA	APW06	B	7/15/2021	Oxidation Reduction Potential	mV	-148
UA	APW06	B	11/10/2021	Oxidation Reduction Potential	mV	-131
UA	APW06	B	2/22/2022	Oxidation Reduction Potential	mV	-19.2
UA	APW06	B	6/14/2022	Oxidation Reduction Potential	mV	-108
UA	APW06	B	8/17/2022	Oxidation Reduction Potential	mV	-147
UA	APW06	B	4/26/2023	Oxidation Reduction Potential	mV	-128
UA	APW06	B	7/25/2023	Oxidation Reduction Potential	mV	22.0
UA	APW06	B	10/10/2023	Oxidation Reduction Potential	mV	-99.0
UA	APW06	B	12/15/2015	Eh	V	0.19
UA	APW06	B	1/20/2016	Eh	V	0.26
UA	APW06	B	4/27/2016	Eh	V	0.13
UA	APW06	B	8/1/2016	Eh	V	0.11
UA	APW06	B	10/25/2016	Eh	V	0.12
UA	APW06	B	1/23/2017	Eh	V	0.088
UA	APW06	B	4/24/2017	Eh	V	0.100
UA	APW06	B	6/13/2017	Eh	V	0.11
UA	APW06	B	11/17/2017	Eh	V	0.12
UA	APW06	B	5/18/2018	Eh	V	0.13
UA	APW06	B	8/17/2018	Eh	V	0.12
UA	APW06	B	11/9/2018	Eh	V	0.11
UA	APW06	B	2/22/2019	Eh	V	0.13
UA	APW06	B	8/23/2019	Eh	V	0.14
UA	APW06	B	2/4/2020	Eh	V	0.073
UA	APW06	B	6/11/2020	Eh	V	0.070
UA	APW06	B	7/28/2020	Eh	V	0.029
UA	APW06	B	2/9/2021	Eh	V	0.090
UA	APW06	B	2/17/2021	Eh	V	0.16
UA	APW06	B	3/10/2021	Eh	V	0.065
UA	APW06	B	3/30/2021	Eh	V	0.13
UA	APW06	B	4/29/2021	Eh	V	0.065
UA	APW06	B	5/25/2021	Eh	V	0.051
UA	APW06	B	6/16/2021	Eh	V	0.063
UA	APW06	B	6/30/2021	Eh	V	0.069
UA	APW06	B	7/15/2021	Eh	V	0.039

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW06	B	11/10/2021	Eh	V	0.063
UA	APW06	B	2/22/2022	Eh	V	0.18
UA	APW06	B	6/14/2022	Eh	V	0.082
UA	APW06	B	8/17/2022	Eh	V	0.048
UA	APW06	B	4/26/2023	Eh	V	0.066
UA	APW06	B	7/25/2023	Eh	V	0.22
UA	APW06	B	10/10/2023	Eh	V	0.097
UA	APW06	B	6/13/2017	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW06	B	8/17/2018	Alkalinity, bicarbonate	mg/L CaCO3	490
UA	APW06	B	2/4/2020	Alkalinity, bicarbonate	mg/L CaCO3	440
UA	APW06	B	7/28/2020	Alkalinity, bicarbonate	mg/L CaCO3	450
UA	APW06	B	2/9/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW06	B	2/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW06	B	3/10/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW06	B	3/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	450
UA	APW06	B	4/29/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW06	B	5/25/2021	Alkalinity, bicarbonate	mg/L CaCO3	880
UA	APW06	B	6/16/2021	Alkalinity, bicarbonate	mg/L CaCO3	450
UA	APW06	B	6/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	410
UA	APW06	B	7/15/2021	Alkalinity, bicarbonate	mg/L CaCO3	450
UA	APW06	B	11/10/2021	Alkalinity, bicarbonate	mg/L CaCO3	450
UA	APW06	B	2/22/2022	Alkalinity, bicarbonate	mg/L CaCO3	420
UA	APW06	B	6/14/2022	Alkalinity, bicarbonate	mg/L CaCO3	370
UA	APW06	B	8/17/2022	Alkalinity, bicarbonate	mg/L CaCO3	420
UA	APW06	B	3/15/2023	Alkalinity, bicarbonate	mg/L CaCO3	480
UA	APW06	B	4/26/2023	Alkalinity, bicarbonate	mg/L CaCO3	380
UA	APW06	B	7/25/2023	Alkalinity, bicarbonate	mg/L CaCO3	456
UA	APW06	B	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	476
UA	APW06	B	6/13/2017	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	8/17/2018	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	2/4/2020	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	7/28/2020	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	2/9/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	2/17/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	3/10/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	3/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	4/29/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	5/25/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	6/16/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	6/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	7/15/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	11/10/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	2/22/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	6/14/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	8/17/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	3/15/2023	Alkalinity, carbonate	mg/L CaCO3	0

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW06	B	4/26/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	7/25/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW06	B	12/15/2015	Barium, total	mg/L	0.160
UA	APW06	B	1/20/2016	Barium, total	mg/L	0.170
UA	APW06	B	4/27/2016	Barium, total	mg/L	0.210
UA	APW06	B	8/1/2016	Barium, total	mg/L	0.200
UA	APW06	B	10/25/2016	Barium, total	mg/L	0.220
UA	APW06	B	1/23/2017	Barium, total	mg/L	0.210
UA	APW06	B	4/24/2017	Barium, total	mg/L	0.200
UA	APW06	B	6/13/2017	Barium, total	mg/L	0.220
UA	APW06	B	2/17/2021	Barium, total	mg/L	0.240
UA	APW06	B	3/10/2021	Barium, total	mg/L	0.250
UA	APW06	B	3/30/2021	Barium, total	mg/L	0.220
UA	APW06	B	4/29/2021	Barium, total	mg/L	0.250
UA	APW06	B	5/25/2021	Barium, total	mg/L	0.280
UA	APW06	B	6/16/2021	Barium, total	mg/L	0.250
UA	APW06	B	6/30/2021	Barium, total	mg/L	0.230
UA	APW06	B	7/15/2021	Barium, total	mg/L	0.230
UA	APW06	B	6/14/2022	Barium, total	mg/L	0.240
UA	APW06	B	8/17/2022	Barium, total	mg/L	0.220
UA	APW06	B	3/15/2023	Barium, total	mg/L	0.210
UA	APW06	B	4/26/2023	Barium, total	mg/L	0.240
UA	APW06	B	7/25/2023	Barium, total	mg/L	0.254
UA	APW06	B	10/10/2023	Barium, total	mg/L	0.304
UA	APW06	B	12/15/2015	Calcium, total	mg/L	53.0
UA	APW06	B	1/20/2016	Calcium, total	mg/L	53.0
UA	APW06	B	4/27/2016	Calcium, total	mg/L	64.0
UA	APW06	B	8/1/2016	Calcium, total	mg/L	50.0
UA	APW06	B	10/25/2016	Calcium, total	mg/L	50.0
UA	APW06	B	1/23/2017	Calcium, total	mg/L	46.0
UA	APW06	B	4/24/2017	Calcium, total	mg/L	43.0
UA	APW06	B	6/13/2017	Calcium, total	mg/L	51.0
UA	APW06	B	11/17/2017	Calcium, total	mg/L	50.0
UA	APW06	B	5/18/2018	Calcium, total	mg/L	51.0
UA	APW06	B	8/17/2018	Calcium, total	mg/L	52.0
UA	APW06	B	11/9/2018	Calcium, total	mg/L	51.0
UA	APW06	B	2/22/2019	Calcium, total	mg/L	45.0
UA	APW06	B	8/23/2019	Calcium, total	mg/L	55.0
UA	APW06	B	2/4/2020	Calcium, total	mg/L	53.0
UA	APW06	B	7/28/2020	Calcium, total	mg/L	55.0
UA	APW06	B	2/9/2021	Calcium, total	mg/L	55.0
UA	APW06	B	2/17/2021	Calcium, total	mg/L	54.0
UA	APW06	B	3/10/2021	Calcium, total	mg/L	58.0
UA	APW06	B	3/30/2021	Calcium, total	mg/L	56.0
UA	APW06	B	4/29/2021	Calcium, total	mg/L	62.0

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW06	B	5/25/2021	Calcium, total	mg/L	68.0
UA	APW06	B	6/16/2021	Calcium, total	mg/L	67.0
UA	APW06	B	6/30/2021	Calcium, total	mg/L	63.0
UA	APW06	B	7/15/2021	Calcium, total	mg/L	55.0
UA	APW06	B	11/10/2021	Calcium, total	mg/L	120
UA	APW06	B	2/22/2022	Calcium, total	mg/L	56.0
UA	APW06	B	6/14/2022	Calcium, total	mg/L	59.0
UA	APW06	B	8/17/2022	Calcium, total	mg/L	56.0
UA	APW06	B	3/15/2023	Calcium, total	mg/L	54.0
UA	APW06	B	4/26/2023	Calcium, total	mg/L	58.0
UA	APW06	B	7/25/2023	Calcium, total	mg/L	53.7
UA	APW06	B	10/10/2023	Calcium, total	mg/L	56.8
UA	APW06	B	12/15/2015	Chloride, total	mg/L	26.0
UA	APW06	B	1/20/2016	Chloride, total	mg/L	24.0
UA	APW06	B	4/27/2016	Chloride, total	mg/L	29.0
UA	APW06	B	8/1/2016	Chloride, total	mg/L	27.0
UA	APW06	B	10/25/2016	Chloride, total	mg/L	26.0
UA	APW06	B	1/23/2017	Chloride, total	mg/L	26.0
UA	APW06	B	4/24/2017	Chloride, total	mg/L	50.0
UA	APW06	B	6/13/2017	Chloride, total	mg/L	25.0
UA	APW06	B	11/17/2017	Chloride, total	mg/L	23.0
UA	APW06	B	5/18/2018	Chloride, total	mg/L	25.0
UA	APW06	B	8/17/2018	Chloride, total	mg/L	25.0
UA	APW06	B	11/9/2018	Chloride, total	mg/L	24.0
UA	APW06	B	2/22/2019	Chloride, total	mg/L	24.0
UA	APW06	B	8/23/2019	Chloride, total	mg/L	26.0
UA	APW06	B	2/4/2020	Chloride, total	mg/L	27.0
UA	APW06	B	7/28/2020	Chloride, total	mg/L	24.0
UA	APW06	B	2/9/2021	Chloride, total	mg/L	24.0
UA	APW06	B	2/17/2021	Chloride, total	mg/L	23.0
UA	APW06	B	3/10/2021	Chloride, total	mg/L	22.0
UA	APW06	B	3/30/2021	Chloride, total	mg/L	26.0
UA	APW06	B	4/29/2021	Chloride, total	mg/L	23.0
UA	APW06	B	5/25/2021	Chloride, total	mg/L	23.0
UA	APW06	B	6/16/2021	Chloride, total	mg/L	25.0
UA	APW06	B	6/30/2021	Chloride, total	mg/L	32.0
UA	APW06	B	7/15/2021	Chloride, total	mg/L	27.0
UA	APW06	B	11/10/2021	Chloride, total	mg/L	24.0
UA	APW06	B	2/22/2022	Chloride, total	mg/L	26.0
UA	APW06	B	6/14/2022	Chloride, total	mg/L	21.0
UA	APW06	B	8/17/2022	Chloride, total	mg/L	23.0
UA	APW06	B	3/15/2023	Chloride, total	mg/L	22.0
UA	APW06	B	4/26/2023	Chloride, total	mg/L	26.0
UA	APW06	B	7/25/2023	Chloride, total	mg/L	24.0
UA	APW06	B	10/10/2023	Chloride, total	mg/L	23.0
UA	APW06	B	4/26/2023	Ferrous Iron, dissolved	mg/L	0.900

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW06	B	7/25/2023	Ferrous Iron, dissolved	mg/L	0.678
UA	APW06	B	4/26/2023	Iron, dissolved	mg/L	0.880
UA	APW06	B	7/25/2023	Iron, dissolved	mg/L	0.683
UA	APW06	B	12/15/2015	Lithium, total	mg/L	0.0190
UA	APW06	B	1/20/2016	Lithium, total	mg/L	0.0120
UA	APW06	B	4/27/2016	Lithium, total	mg/L	0.0190
UA	APW06	B	8/1/2016	Lithium, total	mg/L	0.0160
UA	APW06	B	10/25/2016	Lithium, total	mg/L	0.0150
UA	APW06	B	1/23/2017	Lithium, total	mg/L	0.0140
UA	APW06	B	4/24/2017	Lithium, total	mg/L	0.0150
UA	APW06	B	6/13/2017	Lithium, total	mg/L	0.0140
UA	APW06	B	2/17/2021	Lithium, total	mg/L	<0.0099
UA	APW06	B	3/10/2021	Lithium, total	mg/L	<0.0099
UA	APW06	B	3/30/2021	Lithium, total	mg/L	<0.0099
UA	APW06	B	4/29/2021	Lithium, total	mg/L	<0.0099
UA	APW06	B	5/25/2021	Lithium, total	mg/L	<0.0099
UA	APW06	B	6/16/2021	Lithium, total	mg/L	<0.0099
UA	APW06	B	6/30/2021	Lithium, total	mg/L	0.0300
UA	APW06	B	7/15/2021	Lithium, total	mg/L	<0.0099
UA	APW06	B	6/14/2022	Lithium, total	mg/L	<0.005
UA	APW06	B	8/17/2022	Lithium, total	mg/L	0.0120
UA	APW06	B	3/15/2023	Lithium, total	mg/L	0.0100
UA	APW06	B	4/26/2023	Lithium, total	mg/L	0.0120
UA	APW06	B	7/25/2023	Lithium, total	mg/L	0.00960
UA	APW06	B	10/10/2023	Lithium, total	mg/L	0.0106
UA	APW06	B	6/13/2017	Magnesium, total	mg/L	26.0
UA	APW06	B	8/17/2018	Magnesium, total	mg/L	24.0
UA	APW06	B	2/4/2020	Magnesium, total	mg/L	25.0
UA	APW06	B	7/28/2020	Magnesium, total	mg/L	27.0
UA	APW06	B	2/9/2021	Magnesium, total	mg/L	27.0
UA	APW06	B	2/17/2021	Magnesium, total	mg/L	26.0
UA	APW06	B	3/10/2021	Magnesium, total	mg/L	27.0
UA	APW06	B	3/30/2021	Magnesium, total	mg/L	24.0
UA	APW06	B	4/29/2021	Magnesium, total	mg/L	31.0
UA	APW06	B	5/25/2021	Magnesium, total	mg/L	30.0
UA	APW06	B	6/16/2021	Magnesium, total	mg/L	30.0
UA	APW06	B	6/30/2021	Magnesium, total	mg/L	30.0
UA	APW06	B	7/15/2021	Magnesium, total	mg/L	27.0
UA	APW06	B	11/10/2021	Magnesium, total	mg/L	47.0
UA	APW06	B	2/22/2022	Magnesium, total	mg/L	28.0
UA	APW06	B	6/14/2022	Magnesium, total	mg/L	28.0
UA	APW06	B	8/17/2022	Magnesium, total	mg/L	26.0
UA	APW06	B	3/15/2023	Magnesium, total	mg/L	29.0
UA	APW06	B	4/26/2023	Magnesium, total	mg/L	27.0
UA	APW06	B	7/25/2023	Magnesium, total	mg/L	24.7
UA	APW06	B	10/10/2023	Magnesium, total	mg/L	25.7

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW06	B	4/26/2023	Manganese, dissolved	mg/L	0.0390
UA	APW06	B	7/25/2023	Manganese, dissolved	mg/L	0.0486
UA	APW06	B	7/25/2023	Phosphate, dissolved	mg/L	0.249
UA	APW06	B	6/13/2017	Potassium, total	mg/L	2.00
UA	APW06	B	8/17/2018	Potassium, total	mg/L	1.60
UA	APW06	B	2/4/2020	Potassium, total	mg/L	1.40
UA	APW06	B	7/28/2020	Potassium, total	mg/L	1.30
UA	APW06	B	2/9/2021	Potassium, total	mg/L	1.40
UA	APW06	B	2/17/2021	Potassium, total	mg/L	1.30
UA	APW06	B	3/10/2021	Potassium, total	mg/L	1.50
UA	APW06	B	3/30/2021	Potassium, total	mg/L	1.30
UA	APW06	B	4/29/2021	Potassium, total	mg/L	2.10
UA	APW06	B	5/25/2021	Potassium, total	mg/L	2.80
UA	APW06	B	6/16/2021	Potassium, total	mg/L	2.30
UA	APW06	B	6/30/2021	Potassium, total	mg/L	2.20
UA	APW06	B	7/15/2021	Potassium, total	mg/L	1.70
UA	APW06	B	11/10/2021	Potassium, total	mg/L	2.90
UA	APW06	B	2/22/2022	Potassium, total	mg/L	1.80
UA	APW06	B	6/14/2022	Potassium, total	mg/L	1.90
UA	APW06	B	8/17/2022	Potassium, total	mg/L	1.40
UA	APW06	B	3/15/2023	Potassium, total	mg/L	1.40
UA	APW06	B	4/26/2023	Potassium, total	mg/L	1.50
UA	APW06	B	7/25/2023	Potassium, total	mg/L	1.42
UA	APW06	B	10/10/2023	Potassium, total	mg/L	1.48
UA	APW06	B	4/26/2023	Silicon, dissolved	mg/L	7.50
UA	APW06	B	7/25/2023	Silicon, dissolved	mg/L	6.67
UA	APW06	B	6/13/2017	Sodium, total	mg/L	140
UA	APW06	B	8/17/2018	Sodium, total	mg/L	120
UA	APW06	B	2/4/2020	Sodium, total	mg/L	130
UA	APW06	B	7/28/2020	Sodium, total	mg/L	130
UA	APW06	B	2/9/2021	Sodium, total	mg/L	130
UA	APW06	B	2/17/2021	Sodium, total	mg/L	130
UA	APW06	B	3/10/2021	Sodium, total	mg/L	120
UA	APW06	B	3/30/2021	Sodium, total	mg/L	110
UA	APW06	B	4/29/2021	Sodium, total	mg/L	130
UA	APW06	B	5/25/2021	Sodium, total	mg/L	110
UA	APW06	B	6/16/2021	Sodium, total	mg/L	120
UA	APW06	B	6/30/2021	Sodium, total	mg/L	120
UA	APW06	B	7/15/2021	Sodium, total	mg/L	120
UA	APW06	B	11/10/2021	Sodium, total	mg/L	120
UA	APW06	B	2/22/2022	Sodium, total	mg/L	130
UA	APW06	B	6/14/2022	Sodium, total	mg/L	110
UA	APW06	B	8/17/2022	Sodium, total	mg/L	120
UA	APW06	B	3/15/2023	Sodium, total	mg/L	130
UA	APW06	B	4/26/2023	Sodium, total	mg/L	120
UA	APW06	B	7/25/2023	Sodium, total	mg/L	115

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW06	B	10/10/2023	Sodium, total	mg/L	115
UA	APW06	B	12/15/2015	Sulfate, total	mg/L	9.90
UA	APW06	B	1/20/2016	Sulfate, total	mg/L	9.90
UA	APW06	B	4/27/2016	Sulfate, total	mg/L	7.40
UA	APW06	B	8/1/2016	Sulfate, total	mg/L	1.20
UA	APW06	B	10/25/2016	Sulfate, total	mg/L	<0.12
UA	APW06	B	1/23/2017	Sulfate, total	mg/L	<0.12
UA	APW06	B	4/24/2017	Sulfate, total	mg/L	<0.12
UA	APW06	B	6/13/2017	Sulfate, total	mg/L	2.30
UA	APW06	B	11/17/2017	Sulfate, total	mg/L	1.90
UA	APW06	B	5/18/2018	Sulfate, total	mg/L	1.70
UA	APW06	B	8/17/2018	Sulfate, total	mg/L	1.70
UA	APW06	B	11/9/2018	Sulfate, total	mg/L	2.10
UA	APW06	B	2/22/2019	Sulfate, total	mg/L	1.70
UA	APW06	B	8/23/2019	Sulfate, total	mg/L	5.80
UA	APW06	B	2/4/2020	Sulfate, total	mg/L	<0.062
UA	APW06	B	7/28/2020	Sulfate, total	mg/L	3.20
UA	APW06	B	2/9/2021	Sulfate, total	mg/L	1.80
UA	APW06	B	2/17/2021	Sulfate, total	mg/L	3.60
UA	APW06	B	3/10/2021	Sulfate, total	mg/L	9.20
UA	APW06	B	3/30/2021	Sulfate, total	mg/L	7.70
UA	APW06	B	4/29/2021	Sulfate, total	mg/L	8.50
UA	APW06	B	5/25/2021	Sulfate, total	mg/L	7.80
UA	APW06	B	6/16/2021	Sulfate, total	mg/L	6.20
UA	APW06	B	6/30/2021	Sulfate, total	mg/L	6.30
UA	APW06	B	7/15/2021	Sulfate, total	mg/L	7.80
UA	APW06	B	11/10/2021	Sulfate, total	mg/L	4.40
UA	APW06	B	2/22/2022	Sulfate, total	mg/L	7.60
UA	APW06	B	6/14/2022	Sulfate, total	mg/L	11.0
UA	APW06	B	8/17/2022	Sulfate, total	mg/L	6.10
UA	APW06	B	3/15/2023	Sulfate, total	mg/L	6.80
UA	APW06	B	4/26/2023	Sulfate, total	mg/L	7.60
UA	APW06	B	7/25/2023	Sulfate, total	mg/L	17.0
UA	APW06	B	10/10/2023	Sulfate, total	mg/L	11.0
UA	APW06	B	12/15/2015	Total Dissolved Solids	mg/L	480
UA	APW06	B	1/20/2016	Total Dissolved Solids	mg/L	500
UA	APW06	B	4/27/2016	Total Dissolved Solids	mg/L	450
UA	APW06	B	8/1/2016	Total Dissolved Solids	mg/L	520
UA	APW06	B	10/25/2016	Total Dissolved Solids	mg/L	560
UA	APW06	B	1/23/2017	Total Dissolved Solids	mg/L	530
UA	APW06	B	4/24/2017	Total Dissolved Solids	mg/L	540
UA	APW06	B	6/13/2017	Total Dissolved Solids	mg/L	460
UA	APW06	B	11/17/2017	Total Dissolved Solids	mg/L	470
UA	APW06	B	5/18/2018	Total Dissolved Solids	mg/L	420
UA	APW06	B	11/9/2018	Total Dissolved Solids	mg/L	440
UA	APW06	B	2/22/2019	Total Dissolved Solids	mg/L	480

Attachment 8. Aqueous Data
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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW06	B	8/23/2019	Total Dissolved Solids	mg/L	500
UA	APW06	B	2/4/2020	Total Dissolved Solids	mg/L	640
UA	APW06	B	7/28/2020	Total Dissolved Solids	mg/L	510
UA	APW06	B	2/9/2021	Total Dissolved Solids	mg/L	450
UA	APW06	B	2/17/2021	Total Dissolved Solids	mg/L	500
UA	APW06	B	3/10/2021	Total Dissolved Solids	mg/L	540
UA	APW06	B	3/30/2021	Total Dissolved Solids	mg/L	500
UA	APW06	B	4/29/2021	Total Dissolved Solids	mg/L	610
UA	APW06	B	5/25/2021	Total Dissolved Solids	mg/L	490
UA	APW06	B	6/16/2021	Total Dissolved Solids	mg/L	520
UA	APW06	B	6/30/2021	Total Dissolved Solids	mg/L	500
UA	APW06	B	7/15/2021	Total Dissolved Solids	mg/L	490
UA	APW06	B	11/10/2021	Total Dissolved Solids	mg/L	500
UA	APW06	B	2/22/2022	Total Dissolved Solids	mg/L	450
UA	APW06	B	6/14/2022	Total Dissolved Solids	mg/L	560
UA	APW06	B	8/17/2022	Total Dissolved Solids	mg/L	440
UA	APW06	B	3/15/2023	Total Dissolved Solids	mg/L	500
UA	APW06	B	4/26/2023	Total Dissolved Solids	mg/L	500
UA	APW06	B	7/25/2023	Total Dissolved Solids	mg/L	540
UA	APW06	B	10/10/2023	Total Dissolved Solids	mg/L	526
UA	APW07	C	12/15/2015	pH (field)	SU	7.4
UA	APW07	C	1/21/2016	pH (field)	SU	7.4
UA	APW07	C	5/3/2016	pH (field)	SU	7.5
UA	APW07	C	8/1/2016	pH (field)	SU	7.3
UA	APW07	C	10/26/2016	pH (field)	SU	7.2
UA	APW07	C	1/26/2017	pH (field)	SU	7.2
UA	APW07	C	4/24/2017	pH (field)	SU	7.3
UA	APW07	C	6/13/2017	pH (field)	SU	7.2
UA	APW07	C	11/17/2017	pH (field)	SU	7.2
UA	APW07	C	5/18/2018	pH (field)	SU	7.1
UA	APW07	C	8/18/2018	pH (field)	SU	7.1
UA	APW07	C	11/9/2018	pH (field)	SU	7.0
UA	APW07	C	2/22/2019	pH (field)	SU	7.2
UA	APW07	C	8/23/2019	pH (field)	SU	7.1
UA	APW07	C	2/5/2020	pH (field)	SU	7.4
UA	APW07	C	6/11/2020	pH (field)	SU	7.3
UA	APW07	C	7/28/2020	pH (field)	SU	7.3
UA	APW07	C	2/10/2021	pH (field)	SU	7.0
UA	APW07	C	11/9/2021	pH (field)	SU	7.4
UA	APW07	C	2/22/2022	pH (field)	SU	7.3
UA	APW07	C	6/14/2022	pH (field)	SU	7.4
UA	APW07	C	8/16/2022	pH (field)	SU	7.1
UA	APW07	C	1/31/2023	pH (field)	SU	6.8
UA	APW07	C	4/27/2023	pH (field)	SU	7.4
UA	APW07	C	7/25/2023	pH (field)	SU	7.3
UA	APW07	C	10/10/2023	pH (field)	SU	7.6

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW07	C	12/15/2015	Oxidation Reduction Potential	mV	-40.0
UA	APW07	C	1/21/2016	Oxidation Reduction Potential	mV	-110
UA	APW07	C	5/3/2016	Oxidation Reduction Potential	mV	-94.0
UA	APW07	C	8/1/2016	Oxidation Reduction Potential	mV	-114
UA	APW07	C	10/26/2016	Oxidation Reduction Potential	mV	-69.0
UA	APW07	C	1/26/2017	Oxidation Reduction Potential	mV	-136
UA	APW07	C	4/24/2017	Oxidation Reduction Potential	mV	-112
UA	APW07	C	6/13/2017	Oxidation Reduction Potential	mV	-94.0
UA	APW07	C	11/17/2017	Oxidation Reduction Potential	mV	-71.0
UA	APW07	C	5/18/2018	Oxidation Reduction Potential	mV	-88.0
UA	APW07	C	8/18/2018	Oxidation Reduction Potential	mV	-88.0
UA	APW07	C	11/9/2018	Oxidation Reduction Potential	mV	-92.0
UA	APW07	C	2/22/2019	Oxidation Reduction Potential	mV	-92.0
UA	APW07	C	8/23/2019	Oxidation Reduction Potential	mV	-74.0
UA	APW07	C	2/5/2020	Oxidation Reduction Potential	mV	-137
UA	APW07	C	6/11/2020	Oxidation Reduction Potential	mV	-164
UA	APW07	C	7/28/2020	Oxidation Reduction Potential	mV	-104
UA	APW07	C	2/10/2021	Oxidation Reduction Potential	mV	-10.5
UA	APW07	C	11/9/2021	Oxidation Reduction Potential	mV	-90.5
UA	APW07	C	2/22/2022	Oxidation Reduction Potential	mV	4.50
UA	APW07	C	6/14/2022	Oxidation Reduction Potential	mV	-91.7
UA	APW07	C	8/16/2022	Oxidation Reduction Potential	mV	-116
UA	APW07	C	1/31/2023	Oxidation Reduction Potential	mV	106
UA	APW07	C	4/27/2023	Oxidation Reduction Potential	mV	-116
UA	APW07	C	7/25/2023	Oxidation Reduction Potential	mV	33.0
UA	APW07	C	10/10/2023	Oxidation Reduction Potential	mV	-68.0
UA	APW07	C	12/15/2015	Eh	V	0.16
UA	APW07	C	1/21/2016	Eh	V	0.089
UA	APW07	C	5/3/2016	Eh	V	0.10
UA	APW07	C	8/1/2016	Eh	V	0.078
UA	APW07	C	10/26/2016	Eh	V	0.12
UA	APW07	C	1/26/2017	Eh	V	0.062
UA	APW07	C	4/24/2017	Eh	V	0.082
UA	APW07	C	6/13/2017	Eh	V	0.10
UA	APW07	C	11/17/2017	Eh	V	0.13
UA	APW07	C	5/18/2018	Eh	V	0.11
UA	APW07	C	8/18/2018	Eh	V	0.11
UA	APW07	C	11/9/2018	Eh	V	0.10
UA	APW07	C	2/22/2019	Eh	V	0.11
UA	APW07	C	8/23/2019	Eh	V	0.12
UA	APW07	C	2/5/2020	Eh	V	0.062
UA	APW07	C	6/11/2020	Eh	V	0.031
UA	APW07	C	7/28/2020	Eh	V	0.089
UA	APW07	C	2/10/2021	Eh	V	0.19
UA	APW07	C	11/9/2021	Eh	V	0.11
UA	APW07	C	2/22/2022	Eh	V	0.20

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW07	C	6/14/2022	Eh	V	0.10
UA	APW07	C	8/16/2022	Eh	V	0.078
UA	APW07	C	1/31/2023	Eh	V	0.31
UA	APW07	C	4/27/2023	Eh	V	0.080
UA	APW07	C	7/25/2023	Eh	V	0.23
UA	APW07	C	10/10/2023	Eh	V	0.13
UA	APW07	C	6/13/2017	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW07	C	8/18/2018	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW07	C	2/5/2020	Alkalinity, bicarbonate	mg/L CaCO3	490
UA	APW07	C	7/28/2020	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW07	C	2/10/2021	Alkalinity, bicarbonate	mg/L CaCO3	490
UA	APW07	C	11/9/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW07	C	2/22/2022	Alkalinity, bicarbonate	mg/L CaCO3	440
UA	APW07	C	6/14/2022	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	APW07	C	8/16/2022	Alkalinity, bicarbonate	mg/L CaCO3	340
UA	APW07	C	1/31/2023	Alkalinity, bicarbonate	mg/L CaCO3	310
UA	APW07	C	4/27/2023	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW07	C	7/25/2023	Alkalinity, bicarbonate	mg/L CaCO3	493
UA	APW07	C	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	512
UA	APW07	C	6/13/2017	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW07	C	8/18/2018	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW07	C	2/5/2020	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW07	C	7/28/2020	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW07	C	2/10/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW07	C	11/9/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW07	C	2/22/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW07	C	6/14/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW07	C	8/16/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW07	C	1/31/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW07	C	4/27/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW07	C	7/25/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW07	C	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW07	C	12/15/2015	Barium, total	mg/L	0.350
UA	APW07	C	1/21/2016	Barium, total	mg/L	0.400
UA	APW07	C	5/3/2016	Barium, total	mg/L	0.410
UA	APW07	C	8/1/2016	Barium, total	mg/L	0.450
UA	APW07	C	10/26/2016	Barium, total	mg/L	0.500
UA	APW07	C	1/26/2017	Barium, total	mg/L	0.450
UA	APW07	C	4/24/2017	Barium, total	mg/L	0.450
UA	APW07	C	6/13/2017	Barium, total	mg/L	0.480
UA	APW07	C	6/14/2022	Barium, total	mg/L	0.500
UA	APW07	C	8/16/2022	Barium, total	mg/L	0.510
UA	APW07	C	1/31/2023	Barium, total	mg/L	0.540
UA	APW07	C	4/27/2023	Barium, total	mg/L	0.510
UA	APW07	C	7/25/2023	Barium, total	mg/L	0.519
UA	APW07	C	10/10/2023	Barium, total	mg/L	0.808

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW07	C	12/15/2015	Calcium, total	mg/L	74.0
UA	APW07	C	1/21/2016	Calcium, total	mg/L	74.0
UA	APW07	C	5/3/2016	Calcium, total	mg/L	85.0
UA	APW07	C	8/1/2016	Calcium, total	mg/L	86.0
UA	APW07	C	10/26/2016	Calcium, total	mg/L	76.0
UA	APW07	C	1/26/2017	Calcium, total	mg/L	87.0
UA	APW07	C	4/24/2017	Calcium, total	mg/L	87.0
UA	APW07	C	6/13/2017	Calcium, total	mg/L	93.0
UA	APW07	C	11/17/2017	Calcium, total	mg/L	72.0
UA	APW07	C	5/18/2018	Calcium, total	mg/L	97.0
UA	APW07	C	8/18/2018	Calcium, total	mg/L	100
UA	APW07	C	11/9/2018	Calcium, total	mg/L	92.0
UA	APW07	C	2/22/2019	Calcium, total	mg/L	45.0
UA	APW07	C	8/23/2019	Calcium, total	mg/L	58.0
UA	APW07	C	2/5/2020	Calcium, total	mg/L	100
UA	APW07	C	7/28/2020	Calcium, total	mg/L	94.0
UA	APW07	C	2/10/2021	Calcium, total	mg/L	110
UA	APW07	C	11/9/2021	Calcium, total	mg/L	97.0
UA	APW07	C	2/22/2022	Calcium, total	mg/L	96.0
UA	APW07	C	6/14/2022	Calcium, total	mg/L	93.0
UA	APW07	C	8/16/2022	Calcium, total	mg/L	96.0
UA	APW07	C	1/31/2023	Calcium, total	mg/L	110
UA	APW07	C	4/27/2023	Calcium, total	mg/L	100
UA	APW07	C	7/25/2023	Calcium, total	mg/L	90.4
UA	APW07	C	10/10/2023	Calcium, total	mg/L	96.2
UA	APW07	C	12/15/2015	Chloride, total	mg/L	69.0
UA	APW07	C	1/21/2016	Chloride, total	mg/L	79.0
UA	APW07	C	5/3/2016	Chloride, total	mg/L	72.0
UA	APW07	C	8/1/2016	Chloride, total	mg/L	77.0
UA	APW07	C	10/26/2016	Chloride, total	mg/L	79.0
UA	APW07	C	1/26/2017	Chloride, total	mg/L	77.0
UA	APW07	C	4/24/2017	Chloride, total	mg/L	77.0
UA	APW07	C	6/13/2017	Chloride, total	mg/L	77.0
UA	APW07	C	11/17/2017	Chloride, total	mg/L	73.0
UA	APW07	C	5/18/2018	Chloride, total	mg/L	75.0
UA	APW07	C	8/18/2018	Chloride, total	mg/L	77.0
UA	APW07	C	11/9/2018	Chloride, total	mg/L	71.0
UA	APW07	C	2/22/2019	Chloride, total	mg/L	43.0
UA	APW07	C	8/23/2019	Chloride, total	mg/L	46.0
UA	APW07	C	2/5/2020	Chloride, total	mg/L	68.0
UA	APW07	C	6/11/2020	Chloride, total	mg/L	68.0
UA	APW07	C	7/28/2020	Chloride, total	mg/L	77.0
UA	APW07	C	2/10/2021	Chloride, total	mg/L	69.0
UA	APW07	C	11/9/2021	Chloride, total	mg/L	66.0
UA	APW07	C	2/22/2022	Chloride, total	mg/L	67.0
UA	APW07	C	6/14/2022	Chloride, total	mg/L	64.0

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW07	C	8/16/2022	Chloride, total	mg/L	63.0
UA	APW07	C	1/31/2023	Chloride, total	mg/L	59.0
UA	APW07	C	4/27/2023	Chloride, total	mg/L	63.0
UA	APW07	C	7/25/2023	Chloride, total	mg/L	62.0
UA	APW07	C	10/10/2023	Chloride, total	mg/L	67.0
UA	APW07	C	4/27/2023	Ferrous Iron, dissolved	mg/L	1.10
UA	APW07	C	7/25/2023	Ferrous Iron, dissolved	mg/L	2.29
UA	APW07	C	4/27/2023	Iron, dissolved	mg/L	2.30
UA	APW07	C	7/25/2023	Iron, dissolved	mg/L	2.36
UA	APW07	C	12/15/2015	Lithium, total	mg/L	<0.0001
UA	APW07	C	1/21/2016	Lithium, total	mg/L	<0.0001
UA	APW07	C	5/3/2016	Lithium, total	mg/L	<0.0001
UA	APW07	C	8/1/2016	Lithium, total	mg/L	<0.0001
UA	APW07	C	10/26/2016	Lithium, total	mg/L	<0.0001
UA	APW07	C	1/26/2017	Lithium, total	mg/L	<0.0001
UA	APW07	C	4/24/2017	Lithium, total	mg/L	<0.0001
UA	APW07	C	6/13/2017	Lithium, total	mg/L	<0.0001
UA	APW07	C	6/14/2022	Lithium, total	mg/L	<0.005
UA	APW07	C	8/16/2022	Lithium, total	mg/L	<0.005
UA	APW07	C	1/31/2023	Lithium, total	mg/L	<0.005
UA	APW07	C	4/27/2023	Lithium, total	mg/L	0.00580
UA	APW07	C	7/25/2023	Lithium, total	mg/L	0.00340
UA	APW07	C	10/10/2023	Lithium, total	mg/L	0.00250
UA	APW07	C	6/13/2017	Magnesium, total	mg/L	36.0
UA	APW07	C	8/18/2018	Magnesium, total	mg/L	39.0
UA	APW07	C	2/5/2020	Magnesium, total	mg/L	42.0
UA	APW07	C	7/28/2020	Magnesium, total	mg/L	38.0
UA	APW07	C	2/10/2021	Magnesium, total	mg/L	42.0
UA	APW07	C	11/9/2021	Magnesium, total	mg/L	37.0
UA	APW07	C	2/22/2022	Magnesium, total	mg/L	39.0
UA	APW07	C	6/14/2022	Magnesium, total	mg/L	37.0
UA	APW07	C	8/16/2022	Magnesium, total	mg/L	42.0
UA	APW07	C	1/31/2023	Magnesium, total	mg/L	42.0
UA	APW07	C	4/27/2023	Magnesium, total	mg/L	40.0
UA	APW07	C	7/25/2023	Magnesium, total	mg/L	34.8
UA	APW07	C	10/10/2023	Magnesium, total	mg/L	35.4
UA	APW07	C	4/27/2023	Manganese, dissolved	mg/L	0.0210
UA	APW07	C	7/25/2023	Manganese, dissolved	mg/L	0.0224
UA	APW07	C	7/25/2023	Phosphate, dissolved	mg/L	1.11
UA	APW07	C	6/13/2017	Potassium, total	mg/L	2.00
UA	APW07	C	8/18/2018	Potassium, total	mg/L	2.60
UA	APW07	C	2/5/2020	Potassium, total	mg/L	2.00
UA	APW07	C	7/28/2020	Potassium, total	mg/L	1.40
UA	APW07	C	2/10/2021	Potassium, total	mg/L	2.90
UA	APW07	C	11/9/2021	Potassium, total	mg/L	1.60
UA	APW07	C	2/22/2022	Potassium, total	mg/L	1.90

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW07	C	6/14/2022	Potassium, total	mg/L	1.60
UA	APW07	C	8/16/2022	Potassium, total	mg/L	1.80
UA	APW07	C	1/31/2023	Potassium, total	mg/L	2.40
UA	APW07	C	4/27/2023	Potassium, total	mg/L	2.50
UA	APW07	C	7/25/2023	Potassium, total	mg/L	1.76
UA	APW07	C	10/10/2023	Potassium, total	mg/L	1.80
UA	APW07	C	4/27/2023	Silicon, dissolved	mg/L	8.10
UA	APW07	C	7/25/2023	Silicon, dissolved	mg/L	7.29
UA	APW07	C	6/13/2017	Sodium, total	mg/L	100
UA	APW07	C	8/18/2018	Sodium, total	mg/L	98.0
UA	APW07	C	2/5/2020	Sodium, total	mg/L	100
UA	APW07	C	7/28/2020	Sodium, total	mg/L	98.0
UA	APW07	C	2/10/2021	Sodium, total	mg/L	91.0
UA	APW07	C	11/9/2021	Sodium, total	mg/L	91.0
UA	APW07	C	2/22/2022	Sodium, total	mg/L	97.0
UA	APW07	C	6/14/2022	Sodium, total	mg/L	84.0
UA	APW07	C	8/16/2022	Sodium, total	mg/L	110
UA	APW07	C	1/31/2023	Sodium, total	mg/L	100
UA	APW07	C	4/27/2023	Sodium, total	mg/L	93.0
UA	APW07	C	7/25/2023	Sodium, total	mg/L	91.2
UA	APW07	C	10/10/2023	Sodium, total	mg/L	95.4
UA	APW07	C	12/15/2015	Sulfate, total	mg/L	13.0
UA	APW07	C	1/21/2016	Sulfate, total	mg/L	8.60
UA	APW07	C	5/3/2016	Sulfate, total	mg/L	7.50
UA	APW07	C	8/1/2016	Sulfate, total	mg/L	2.80
UA	APW07	C	10/26/2016	Sulfate, total	mg/L	<0.12
UA	APW07	C	1/26/2017	Sulfate, total	mg/L	<0.12
UA	APW07	C	4/24/2017	Sulfate, total	mg/L	<0.12
UA	APW07	C	6/13/2017	Sulfate, total	mg/L	<0.12
UA	APW07	C	11/17/2017	Sulfate, total	mg/L	3.80
UA	APW07	C	5/18/2018	Sulfate, total	mg/L	4.90
UA	APW07	C	8/18/2018	Sulfate, total	mg/L	3.20
UA	APW07	C	11/9/2018	Sulfate, total	mg/L	4.50
UA	APW07	C	2/22/2019	Sulfate, total	mg/L	66.0
UA	APW07	C	8/23/2019	Sulfate, total	mg/L	62.0
UA	APW07	C	2/5/2020	Sulfate, total	mg/L	5.70
UA	APW07	C	7/28/2020	Sulfate, total	mg/L	6.70
UA	APW07	C	2/10/2021	Sulfate, total	mg/L	6.30
UA	APW07	C	11/9/2021	Sulfate, total	mg/L	11.0
UA	APW07	C	2/22/2022	Sulfate, total	mg/L	11.0
UA	APW07	C	6/14/2022	Sulfate, total	mg/L	12.0
UA	APW07	C	8/16/2022	Sulfate, total	mg/L	12.0
UA	APW07	C	1/31/2023	Sulfate, total	mg/L	12.0
UA	APW07	C	4/27/2023	Sulfate, total	mg/L	14.0
UA	APW07	C	7/25/2023	Sulfate, total	mg/L	23.0
UA	APW07	C	10/10/2023	Sulfate, total	mg/L	16.0

Attachment 8. Aqueous Data
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Newton Primary Ash Pond
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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW07	C	12/15/2015	Total Dissolved Solids	mg/L	520
UA	APW07	C	1/21/2016	Total Dissolved Solids	mg/L	440
UA	APW07	C	5/3/2016	Total Dissolved Solids	mg/L	500
UA	APW07	C	8/1/2016	Total Dissolved Solids	mg/L	490
UA	APW07	C	10/26/2016	Total Dissolved Solids	mg/L	590
UA	APW07	C	1/26/2017	Total Dissolved Solids	mg/L	520
UA	APW07	C	4/24/2017	Total Dissolved Solids	mg/L	600
UA	APW07	C	6/13/2017	Total Dissolved Solids	mg/L	560
UA	APW07	C	11/17/2017	Total Dissolved Solids	mg/L	530
UA	APW07	C	5/18/2018	Total Dissolved Solids	mg/L	500
UA	APW07	C	11/9/2018	Total Dissolved Solids	mg/L	500
UA	APW07	C	2/22/2019	Total Dissolved Solids	mg/L	340
UA	APW07	C	8/23/2019	Total Dissolved Solids	mg/L	350
UA	APW07	C	2/5/2020	Total Dissolved Solids	mg/L	640
UA	APW07	C	7/28/2020	Total Dissolved Solids	mg/L	530
UA	APW07	C	2/10/2021	Total Dissolved Solids	mg/L	540
UA	APW07	C	11/9/2021	Total Dissolved Solids	mg/L	600
UA	APW07	C	2/22/2022	Total Dissolved Solids	mg/L	550
UA	APW07	C	6/14/2022	Total Dissolved Solids	mg/L	530
UA	APW07	C	8/16/2022	Total Dissolved Solids	mg/L	600
UA	APW07	C	1/31/2023	Total Dissolved Solids	mg/L	560
UA	APW07	C	4/27/2023	Total Dissolved Solids	mg/L	590
UA	APW07	C	7/25/2023	Total Dissolved Solids	mg/L	605
UA	APW07	C	10/10/2023	Total Dissolved Solids	mg/L	630
UA	APW08	C	12/15/2015	pH (field)	SU	7.4
UA	APW08	C	1/21/2016	pH (field)	SU	7.5
UA	APW08	C	5/3/2016	pH (field)	SU	7.4
UA	APW08	C	8/2/2016	pH (field)	SU	7.2
UA	APW08	C	10/26/2016	pH (field)	SU	7.4
UA	APW08	C	1/25/2017	pH (field)	SU	7.2
UA	APW08	C	4/25/2017	pH (field)	SU	7.5
UA	APW08	C	6/13/2017	pH (field)	SU	7.3
UA	APW08	C	11/17/2017	pH (field)	SU	7.1
UA	APW08	C	5/18/2018	pH (field)	SU	7.2
UA	APW08	C	8/18/2018	pH (field)	SU	7.2
UA	APW08	C	11/9/2018	pH (field)	SU	7.1
UA	APW08	C	2/22/2019	pH (field)	SU	7.2
UA	APW08	C	8/23/2019	pH (field)	SU	7.2
UA	APW08	C	2/5/2020	pH (field)	SU	7.4
UA	APW08	C	6/11/2020	pH (field)	SU	7.3
UA	APW08	C	7/28/2020	pH (field)	SU	7.3
UA	APW08	C	10/28/2020	pH (field)	SU	7.4
UA	APW08	C	2/10/2021	pH (field)	SU	7.2
UA	APW08	C	11/9/2021	pH (field)	SU	7.4
UA	APW08	C	2/22/2022	pH (field)	SU	7.4
UA	APW08	C	6/14/2022	pH (field)	SU	7.4

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW08	C	8/16/2022	pH (field)	SU	7.1
UA	APW08	C	1/31/2023	pH (field)	SU	7.3
UA	APW08	C	4/26/2023	pH (field)	SU	7.5
UA	APW08	C	7/31/2023	pH (field)	SU	7.1
UA	APW08	C	10/10/2023	pH (field)	SU	7.4
UA	APW08	C	12/15/2015	Oxidation Reduction Potential	mV	38.0
UA	APW08	C	1/21/2016	Oxidation Reduction Potential	mV	-93.0
UA	APW08	C	5/3/2016	Oxidation Reduction Potential	mV	-93.0
UA	APW08	C	8/2/2016	Oxidation Reduction Potential	mV	-87.0
UA	APW08	C	10/26/2016	Oxidation Reduction Potential	mV	-76.0
UA	APW08	C	1/25/2017	Oxidation Reduction Potential	mV	-121
UA	APW08	C	4/25/2017	Oxidation Reduction Potential	mV	-103
UA	APW08	C	6/13/2017	Oxidation Reduction Potential	mV	-108
UA	APW08	C	11/17/2017	Oxidation Reduction Potential	mV	-102
UA	APW08	C	5/18/2018	Oxidation Reduction Potential	mV	-96.0
UA	APW08	C	8/18/2018	Oxidation Reduction Potential	mV	-101
UA	APW08	C	11/9/2018	Oxidation Reduction Potential	mV	-109
UA	APW08	C	2/22/2019	Oxidation Reduction Potential	mV	-99.0
UA	APW08	C	8/23/2019	Oxidation Reduction Potential	mV	-98.0
UA	APW08	C	2/5/2020	Oxidation Reduction Potential	mV	-130
UA	APW08	C	6/11/2020	Oxidation Reduction Potential	mV	-127
UA	APW08	C	7/28/2020	Oxidation Reduction Potential	mV	-101
UA	APW08	C	10/28/2020	Oxidation Reduction Potential	mV	-94.2
UA	APW08	C	2/10/2021	Oxidation Reduction Potential	mV	-103
UA	APW08	C	11/9/2021	Oxidation Reduction Potential	mV	-99.2
UA	APW08	C	2/22/2022	Oxidation Reduction Potential	mV	-93.8
UA	APW08	C	6/14/2022	Oxidation Reduction Potential	mV	-139
UA	APW08	C	8/16/2022	Oxidation Reduction Potential	mV	-125
UA	APW08	C	1/31/2023	Oxidation Reduction Potential	mV	-109
UA	APW08	C	4/26/2023	Oxidation Reduction Potential	mV	-118
UA	APW08	C	7/31/2023	Oxidation Reduction Potential	mV	94.0
UA	APW08	C	10/10/2023	Oxidation Reduction Potential	mV	-64.0
UA	APW08	C	12/15/2015	Eh	V	0.24
UA	APW08	C	1/21/2016	Eh	V	0.11
UA	APW08	C	5/3/2016	Eh	V	0.10
UA	APW08	C	8/2/2016	Eh	V	0.11
UA	APW08	C	10/26/2016	Eh	V	0.12
UA	APW08	C	1/25/2017	Eh	V	0.075
UA	APW08	C	4/25/2017	Eh	V	0.091
UA	APW08	C	6/13/2017	Eh	V	0.086
UA	APW08	C	11/17/2017	Eh	V	0.095
UA	APW08	C	5/18/2018	Eh	V	0.099
UA	APW08	C	8/18/2018	Eh	V	0.094
UA	APW08	C	11/9/2018	Eh	V	0.087
UA	APW08	C	2/22/2019	Eh	V	0.099
UA	APW08	C	8/23/2019	Eh	V	0.096

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW08	C	2/5/2020	Eh	V	0.068
UA	APW08	C	6/11/2020	Eh	V	0.068
UA	APW08	C	7/28/2020	Eh	V	0.093
UA	APW08	C	10/28/2020	Eh	V	0.10
UA	APW08	C	2/10/2021	Eh	V	0.096
UA	APW08	C	11/9/2021	Eh	V	0.096
UA	APW08	C	2/22/2022	Eh	V	0.10
UA	APW08	C	6/14/2022	Eh	V	0.055
UA	APW08	C	8/16/2022	Eh	V	0.068
UA	APW08	C	1/31/2023	Eh	V	0.089
UA	APW08	C	4/26/2023	Eh	V	0.078
UA	APW08	C	7/31/2023	Eh	V	0.29
UA	APW08	C	10/10/2023	Eh	V	0.13
UA	APW08	C	6/13/2017	Alkalinity, bicarbonate	mg/L CaCO3	520
UA	APW08	C	8/18/2018	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW08	C	2/5/2020	Alkalinity, bicarbonate	mg/L CaCO3	490
UA	APW08	C	7/28/2020	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW08	C	2/10/2021	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW08	C	11/9/2021	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW08	C	2/22/2022	Alkalinity, bicarbonate	mg/L CaCO3	480
UA	APW08	C	6/14/2022	Alkalinity, bicarbonate	mg/L CaCO3	450
UA	APW08	C	8/16/2022	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW08	C	1/31/2023	Alkalinity, bicarbonate	mg/L CaCO3	340
UA	APW08	C	4/26/2023	Alkalinity, bicarbonate	mg/L CaCO3	410
UA	APW08	C	7/31/2023	Alkalinity, bicarbonate	mg/L CaCO3	505
UA	APW08	C	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	532
UA	APW08	C	6/13/2017	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW08	C	8/18/2018	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW08	C	2/5/2020	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW08	C	7/28/2020	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW08	C	2/10/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW08	C	11/9/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW08	C	2/22/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW08	C	6/14/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW08	C	8/16/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW08	C	1/31/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW08	C	4/26/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW08	C	7/31/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW08	C	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW08	C	12/15/2015	Barium, total	mg/L	0.240
UA	APW08	C	1/21/2016	Barium, total	mg/L	0.300
UA	APW08	C	5/3/2016	Barium, total	mg/L	0.320
UA	APW08	C	8/2/2016	Barium, total	mg/L	0.320
UA	APW08	C	10/26/2016	Barium, total	mg/L	0.350
UA	APW08	C	1/25/2017	Barium, total	mg/L	0.370
UA	APW08	C	4/25/2017	Barium, total	mg/L	0.360

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW08	C	6/13/2017	Barium, total	mg/L	0.390
UA	APW08	C	6/14/2022	Barium, total	mg/L	0.460
UA	APW08	C	8/16/2022	Barium, total	mg/L	0.490
UA	APW08	C	1/31/2023	Barium, total	mg/L	0.500
UA	APW08	C	4/26/2023	Barium, total	mg/L	0.470
UA	APW08	C	7/31/2023	Barium, total	mg/L	0.651
UA	APW08	C	10/10/2023	Barium, total	mg/L	0.777
UA	APW08	C	12/15/2015	Calcium, total	mg/L	85.0
UA	APW08	C	1/21/2016	Calcium, total	mg/L	85.0
UA	APW08	C	5/3/2016	Calcium, total	mg/L	100
UA	APW08	C	8/2/2016	Calcium, total	mg/L	94.0
UA	APW08	C	10/26/2016	Calcium, total	mg/L	84.0
UA	APW08	C	1/25/2017	Calcium, total	mg/L	100
UA	APW08	C	4/25/2017	Calcium, total	mg/L	100
UA	APW08	C	6/13/2017	Calcium, total	mg/L	110
UA	APW08	C	11/17/2017	Calcium, total	mg/L	83.0
UA	APW08	C	5/18/2018	Calcium, total	mg/L	92.0
UA	APW08	C	8/18/2018	Calcium, total	mg/L	82.0
UA	APW08	C	11/9/2018	Calcium, total	mg/L	110
UA	APW08	C	2/22/2019	Calcium, total	mg/L	80.0
UA	APW08	C	8/23/2019	Calcium, total	mg/L	82.0
UA	APW08	C	2/5/2020	Calcium, total	mg/L	120
UA	APW08	C	7/28/2020	Calcium, total	mg/L	110
UA	APW08	C	2/10/2021	Calcium, total	mg/L	110
UA	APW08	C	11/9/2021	Calcium, total	mg/L	100
UA	APW08	C	2/22/2022	Calcium, total	mg/L	110
UA	APW08	C	6/14/2022	Calcium, total	mg/L	110
UA	APW08	C	8/16/2022	Calcium, total	mg/L	100
UA	APW08	C	1/31/2023	Calcium, total	mg/L	110
UA	APW08	C	4/26/2023	Calcium, total	mg/L	110
UA	APW08	C	7/31/2023	Calcium, total	mg/L	102
UA	APW08	C	10/10/2023	Calcium, total	mg/L	103
UA	APW08	C	12/15/2015	Chloride, total	mg/L	52.0
UA	APW08	C	1/21/2016	Chloride, total	mg/L	59.0
UA	APW08	C	5/3/2016	Chloride, total	mg/L	55.0
UA	APW08	C	8/2/2016	Chloride, total	mg/L	56.0
UA	APW08	C	10/26/2016	Chloride, total	mg/L	59.0
UA	APW08	C	1/25/2017	Chloride, total	mg/L	57.0
UA	APW08	C	4/25/2017	Chloride, total	mg/L	57.0
UA	APW08	C	6/13/2017	Chloride, total	mg/L	57.0
UA	APW08	C	11/17/2017	Chloride, total	mg/L	50.0
UA	APW08	C	5/18/2018	Chloride, total	mg/L	56.0
UA	APW08	C	8/18/2018	Chloride, total	mg/L	57.0
UA	APW08	C	11/9/2018	Chloride, total	mg/L	56.0
UA	APW08	C	2/22/2019	Chloride, total	mg/L	56.0
UA	APW08	C	8/23/2019	Chloride, total	mg/L	59.0

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW08	C	2/5/2020	Chloride, total	mg/L	55.0
UA	APW08	C	7/28/2020	Chloride, total	mg/L	62.0
UA	APW08	C	10/28/2020	Chloride, total	mg/L	55.0
UA	APW08	C	2/10/2021	Chloride, total	mg/L	57.0
UA	APW08	C	11/9/2021	Chloride, total	mg/L	52.0
UA	APW08	C	2/22/2022	Chloride, total	mg/L	54.0
UA	APW08	C	6/14/2022	Chloride, total	mg/L	54.0
UA	APW08	C	8/16/2022	Chloride, total	mg/L	56.0
UA	APW08	C	1/31/2023	Chloride, total	mg/L	55.0
UA	APW08	C	4/26/2023	Chloride, total	mg/L	58.0
UA	APW08	C	7/31/2023	Chloride, total	mg/L	56.0
UA	APW08	C	10/10/2023	Chloride, total	mg/L	60.0
UA	APW08	C	4/26/2023	Ferrous Iron, dissolved	mg/L	2.60
UA	APW08	C	7/31/2023	Ferrous Iron, dissolved	mg/L	5.76
UA	APW08	C	4/26/2023	Iron, dissolved	mg/L	2.20
UA	APW08	C	7/31/2023	Iron, dissolved	mg/L	3.24
UA	APW08	C	12/15/2015	Lithium, total	mg/L	0.0130
UA	APW08	C	1/21/2016	Lithium, total	mg/L	0.0120
UA	APW08	C	5/3/2016	Lithium, total	mg/L	<0.0001
UA	APW08	C	8/2/2016	Lithium, total	mg/L	<0.0001
UA	APW08	C	10/26/2016	Lithium, total	mg/L	<0.0001
UA	APW08	C	1/25/2017	Lithium, total	mg/L	<0.0001
UA	APW08	C	4/25/2017	Lithium, total	mg/L	0.0170
UA	APW08	C	6/13/2017	Lithium, total	mg/L	0.0120
UA	APW08	C	6/14/2022	Lithium, total	mg/L	<0.005
UA	APW08	C	8/16/2022	Lithium, total	mg/L	<0.005
UA	APW08	C	1/31/2023	Lithium, total	mg/L	<0.005
UA	APW08	C	4/26/2023	Lithium, total	mg/L	0.00570
UA	APW08	C	7/31/2023	Lithium, total	mg/L	0.00270
UA	APW08	C	10/10/2023	Lithium, total	mg/L	0.00220
UA	APW08	C	6/13/2017	Magnesium, total	mg/L	47.0
UA	APW08	C	8/18/2018	Magnesium, total	mg/L	43.0
UA	APW08	C	2/5/2020	Magnesium, total	mg/L	52.0
UA	APW08	C	7/28/2020	Magnesium, total	mg/L	46.0
UA	APW08	C	2/10/2021	Magnesium, total	mg/L	45.0
UA	APW08	C	11/9/2021	Magnesium, total	mg/L	42.0
UA	APW08	C	2/22/2022	Magnesium, total	mg/L	45.0
UA	APW08	C	6/14/2022	Magnesium, total	mg/L	44.0
UA	APW08	C	8/16/2022	Magnesium, total	mg/L	44.0
UA	APW08	C	1/31/2023	Magnesium, total	mg/L	45.0
UA	APW08	C	4/26/2023	Magnesium, total	mg/L	45.0
UA	APW08	C	7/31/2023	Magnesium, total	mg/L	42.9
UA	APW08	C	10/10/2023	Magnesium, total	mg/L	41.1
UA	APW08	C	4/26/2023	Manganese, dissolved	mg/L	0.0610
UA	APW08	C	7/31/2023	Manganese, dissolved	mg/L	0.0585
UA	APW08	C	7/31/2023	Phosphate, dissolved	mg/L	1.24

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW08	C	6/13/2017	Potassium, total	mg/L	3.50
UA	APW08	C	8/18/2018	Potassium, total	mg/L	2.70
UA	APW08	C	2/5/2020	Potassium, total	mg/L	2.60
UA	APW08	C	7/28/2020	Potassium, total	mg/L	1.80
UA	APW08	C	2/10/2021	Potassium, total	mg/L	2.10
UA	APW08	C	11/9/2021	Potassium, total	mg/L	1.60
UA	APW08	C	2/22/2022	Potassium, total	mg/L	1.90
UA	APW08	C	6/14/2022	Potassium, total	mg/L	2.00
UA	APW08	C	8/16/2022	Potassium, total	mg/L	1.90
UA	APW08	C	1/31/2023	Potassium, total	mg/L	2.00
UA	APW08	C	4/26/2023	Potassium, total	mg/L	2.00
UA	APW08	C	7/31/2023	Potassium, total	mg/L	1.99
UA	APW08	C	10/10/2023	Potassium, total	mg/L	1.89
UA	APW08	C	4/26/2023	Silicon, dissolved	mg/L	8.30
UA	APW08	C	7/31/2023	Silicon, dissolved	mg/L	6.06
UA	APW08	C	6/13/2017	Sodium, total	mg/L	86.0
UA	APW08	C	8/18/2018	Sodium, total	mg/L	85.0
UA	APW08	C	2/5/2020	Sodium, total	mg/L	92.0
UA	APW08	C	7/28/2020	Sodium, total	mg/L	91.0
UA	APW08	C	2/10/2021	Sodium, total	mg/L	86.0
UA	APW08	C	11/9/2021	Sodium, total	mg/L	86.0
UA	APW08	C	2/22/2022	Sodium, total	mg/L	93.0
UA	APW08	C	6/14/2022	Sodium, total	mg/L	79.0
UA	APW08	C	8/16/2022	Sodium, total	mg/L	93.0
UA	APW08	C	1/31/2023	Sodium, total	mg/L	91.0
UA	APW08	C	4/26/2023	Sodium, total	mg/L	91.0
UA	APW08	C	7/31/2023	Sodium, total	mg/L	85.2
UA	APW08	C	10/10/2023	Sodium, total	mg/L	87.4
UA	APW08	C	12/15/2015	Sulfate, total	mg/L	35.0
UA	APW08	C	1/21/2016	Sulfate, total	mg/L	34.0
UA	APW08	C	5/3/2016	Sulfate, total	mg/L	30.0
UA	APW08	C	8/2/2016	Sulfate, total	mg/L	35.0
UA	APW08	C	10/26/2016	Sulfate, total	mg/L	37.0
UA	APW08	C	1/25/2017	Sulfate, total	mg/L	36.0
UA	APW08	C	4/25/2017	Sulfate, total	mg/L	38.0
UA	APW08	C	6/13/2017	Sulfate, total	mg/L	38.0
UA	APW08	C	11/17/2017	Sulfate, total	mg/L	39.0
UA	APW08	C	5/18/2018	Sulfate, total	mg/L	37.0
UA	APW08	C	8/18/2018	Sulfate, total	mg/L	43.0
UA	APW08	C	11/9/2018	Sulfate, total	mg/L	42.0
UA	APW08	C	2/22/2019	Sulfate, total	mg/L	46.0
UA	APW08	C	8/23/2019	Sulfate, total	mg/L	48.0
UA	APW08	C	2/5/2020	Sulfate, total	mg/L	45.0
UA	APW08	C	7/28/2020	Sulfate, total	mg/L	47.0
UA	APW08	C	2/10/2021	Sulfate, total	mg/L	42.0
UA	APW08	C	11/9/2021	Sulfate, total	mg/L	42.0

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW08	C	2/22/2022	Sulfate, total	mg/L	49.0
UA	APW08	C	6/14/2022	Sulfate, total	mg/L	42.0
UA	APW08	C	8/16/2022	Sulfate, total	mg/L	44.0
UA	APW08	C	1/31/2023	Sulfate, total	mg/L	44.0
UA	APW08	C	4/26/2023	Sulfate, total	mg/L	48.0
UA	APW08	C	7/31/2023	Sulfate, total	mg/L	53.0
UA	APW08	C	10/10/2023	Sulfate, total	mg/L	57.0
UA	APW08	C	12/15/2015	Total Dissolved Solids	mg/L	560
UA	APW08	C	1/21/2016	Total Dissolved Solids	mg/L	510
UA	APW08	C	5/3/2016	Total Dissolved Solids	mg/L	560
UA	APW08	C	8/2/2016	Total Dissolved Solids	mg/L	520
UA	APW08	C	10/26/2016	Total Dissolved Solids	mg/L	600
UA	APW08	C	1/25/2017	Total Dissolved Solids	mg/L	600
UA	APW08	C	4/25/2017	Total Dissolved Solids	mg/L	590
UA	APW08	C	6/13/2017	Total Dissolved Solids	mg/L	600
UA	APW08	C	11/17/2017	Total Dissolved Solids	mg/L	490
UA	APW08	C	5/18/2018	Total Dissolved Solids	mg/L	520
UA	APW08	C	11/9/2018	Total Dissolved Solids	mg/L	580
UA	APW08	C	2/22/2019	Total Dissolved Solids	mg/L	600
UA	APW08	C	8/23/2019	Total Dissolved Solids	mg/L	570
UA	APW08	C	2/5/2020	Total Dissolved Solids	mg/L	700
UA	APW08	C	7/28/2020	Total Dissolved Solids	mg/L	620
UA	APW08	C	2/10/2021	Total Dissolved Solids	mg/L	550
UA	APW08	C	11/9/2021	Total Dissolved Solids	mg/L	620
UA	APW08	C	2/22/2022	Total Dissolved Solids	mg/L	660
UA	APW08	C	6/14/2022	Total Dissolved Solids	mg/L	620
UA	APW08	C	8/16/2022	Total Dissolved Solids	mg/L	670
UA	APW08	C	1/31/2023	Total Dissolved Solids	mg/L	600
UA	APW08	C	4/26/2023	Total Dissolved Solids	mg/L	640
UA	APW08	C	7/31/2023	Total Dissolved Solids	mg/L	600
UA	APW08	C	10/10/2023	Total Dissolved Solids	mg/L	615
UA	APW09	C	12/15/2015	pH (field)	SU	7.5
UA	APW09	C	1/20/2016	pH (field)	SU	7.6
UA	APW09	C	5/3/2016	pH (field)	SU	7.6
UA	APW09	C	8/2/2016	pH (field)	SU	7.2
UA	APW09	C	10/26/2016	pH (field)	SU	7.6
UA	APW09	C	1/25/2017	pH (field)	SU	7.5
UA	APW09	C	4/25/2017	pH (field)	SU	7.5
UA	APW09	C	6/13/2017	pH (field)	SU	7.5
UA	APW09	C	11/18/2017	pH (field)	SU	7.4
UA	APW09	C	5/18/2018	pH (field)	SU	7.4
UA	APW09	C	8/17/2018	pH (field)	SU	7.5
UA	APW09	C	11/9/2018	pH (field)	SU	7.4
UA	APW09	C	2/22/2019	pH (field)	SU	7.5
UA	APW09	C	8/23/2019	pH (field)	SU	7.4
UA	APW09	C	2/19/2020	pH (field)	SU	7.5

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW09	C	6/11/2020	pH (field)	SU	7.4
UA	APW09	C	7/28/2020	pH (field)	SU	7.4
UA	APW09	C	2/11/2021	pH (field)	SU	7.4
UA	APW09	C	11/9/2021	pH (field)	SU	6.7
UA	APW09	C	2/22/2022	pH (field)	SU	7.7
UA	APW09	C	6/15/2022	pH (field)	SU	7.6
UA	APW09	C	8/17/2022	pH (field)	SU	7.2
UA	APW09	C	1/31/2023	pH (field)	SU	7.6
UA	APW09	C	4/27/2023	pH (field)	SU	7.5
UA	APW09	C	7/31/2023	pH (field)	SU	7.2
UA	APW09	C	10/10/2023	pH (field)	SU	7.6
UA	APW09	C	12/15/2015	Oxidation Reduction Potential	mV	11.0
UA	APW09	C	1/20/2016	Oxidation Reduction Potential	mV	72.0
UA	APW09	C	5/3/2016	Oxidation Reduction Potential	mV	56.0
UA	APW09	C	8/2/2016	Oxidation Reduction Potential	mV	-106
UA	APW09	C	10/26/2016	Oxidation Reduction Potential	mV	-77.0
UA	APW09	C	1/25/2017	Oxidation Reduction Potential	mV	-140
UA	APW09	C	4/25/2017	Oxidation Reduction Potential	mV	-74.0
UA	APW09	C	6/13/2017	Oxidation Reduction Potential	mV	-67.0
UA	APW09	C	11/18/2017	Oxidation Reduction Potential	mV	-78.0
UA	APW09	C	5/18/2018	Oxidation Reduction Potential	mV	-71.0
UA	APW09	C	8/17/2018	Oxidation Reduction Potential	mV	-69.0
UA	APW09	C	11/9/2018	Oxidation Reduction Potential	mV	-72.0
UA	APW09	C	2/22/2019	Oxidation Reduction Potential	mV	-65.0
UA	APW09	C	8/23/2019	Oxidation Reduction Potential	mV	-60.0
UA	APW09	C	2/19/2020	Oxidation Reduction Potential	mV	-151
UA	APW09	C	6/11/2020	Oxidation Reduction Potential	mV	-152
UA	APW09	C	7/28/2020	Oxidation Reduction Potential	mV	-136
UA	APW09	C	2/11/2021	Oxidation Reduction Potential	mV	-28.1
UA	APW09	C	11/9/2021	Oxidation Reduction Potential	mV	52.1
UA	APW09	C	2/22/2022	Oxidation Reduction Potential	mV	103
UA	APW09	C	6/15/2022	Oxidation Reduction Potential	mV	-161
UA	APW09	C	8/17/2022	Oxidation Reduction Potential	mV	-88.9
UA	APW09	C	1/31/2023	Oxidation Reduction Potential	mV	-113
UA	APW09	C	4/27/2023	Oxidation Reduction Potential	mV	-137
UA	APW09	C	7/31/2023	Oxidation Reduction Potential	mV	91.0
UA	APW09	C	10/10/2023	Oxidation Reduction Potential	mV	-46.0
UA	APW09	C	12/15/2015	Eh	V	0.21
UA	APW09	C	1/20/2016	Eh	V	0.27
UA	APW09	C	5/3/2016	Eh	V	0.25
UA	APW09	C	8/2/2016	Eh	V	0.088
UA	APW09	C	10/26/2016	Eh	V	0.12
UA	APW09	C	1/25/2017	Eh	V	0.056
UA	APW09	C	4/25/2017	Eh	V	0.12
UA	APW09	C	6/13/2017	Eh	V	0.13
UA	APW09	C	11/18/2017	Eh	V	0.12

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW09	C	5/18/2018	Eh	V	0.12
UA	APW09	C	8/17/2018	Eh	V	0.13
UA	APW09	C	11/9/2018	Eh	V	0.12
UA	APW09	C	2/22/2019	Eh	V	0.13
UA	APW09	C	8/23/2019	Eh	V	0.13
UA	APW09	C	2/19/2020	Eh	V	0.046
UA	APW09	C	6/11/2020	Eh	V	0.043
UA	APW09	C	7/28/2020	Eh	V	0.057
UA	APW09	C	2/11/2021	Eh	V	0.17
UA	APW09	C	11/9/2021	Eh	V	0.25
UA	APW09	C	2/22/2022	Eh	V	0.30
UA	APW09	C	6/15/2022	Eh	V	0.032
UA	APW09	C	8/17/2022	Eh	V	0.10
UA	APW09	C	1/31/2023	Eh	V	0.086
UA	APW09	C	4/27/2023	Eh	V	0.057
UA	APW09	C	7/31/2023	Eh	V	0.28
UA	APW09	C	10/10/2023	Eh	V	0.15
UA	APW09	C	6/13/2017	Alkalinity, bicarbonate	mg/L CaCO3	240
UA	APW09	C	8/17/2018	Alkalinity, bicarbonate	mg/L CaCO3	570
UA	APW09	C	2/19/2020	Alkalinity, bicarbonate	mg/L CaCO3	600
UA	APW09	C	7/28/2020	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW09	C	2/11/2021	Alkalinity, bicarbonate	mg/L CaCO3	600
UA	APW09	C	11/9/2021	Alkalinity, bicarbonate	mg/L CaCO3	590
UA	APW09	C	2/22/2022	Alkalinity, bicarbonate	mg/L CaCO3	520
UA	APW09	C	6/15/2022	Alkalinity, bicarbonate	mg/L CaCO3	580
UA	APW09	C	8/17/2022	Alkalinity, bicarbonate	mg/L CaCO3	600
UA	APW09	C	1/31/2023	Alkalinity, bicarbonate	mg/L CaCO3	410
UA	APW09	C	4/27/2023	Alkalinity, bicarbonate	mg/L CaCO3	600
UA	APW09	C	7/31/2023	Alkalinity, bicarbonate	mg/L CaCO3	617
UA	APW09	C	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	482
UA	APW09	C	6/13/2017	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW09	C	8/17/2018	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW09	C	2/19/2020	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW09	C	7/28/2020	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW09	C	2/11/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW09	C	11/9/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW09	C	2/22/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW09	C	6/15/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW09	C	8/17/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW09	C	1/31/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW09	C	4/27/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW09	C	7/31/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW09	C	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW09	C	12/15/2015	Barium, total	mg/L	0.240
UA	APW09	C	1/20/2016	Barium, total	mg/L	0.240
UA	APW09	C	5/3/2016	Barium, total	mg/L	0.320

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW09	C	8/2/2016	Barium, total	mg/L	0.410
UA	APW09	C	10/26/2016	Barium, total	mg/L	0.470
UA	APW09	C	1/25/2017	Barium, total	mg/L	0.440
UA	APW09	C	4/25/2017	Barium, total	mg/L	0.380
UA	APW09	C	6/13/2017	Barium, total	mg/L	0.110
UA	APW09	C	6/15/2022	Barium, total	mg/L	0.470
UA	APW09	C	8/17/2022	Barium, total	mg/L	0.440
UA	APW09	C	1/31/2023	Barium, total	mg/L	0.470
UA	APW09	C	4/27/2023	Barium, total	mg/L	0.430
UA	APW09	C	7/31/2023	Barium, total	mg/L	0.564
UA	APW09	C	10/10/2023	Barium, total	mg/L	0.406
UA	APW09	C	12/15/2015	Calcium, total	mg/L	54.0
UA	APW09	C	1/20/2016	Calcium, total	mg/L	57.0
UA	APW09	C	5/3/2016	Calcium, total	mg/L	70.0
UA	APW09	C	8/2/2016	Calcium, total	mg/L	74.0
UA	APW09	C	10/26/2016	Calcium, total	mg/L	77.0
UA	APW09	C	1/25/2017	Calcium, total	mg/L	79.0
UA	APW09	C	4/25/2017	Calcium, total	mg/L	67.0
UA	APW09	C	6/13/2017	Calcium, total	mg/L	42.0
UA	APW09	C	11/18/2017	Calcium, total	mg/L	68.0
UA	APW09	C	5/18/2018	Calcium, total	mg/L	80.0
UA	APW09	C	8/17/2018	Calcium, total	mg/L	81.0
UA	APW09	C	11/9/2018	Calcium, total	mg/L	44.0
UA	APW09	C	2/22/2019	Calcium, total	mg/L	38.0
UA	APW09	C	8/23/2019	Calcium, total	mg/L	41.0
UA	APW09	C	2/19/2020	Calcium, total	mg/L	88.0
UA	APW09	C	7/28/2020	Calcium, total	mg/L	84.0
UA	APW09	C	2/11/2021	Calcium, total	mg/L	85.0
UA	APW09	C	11/9/2021	Calcium, total	mg/L	730
UA	APW09	C	2/22/2022	Calcium, total	mg/L	82.0
UA	APW09	C	6/15/2022	Calcium, total	mg/L	82.0
UA	APW09	C	8/17/2022	Calcium, total	mg/L	87.0
UA	APW09	C	1/31/2023	Calcium, total	mg/L	94.0
UA	APW09	C	4/27/2023	Calcium, total	mg/L	76.0
UA	APW09	C	7/31/2023	Calcium, total	mg/L	78.4
UA	APW09	C	10/10/2023	Calcium, total	mg/L	69.2
UA	APW09	C	12/15/2015	Chloride, total	mg/L	88.0
UA	APW09	C	1/20/2016	Chloride, total	mg/L	95.0
UA	APW09	C	5/3/2016	Chloride, total	mg/L	110
UA	APW09	C	8/2/2016	Chloride, total	mg/L	130
UA	APW09	C	10/26/2016	Chloride, total	mg/L	130
UA	APW09	C	1/25/2017	Chloride, total	mg/L	130
UA	APW09	C	4/25/2017	Chloride, total	mg/L	120
UA	APW09	C	6/13/2017	Chloride, total	mg/L	51.0
UA	APW09	C	11/18/2017	Chloride, total	mg/L	84.0
UA	APW09	C	5/18/2018	Chloride, total	mg/L	120

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW09	C	8/17/2018	Chloride, total	mg/L	130
UA	APW09	C	11/9/2018	Chloride, total	mg/L	44.0
UA	APW09	C	2/22/2019	Chloride, total	mg/L	47.0
UA	APW09	C	8/23/2019	Chloride, total	mg/L	51.0
UA	APW09	C	2/19/2020	Chloride, total	mg/L	130
UA	APW09	C	6/11/2020	Chloride, total	mg/L	130
UA	APW09	C	7/28/2020	Chloride, total	mg/L	140
UA	APW09	C	2/11/2021	Chloride, total	mg/L	140
UA	APW09	C	11/9/2021	Chloride, total	mg/L	110
UA	APW09	C	2/22/2022	Chloride, total	mg/L	140
UA	APW09	C	6/15/2022	Chloride, total	mg/L	130
UA	APW09	C	8/17/2022	Chloride, total	mg/L	140
UA	APW09	C	1/31/2023	Chloride, total	mg/L	130
UA	APW09	C	4/27/2023	Chloride, total	mg/L	130
UA	APW09	C	7/31/2023	Chloride, total	mg/L	134
UA	APW09	C	10/10/2023	Chloride, total	mg/L	94.0
UA	APW09	C	4/27/2023	Ferrous Iron, dissolved	mg/L	2.30
UA	APW09	C	7/31/2023	Ferrous Iron, dissolved	mg/L	6.37
UA	APW09	C	4/27/2023	Iron, dissolved	mg/L	2.50
UA	APW09	C	7/31/2023	Iron, dissolved	mg/L	3.20
UA	APW09	C	12/15/2015	Lithium, total	mg/L	<0.0001
UA	APW09	C	1/20/2016	Lithium, total	mg/L	<0.0001
UA	APW09	C	5/3/2016	Lithium, total	mg/L	<0.0001
UA	APW09	C	8/2/2016	Lithium, total	mg/L	<0.0001
UA	APW09	C	10/26/2016	Lithium, total	mg/L	<0.0001
UA	APW09	C	1/25/2017	Lithium, total	mg/L	<0.0001
UA	APW09	C	4/25/2017	Lithium, total	mg/L	<0.0001
UA	APW09	C	6/13/2017	Lithium, total	mg/L	<0.0001
UA	APW09	C	6/15/2022	Lithium, total	mg/L	<0.005
UA	APW09	C	8/17/2022	Lithium, total	mg/L	0.0100
UA	APW09	C	1/31/2023	Lithium, total	mg/L	0.00800
UA	APW09	C	4/27/2023	Lithium, total	mg/L	0.00720
UA	APW09	C	7/31/2023	Lithium, total	mg/L	0.00750
UA	APW09	C	10/10/2023	Lithium, total	mg/L	0.00660
UA	APW09	C	6/13/2017	Magnesium, total	mg/L	22.0
UA	APW09	C	8/17/2018	Magnesium, total	mg/L	38.0
UA	APW09	C	2/19/2020	Magnesium, total	mg/L	43.0
UA	APW09	C	7/28/2020	Magnesium, total	mg/L	42.0
UA	APW09	C	2/11/2021	Magnesium, total	mg/L	42.0
UA	APW09	C	11/9/2021	Magnesium, total	mg/L	180
UA	APW09	C	2/22/2022	Magnesium, total	mg/L	42.0
UA	APW09	C	6/15/2022	Magnesium, total	mg/L	41.0
UA	APW09	C	8/17/2022	Magnesium, total	mg/L	40.0
UA	APW09	C	1/31/2023	Magnesium, total	mg/L	44.0
UA	APW09	C	4/27/2023	Magnesium, total	mg/L	38.0
UA	APW09	C	7/31/2023	Magnesium, total	mg/L	39.3

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW09	C	10/10/2023	Magnesium, total	mg/L	32.7
UA	APW09	C	4/27/2023	Manganese, dissolved	mg/L	0.0260
UA	APW09	C	7/31/2023	Manganese, dissolved	mg/L	0.0294
UA	APW09	C	7/31/2023	Phosphate, dissolved	mg/L	2.27
UA	APW09	C	6/13/2017	Potassium, total	mg/L	3.20
UA	APW09	C	8/17/2018	Potassium, total	mg/L	1.90
UA	APW09	C	2/19/2020	Potassium, total	mg/L	2.10
UA	APW09	C	7/28/2020	Potassium, total	mg/L	1.70
UA	APW09	C	2/11/2021	Potassium, total	mg/L	1.90
UA	APW09	C	11/9/2021	Potassium, total	mg/L	7.10
UA	APW09	C	2/22/2022	Potassium, total	mg/L	1.80
UA	APW09	C	6/15/2022	Potassium, total	mg/L	1.80
UA	APW09	C	8/17/2022	Potassium, total	mg/L	1.90
UA	APW09	C	1/31/2023	Potassium, total	mg/L	2.20
UA	APW09	C	4/27/2023	Potassium, total	mg/L	1.70
UA	APW09	C	7/31/2023	Potassium, total	mg/L	1.83
UA	APW09	C	10/10/2023	Potassium, total	mg/L	3.43
UA	APW09	C	4/27/2023	Silicon, dissolved	mg/L	8.00
UA	APW09	C	7/31/2023	Silicon, dissolved	mg/L	5.95
UA	APW09	C	6/13/2017	Sodium, total	mg/L	70.0
UA	APW09	C	8/17/2018	Sodium, total	mg/L	180
UA	APW09	C	2/19/2020	Sodium, total	mg/L	210
UA	APW09	C	7/28/2020	Sodium, total	mg/L	190
UA	APW09	C	2/11/2021	Sodium, total	mg/L	200
UA	APW09	C	11/9/2021	Sodium, total	mg/L	180
UA	APW09	C	2/22/2022	Sodium, total	mg/L	200
UA	APW09	C	6/15/2022	Sodium, total	mg/L	180
UA	APW09	C	8/17/2022	Sodium, total	mg/L	190
UA	APW09	C	1/31/2023	Sodium, total	mg/L	200
UA	APW09	C	4/27/2023	Sodium, total	mg/L	190
UA	APW09	C	7/31/2023	Sodium, total	mg/L	191
UA	APW09	C	10/10/2023	Sodium, total	mg/L	151
UA	APW09	C	12/15/2015	Sulfate, total	mg/L	25.0
UA	APW09	C	1/20/2016	Sulfate, total	mg/L	27.0
UA	APW09	C	5/3/2016	Sulfate, total	mg/L	18.0
UA	APW09	C	8/2/2016	Sulfate, total	mg/L	4.20
UA	APW09	C	10/26/2016	Sulfate, total	mg/L	1.50
UA	APW09	C	1/25/2017	Sulfate, total	mg/L	<0.12
UA	APW09	C	4/25/2017	Sulfate, total	mg/L	1.10
UA	APW09	C	6/13/2017	Sulfate, total	mg/L	48.0
UA	APW09	C	11/18/2017	Sulfate, total	mg/L	4.50
UA	APW09	C	5/18/2018	Sulfate, total	mg/L	1.00
UA	APW09	C	8/17/2018	Sulfate, total	mg/L	2.40
UA	APW09	C	11/9/2018	Sulfate, total	mg/L	62.0
UA	APW09	C	2/22/2019	Sulfate, total	mg/L	61.0
UA	APW09	C	8/23/2019	Sulfate, total	mg/L	51.0

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW09	C	2/19/2020	Sulfate, total	mg/L	7.50
UA	APW09	C	7/28/2020	Sulfate, total	mg/L	3.20
UA	APW09	C	2/11/2021	Sulfate, total	mg/L	<1.8
UA	APW09	C	11/9/2021	Sulfate, total	mg/L	1,500
UA	APW09	C	2/22/2022	Sulfate, total	mg/L	8.40
UA	APW09	C	6/15/2022	Sulfate, total	mg/L	15.0
UA	APW09	C	8/17/2022	Sulfate, total	mg/L	9.70
UA	APW09	C	1/31/2023	Sulfate, total	mg/L	11.0
UA	APW09	C	4/27/2023	Sulfate, total	mg/L	9.40
UA	APW09	C	7/31/2023	Sulfate, total	mg/L	19.0
UA	APW09	C	10/10/2023	Sulfate, total	mg/L	32.0
UA	APW09	C	12/15/2015	Total Dissolved Solids	mg/L	630
UA	APW09	C	1/20/2016	Total Dissolved Solids	mg/L	540
UA	APW09	C	5/3/2016	Total Dissolved Solids	mg/L	590
UA	APW09	C	8/2/2016	Total Dissolved Solids	mg/L	640
UA	APW09	C	10/26/2016	Total Dissolved Solids	mg/L	770
UA	APW09	C	1/25/2017	Total Dissolved Solids	mg/L	740
UA	APW09	C	4/25/2017	Total Dissolved Solids	mg/L	840
UA	APW09	C	6/13/2017	Total Dissolved Solids	mg/L	300
UA	APW09	C	11/18/2017	Total Dissolved Solids	mg/L	720
UA	APW09	C	5/18/2018	Total Dissolved Solids	mg/L	710
UA	APW09	C	11/9/2018	Total Dissolved Solids	mg/L	300
UA	APW09	C	2/22/2019	Total Dissolved Solids	mg/L	320
UA	APW09	C	8/23/2019	Total Dissolved Solids	mg/L	360
UA	APW09	C	2/19/2020	Total Dissolved Solids	mg/L	790
UA	APW09	C	6/11/2020	Total Dissolved Solids	mg/L	870
UA	APW09	C	7/28/2020	Total Dissolved Solids	mg/L	810
UA	APW09	C	2/11/2021	Total Dissolved Solids	mg/L	840
UA	APW09	C	11/9/2021	Total Dissolved Solids	mg/L	3,200
UA	APW09	C	2/22/2022	Total Dissolved Solids	mg/L	820
UA	APW09	C	6/15/2022	Total Dissolved Solids	mg/L	800
UA	APW09	C	8/17/2022	Total Dissolved Solids	mg/L	860
UA	APW09	C	1/31/2023	Total Dissolved Solids	mg/L	760
UA	APW09	C	4/27/2023	Total Dissolved Solids	mg/L	840
UA	APW09	C	7/31/2023	Total Dissolved Solids	mg/L	805
UA	APW09	C	10/10/2023	Total Dissolved Solids	mg/L	760
UA	APW10	C	12/16/2015	pH (field)	SU	7.1
UA	APW10	C	1/20/2016	pH (field)	SU	7.2
UA	APW10	C	5/3/2016	pH (field)	SU	7.1
UA	APW10	C	8/2/2016	pH (field)	SU	7.1
UA	APW10	C	10/26/2016	pH (field)	SU	7.1
UA	APW10	C	1/25/2017	pH (field)	SU	7.1
UA	APW10	C	4/25/2017	pH (field)	SU	7.0
UA	APW10	C	6/13/2017	pH (field)	SU	6.9
UA	APW10	C	11/18/2017	pH (field)	SU	6.9
UA	APW10	C	5/18/2018	pH (field)	SU	7.2

Attachment 8. Aqueous Data
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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW10	C	8/17/2018	pH (field)	SU	6.9
UA	APW10	C	11/9/2018	pH (field)	SU	7.0
UA	APW10	C	2/22/2019	pH (field)	SU	6.9
UA	APW10	C	8/23/2019	pH (field)	SU	7.0
UA	APW10	C	2/5/2020	pH (field)	SU	7.1
UA	APW10	C	6/11/2020	pH (field)	SU	7.2
UA	APW10	C	7/28/2020	pH (field)	SU	7.1
UA	APW10	C	2/11/2021	pH (field)	SU	7.4
UA	APW10	C	6/17/2021	pH (field)	SU	7.3
UA	APW10	C	6/30/2021	pH (field)	SU	7.5
UA	APW10	C	7/29/2021	pH (field)	SU	7.5
UA	APW10	C	11/9/2021	pH (field)	SU	7.4
UA	APW10	C	2/22/2022	pH (field)	SU	7.3
UA	APW10	C	6/15/2022	pH (field)	SU	7.1
UA	APW10	C	8/17/2022	pH (field)	SU	7.2
UA	APW10	C	1/31/2023	pH (field)	SU	7.4
UA	APW10	C	4/27/2023	pH (field)	SU	7.4
UA	APW10	C	7/31/2023	pH (field)	SU	7.1
UA	APW10	C	10/10/2023	pH (field)	SU	7.3
UA	APW10	C	12/16/2015	Oxidation Reduction Potential	mV	-29.0
UA	APW10	C	1/20/2016	Oxidation Reduction Potential	mV	-21.0
UA	APW10	C	5/3/2016	Oxidation Reduction Potential	mV	-19.0
UA	APW10	C	8/2/2016	Oxidation Reduction Potential	mV	-18.0
UA	APW10	C	10/26/2016	Oxidation Reduction Potential	mV	38.0
UA	APW10	C	1/25/2017	Oxidation Reduction Potential	mV	-73.0
UA	APW10	C	6/13/2017	Oxidation Reduction Potential	mV	12.0
UA	APW10	C	11/18/2017	Oxidation Reduction Potential	mV	34.0
UA	APW10	C	5/18/2018	Oxidation Reduction Potential	mV	29.0
UA	APW10	C	8/17/2018	Oxidation Reduction Potential	mV	57.0
UA	APW10	C	11/9/2018	Oxidation Reduction Potential	mV	78.0
UA	APW10	C	2/22/2019	Oxidation Reduction Potential	mV	61.0
UA	APW10	C	8/23/2019	Oxidation Reduction Potential	mV	69.0
UA	APW10	C	2/5/2020	Oxidation Reduction Potential	mV	14.7
UA	APW10	C	6/11/2020	Oxidation Reduction Potential	mV	-207
UA	APW10	C	7/28/2020	Oxidation Reduction Potential	mV	-153
UA	APW10	C	2/11/2021	Oxidation Reduction Potential	mV	46.7
UA	APW10	C	6/17/2021	Oxidation Reduction Potential	mV	79.6
UA	APW10	C	6/30/2021	Oxidation Reduction Potential	mV	140
UA	APW10	C	7/29/2021	Oxidation Reduction Potential	mV	132
UA	APW10	C	11/9/2021	Oxidation Reduction Potential	mV	34.3
UA	APW10	C	2/22/2022	Oxidation Reduction Potential	mV	142
UA	APW10	C	6/15/2022	Oxidation Reduction Potential	mV	98.3
UA	APW10	C	8/17/2022	Oxidation Reduction Potential	mV	-14.1
UA	APW10	C	1/31/2023	Oxidation Reduction Potential	mV	50.0
UA	APW10	C	4/27/2023	Oxidation Reduction Potential	mV	77.5
UA	APW10	C	7/31/2023	Oxidation Reduction Potential	mV	104

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW10	C	10/10/2023	Oxidation Reduction Potential	mV	3.00
UA	APW10	C	12/16/2015	Eh	V	0.17
UA	APW10	C	1/20/2016	Eh	V	0.18
UA	APW10	C	5/3/2016	Eh	V	0.18
UA	APW10	C	8/2/2016	Eh	V	0.18
UA	APW10	C	10/26/2016	Eh	V	0.23
UA	APW10	C	1/25/2017	Eh	V	0.12
UA	APW10	C	6/13/2017	Eh	V	0.21
UA	APW10	C	11/18/2017	Eh	V	0.23
UA	APW10	C	5/18/2018	Eh	V	0.22
UA	APW10	C	8/17/2018	Eh	V	0.25
UA	APW10	C	11/9/2018	Eh	V	0.27
UA	APW10	C	2/22/2019	Eh	V	0.26
UA	APW10	C	8/23/2019	Eh	V	0.26
UA	APW10	C	2/5/2020	Eh	V	0.21
UA	APW10	C	6/11/2020	Eh	V	-0.012
UA	APW10	C	7/28/2020	Eh	V	0.038
UA	APW10	C	2/11/2021	Eh	V	0.25
UA	APW10	C	6/17/2021	Eh	V	0.27
UA	APW10	C	6/30/2021	Eh	V	0.33
UA	APW10	C	7/29/2021	Eh	V	0.32
UA	APW10	C	11/9/2021	Eh	V	0.23
UA	APW10	C	2/22/2022	Eh	V	0.34
UA	APW10	C	6/15/2022	Eh	V	0.29
UA	APW10	C	8/17/2022	Eh	V	0.18
UA	APW10	C	1/31/2023	Eh	V	0.25
UA	APW10	C	4/27/2023	Eh	V	0.27
UA	APW10	C	7/31/2023	Eh	V	0.30
UA	APW10	C	10/10/2023	Eh	V	0.20
UA	APW10	C	6/13/2017	Alkalinity, bicarbonate	mg/L CaCO3	420
UA	APW10	C	8/17/2018	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	APW10	C	2/5/2020	Alkalinity, bicarbonate	mg/L CaCO3	420
UA	APW10	C	7/28/2020	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	APW10	C	2/11/2021	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	APW10	C	6/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	APW10	C	7/29/2021	Alkalinity, bicarbonate	mg/L CaCO3	410
UA	APW10	C	11/9/2021	Alkalinity, bicarbonate	mg/L CaCO3	410
UA	APW10	C	2/22/2022	Alkalinity, bicarbonate	mg/L CaCO3	360
UA	APW10	C	6/15/2022	Alkalinity, bicarbonate	mg/L CaCO3	390
UA	APW10	C	8/17/2022	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	APW10	C	1/31/2023	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	APW10	C	4/27/2023	Alkalinity, bicarbonate	mg/L CaCO3	420
UA	APW10	C	7/31/2023	Alkalinity, bicarbonate	mg/L CaCO3	416
UA	APW10	C	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	452
UA	APW10	C	6/13/2017	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW10	C	8/17/2018	Alkalinity, carbonate	mg/L CaCO3	0

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW10	C	2/5/2020	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW10	C	7/28/2020	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW10	C	2/11/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW10	C	6/17/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW10	C	7/29/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW10	C	11/9/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW10	C	2/22/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW10	C	6/15/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW10	C	8/17/2022	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW10	C	1/31/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW10	C	4/27/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW10	C	7/31/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW10	C	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW10	C	12/16/2015	Barium, total	mg/L	0.0380
UA	APW10	C	1/20/2016	Barium, total	mg/L	0.0420
UA	APW10	C	5/3/2016	Barium, total	mg/L	0.0400
UA	APW10	C	8/2/2016	Barium, total	mg/L	0.0370
UA	APW10	C	10/26/2016	Barium, total	mg/L	0.0400
UA	APW10	C	1/25/2017	Barium, total	mg/L	0.0350
UA	APW10	C	4/25/2017	Barium, total	mg/L	0.0310
UA	APW10	C	6/13/2017	Barium, total	mg/L	0.0270
UA	APW10	C	6/17/2021	Barium, total	mg/L	0.0260
UA	APW10	C	7/29/2021	Barium, total	mg/L	0.0260
UA	APW10	C	6/15/2022	Barium, total	mg/L	0.0260
UA	APW10	C	8/17/2022	Barium, total	mg/L	0.0380
UA	APW10	C	1/31/2023	Barium, total	mg/L	0.0590
UA	APW10	C	4/27/2023	Barium, total	mg/L	0.0260
UA	APW10	C	7/31/2023	Barium, total	mg/L	0.0326
UA	APW10	C	10/10/2023	Barium, total	mg/L	0.0397
UA	APW10	C	12/16/2015	Calcium, total	mg/L	120
UA	APW10	C	1/20/2016	Calcium, total	mg/L	120
UA	APW10	C	5/3/2016	Calcium, total	mg/L	140
UA	APW10	C	8/2/2016	Calcium, total	mg/L	140
UA	APW10	C	10/26/2016	Calcium, total	mg/L	120
UA	APW10	C	1/25/2017	Calcium, total	mg/L	160
UA	APW10	C	4/25/2017	Calcium, total	mg/L	120
UA	APW10	C	6/13/2017	Calcium, total	mg/L	110
UA	APW10	C	11/18/2017	Calcium, total	mg/L	120
UA	APW10	C	5/18/2018	Calcium, total	mg/L	130
UA	APW10	C	8/17/2018	Calcium, total	mg/L	130
UA	APW10	C	11/9/2018	Calcium, total	mg/L	140
UA	APW10	C	2/22/2019	Calcium, total	mg/L	110
UA	APW10	C	8/23/2019	Calcium, total	mg/L	130
UA	APW10	C	2/5/2020	Calcium, total	mg/L	140
UA	APW10	C	7/28/2020	Calcium, total	mg/L	140
UA	APW10	C	2/11/2021	Calcium, total	mg/L	150

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW10	C	6/17/2021	Calcium, total	mg/L	150
UA	APW10	C	7/29/2021	Calcium, total	mg/L	150
UA	APW10	C	11/9/2021	Calcium, total	mg/L	150
UA	APW10	C	2/22/2022	Calcium, total	mg/L	140
UA	APW10	C	6/15/2022	Calcium, total	mg/L	140
UA	APW10	C	8/17/2022	Calcium, total	mg/L	150
UA	APW10	C	1/31/2023	Calcium, total	mg/L	160
UA	APW10	C	4/27/2023	Calcium, total	mg/L	140
UA	APW10	C	7/31/2023	Calcium, total	mg/L	140
UA	APW10	C	10/10/2023	Calcium, total	mg/L	146
UA	APW10	C	12/16/2015	Chloride, total	mg/L	46.0
UA	APW10	C	1/20/2016	Chloride, total	mg/L	48.0
UA	APW10	C	5/3/2016	Chloride, total	mg/L	46.0
UA	APW10	C	8/2/2016	Chloride, total	mg/L	45.0
UA	APW10	C	10/26/2016	Chloride, total	mg/L	48.0
UA	APW10	C	1/25/2017	Chloride, total	mg/L	46.0
UA	APW10	C	4/25/2017	Chloride, total	mg/L	44.0
UA	APW10	C	6/13/2017	Chloride, total	mg/L	46.0
UA	APW10	C	11/18/2017	Chloride, total	mg/L	47.0
UA	APW10	C	5/18/2018	Chloride, total	mg/L	51.0
UA	APW10	C	8/17/2018	Chloride, total	mg/L	51.0
UA	APW10	C	11/9/2018	Chloride, total	mg/L	47.0
UA	APW10	C	2/22/2019	Chloride, total	mg/L	50.0
UA	APW10	C	8/23/2019	Chloride, total	mg/L	50.0
UA	APW10	C	2/5/2020	Chloride, total	mg/L	44.0
UA	APW10	C	7/28/2020	Chloride, total	mg/L	53.0
UA	APW10	C	2/11/2021	Chloride, total	mg/L	45.0
UA	APW10	C	6/17/2021	Chloride, total	mg/L	47.0
UA	APW10	C	7/29/2021	Chloride, total	mg/L	45.0
UA	APW10	C	11/9/2021	Chloride, total	mg/L	43.0
UA	APW10	C	2/22/2022	Chloride, total	mg/L	48.0
UA	APW10	C	6/15/2022	Chloride, total	mg/L	44.0
UA	APW10	C	8/17/2022	Chloride, total	mg/L	51.0
UA	APW10	C	1/31/2023	Chloride, total	mg/L	41.0
UA	APW10	C	4/27/2023	Chloride, total	mg/L	46.0
UA	APW10	C	7/31/2023	Chloride, total	mg/L	45.0
UA	APW10	C	10/10/2023	Chloride, total	mg/L	43.0
UA	APW10	C	4/27/2023	Ferrous Iron, dissolved	mg/L	<0.02
UA	APW10	C	7/31/2023	Ferrous Iron, dissolved	mg/L	3.61
UA	APW10	C	4/27/2023	Iron, dissolved	mg/L	0.0780
UA	APW10	C	7/31/2023	Iron, dissolved	mg/L	0.0949
UA	APW10	C	12/16/2015	Lithium, total	mg/L	0.0300
UA	APW10	C	1/20/2016	Lithium, total	mg/L	0.0210
UA	APW10	C	5/3/2016	Lithium, total	mg/L	0.0230
UA	APW10	C	8/2/2016	Lithium, total	mg/L	0.0260
UA	APW10	C	10/26/2016	Lithium, total	mg/L	0.0270

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW10	C	1/25/2017	Lithium, total	mg/L	0.0230
UA	APW10	C	4/25/2017	Lithium, total	mg/L	0.0260
UA	APW10	C	6/13/2017	Lithium, total	mg/L	0.0260
UA	APW10	C	6/17/2021	Lithium, total	mg/L	0.0220
UA	APW10	C	7/29/2021	Lithium, total	mg/L	0.0220
UA	APW10	C	6/15/2022	Lithium, total	mg/L	0.0200
UA	APW10	C	8/17/2022	Lithium, total	mg/L	0.0220
UA	APW10	C	1/31/2023	Lithium, total	mg/L	0.0200
UA	APW10	C	4/27/2023	Lithium, total	mg/L	0.0180
UA	APW10	C	7/31/2023	Lithium, total	mg/L	0.0215
UA	APW10	C	10/10/2023	Lithium, total	mg/L	0.0182
UA	APW10	C	6/13/2017	Magnesium, total	mg/L	67.0
UA	APW10	C	8/17/2018	Magnesium, total	mg/L	64.0
UA	APW10	C	2/5/2020	Magnesium, total	mg/L	72.0
UA	APW10	C	7/28/2020	Magnesium, total	mg/L	71.0
UA	APW10	C	2/11/2021	Magnesium, total	mg/L	70.0
UA	APW10	C	6/17/2021	Magnesium, total	mg/L	73.0
UA	APW10	C	7/29/2021	Magnesium, total	mg/L	70.0
UA	APW10	C	11/9/2021	Magnesium, total	mg/L	70.0
UA	APW10	C	2/22/2022	Magnesium, total	mg/L	71.0
UA	APW10	C	6/15/2022	Magnesium, total	mg/L	70.0
UA	APW10	C	8/17/2022	Magnesium, total	mg/L	69.0
UA	APW10	C	1/31/2023	Magnesium, total	mg/L	73.0
UA	APW10	C	4/27/2023	Magnesium, total	mg/L	68.0
UA	APW10	C	7/31/2023	Magnesium, total	mg/L	67.3
UA	APW10	C	10/10/2023	Magnesium, total	mg/L	65.7
UA	APW10	C	4/27/2023	Manganese, dissolved	mg/L	0.290
UA	APW10	C	7/31/2023	Manganese, dissolved	mg/L	0.350
UA	APW10	C	7/31/2023	Phosphate, dissolved	mg/L	<0.005
UA	APW10	C	6/13/2017	Potassium, total	mg/L	1.70
UA	APW10	C	8/17/2018	Potassium, total	mg/L	2.90
UA	APW10	C	2/5/2020	Potassium, total	mg/L	1.40
UA	APW10	C	7/28/2020	Potassium, total	mg/L	1.30
UA	APW10	C	2/11/2021	Potassium, total	mg/L	2.00
UA	APW10	C	6/17/2021	Potassium, total	mg/L	1.50
UA	APW10	C	7/29/2021	Potassium, total	mg/L	1.50
UA	APW10	C	11/9/2021	Potassium, total	mg/L	1.40
UA	APW10	C	2/22/2022	Potassium, total	mg/L	1.60
UA	APW10	C	6/15/2022	Potassium, total	mg/L	1.50
UA	APW10	C	8/17/2022	Potassium, total	mg/L	1.70
UA	APW10	C	1/31/2023	Potassium, total	mg/L	2.20
UA	APW10	C	4/27/2023	Potassium, total	mg/L	1.50
UA	APW10	C	7/31/2023	Potassium, total	mg/L	1.50
UA	APW10	C	10/10/2023	Potassium, total	mg/L	1.66
UA	APW10	C	4/27/2023	Silicon, dissolved	mg/L	9.70
UA	APW10	C	7/31/2023	Silicon, dissolved	mg/L	7.41

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW10	C	6/13/2017	Sodium, total	mg/L	120
UA	APW10	C	8/17/2018	Sodium, total	mg/L	120
UA	APW10	C	2/5/2020	Sodium, total	mg/L	130
UA	APW10	C	7/28/2020	Sodium, total	mg/L	120
UA	APW10	C	2/11/2021	Sodium, total	mg/L	120
UA	APW10	C	6/17/2021	Sodium, total	mg/L	120
UA	APW10	C	7/29/2021	Sodium, total	mg/L	120
UA	APW10	C	11/9/2021	Sodium, total	mg/L	120
UA	APW10	C	2/22/2022	Sodium, total	mg/L	130
UA	APW10	C	6/15/2022	Sodium, total	mg/L	110
UA	APW10	C	8/17/2022	Sodium, total	mg/L	120
UA	APW10	C	1/31/2023	Sodium, total	mg/L	120
UA	APW10	C	4/27/2023	Sodium, total	mg/L	120
UA	APW10	C	7/31/2023	Sodium, total	mg/L	112
UA	APW10	C	10/10/2023	Sodium, total	mg/L	124
UA	APW10	C	12/16/2015	Sulfate, total	mg/L	430
UA	APW10	C	1/20/2016	Sulfate, total	mg/L	410
UA	APW10	C	5/3/2016	Sulfate, total	mg/L	410
UA	APW10	C	8/2/2016	Sulfate, total	mg/L	410
UA	APW10	C	10/26/2016	Sulfate, total	mg/L	470
UA	APW10	C	1/25/2017	Sulfate, total	mg/L	430
UA	APW10	C	4/25/2017	Sulfate, total	mg/L	410
UA	APW10	C	6/13/2017	Sulfate, total	mg/L	410
UA	APW10	C	11/18/2017	Sulfate, total	mg/L	390
UA	APW10	C	5/18/2018	Sulfate, total	mg/L	440
UA	APW10	C	8/17/2018	Sulfate, total	mg/L	420
UA	APW10	C	11/9/2018	Sulfate, total	mg/L	410
UA	APW10	C	2/22/2019	Sulfate, total	mg/L	420
UA	APW10	C	8/23/2019	Sulfate, total	mg/L	390
UA	APW10	C	2/5/2020	Sulfate, total	mg/L	400
UA	APW10	C	7/28/2020	Sulfate, total	mg/L	410
UA	APW10	C	2/11/2021	Sulfate, total	mg/L	410
UA	APW10	C	6/17/2021	Sulfate, total	mg/L	540
UA	APW10	C	7/29/2021	Sulfate, total	mg/L	410
UA	APW10	C	11/9/2021	Sulfate, total	mg/L	410
UA	APW10	C	2/22/2022	Sulfate, total	mg/L	410
UA	APW10	C	6/15/2022	Sulfate, total	mg/L	400
UA	APW10	C	8/17/2022	Sulfate, total	mg/L	440
UA	APW10	C	1/31/2023	Sulfate, total	mg/L	390
UA	APW10	C	4/27/2023	Sulfate, total	mg/L	410
UA	APW10	C	7/31/2023	Sulfate, total	mg/L	421
UA	APW10	C	10/10/2023	Sulfate, total	mg/L	399
UA	APW10	C	12/16/2015	Total Dissolved Solids	mg/L	1,000
UA	APW10	C	1/20/2016	Total Dissolved Solids	mg/L	950
UA	APW10	C	5/3/2016	Total Dissolved Solids	mg/L	930
UA	APW10	C	8/2/2016	Total Dissolved Solids	mg/L	840

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW10	C	10/26/2016	Total Dissolved Solids	mg/L	960
UA	APW10	C	1/25/2017	Total Dissolved Solids	mg/L	1,000
UA	APW10	C	4/25/2017	Total Dissolved Solids	mg/L	1,000
UA	APW10	C	6/13/2017	Total Dissolved Solids	mg/L	920
UA	APW10	C	11/18/2017	Total Dissolved Solids	mg/L	910
UA	APW10	C	5/18/2018	Total Dissolved Solids	mg/L	900
UA	APW10	C	11/9/2018	Total Dissolved Solids	mg/L	900
UA	APW10	C	2/22/2019	Total Dissolved Solids	mg/L	990
UA	APW10	C	8/23/2019	Total Dissolved Solids	mg/L	1,000
UA	APW10	C	2/5/2020	Total Dissolved Solids	mg/L	1,200
UA	APW10	C	6/11/2020	Total Dissolved Solids	mg/L	1,000
UA	APW10	C	7/28/2020	Total Dissolved Solids	mg/L	1,000
UA	APW10	C	2/11/2021	Total Dissolved Solids	mg/L	1,100
UA	APW10	C	6/17/2021	Total Dissolved Solids	mg/L	1,100
UA	APW10	C	6/30/2021	Total Dissolved Solids	mg/L	1,000
UA	APW10	C	7/29/2021	Total Dissolved Solids	mg/L	1,000
UA	APW10	C	11/9/2021	Total Dissolved Solids	mg/L	1,100
UA	APW10	C	2/22/2022	Total Dissolved Solids	mg/L	1,100
UA	APW10	C	6/15/2022	Total Dissolved Solids	mg/L	1,100
UA	APW10	C	8/17/2022	Total Dissolved Solids	mg/L	1,100
UA	APW10	C	1/31/2023	Total Dissolved Solids	mg/L	1,000
UA	APW10	C	4/27/2023	Total Dissolved Solids	mg/L	1,100
UA	APW10	C	7/31/2023	Total Dissolved Solids	mg/L	1,060
UA	APW10	C	10/10/2023	Total Dissolved Solids	mg/L	1,050
UA	APW11	C	2/18/2021	pH (field)	SU	6.1
UA	APW11	C	3/9/2021	pH (field)	SU	7.2
UA	APW11	C	3/29/2021	pH (field)	SU	6.6
UA	APW11	C	4/28/2021	pH (field)	SU	7.1
UA	APW11	C	5/24/2021	pH (field)	SU	7.4
UA	APW11	C	6/16/2021	pH (field)	SU	7.2
UA	APW11	C	6/30/2021	pH (field)	SU	7.1
UA	APW11	C	7/15/2021	pH (field)	SU	7.2
UA	APW11	C	3/15/2023	pH (field)	SU	7.2
UA	APW11	C	4/26/2023	pH (field)	SU	7.2
UA	APW11	C	7/24/2023	pH (field)	SU	7.2
UA	APW11	C	10/10/2023	pH (field)	SU	7.5
UA	APW11	C	2/18/2021	Oxidation Reduction Potential	mV	125
UA	APW11	C	3/9/2021	Oxidation Reduction Potential	mV	-56.2
UA	APW11	C	3/29/2021	Oxidation Reduction Potential	mV	2.60
UA	APW11	C	4/28/2021	Oxidation Reduction Potential	mV	-51.6
UA	APW11	C	5/24/2021	Oxidation Reduction Potential	mV	-82.4
UA	APW11	C	6/16/2021	Oxidation Reduction Potential	mV	-41.2
UA	APW11	C	6/30/2021	Oxidation Reduction Potential	mV	-37.2
UA	APW11	C	7/15/2021	Oxidation Reduction Potential	mV	-24.4
UA	APW11	C	4/26/2023	Oxidation Reduction Potential	mV	-17.8
UA	APW11	C	7/24/2023	Oxidation Reduction Potential	mV	-54.0

Attachment 8. Aqueous Data
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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW11	C	10/10/2023	Oxidation Reduction Potential	mV	-117
UA	APW11	C	2/18/2021	Eh	V	0.32
UA	APW11	C	3/9/2021	Eh	V	0.14
UA	APW11	C	3/29/2021	Eh	V	0.20
UA	APW11	C	4/28/2021	Eh	V	0.14
UA	APW11	C	5/24/2021	Eh	V	0.11
UA	APW11	C	6/16/2021	Eh	V	0.15
UA	APW11	C	6/30/2021	Eh	V	0.16
UA	APW11	C	7/15/2021	Eh	V	0.17
UA	APW11	C	4/26/2023	Eh	V	0.18
UA	APW11	C	7/24/2023	Eh	V	0.14
UA	APW11	C	10/10/2023	Eh	V	0.078
UA	APW11	C	2/18/2021	Alkalinity, bicarbonate	mg/L CaCO3	320
UA	APW11	C	3/9/2021	Alkalinity, bicarbonate	mg/L CaCO3	410
UA	APW11	C	3/29/2021	Alkalinity, bicarbonate	mg/L CaCO3	410
UA	APW11	C	4/28/2021	Alkalinity, bicarbonate	mg/L CaCO3	420
UA	APW11	C	5/24/2021	Alkalinity, bicarbonate	mg/L CaCO3	820
UA	APW11	C	6/16/2021	Alkalinity, bicarbonate	mg/L CaCO3	420
UA	APW11	C	6/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	APW11	C	7/15/2021	Alkalinity, bicarbonate	mg/L CaCO3	420
UA	APW11	C	3/15/2023	Alkalinity, bicarbonate	mg/L CaCO3	420
UA	APW11	C	4/26/2023	Alkalinity, bicarbonate	mg/L CaCO3	350
UA	APW11	C	7/24/2023	Alkalinity, bicarbonate	mg/L CaCO3	427
UA	APW11	C	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	426
UA	APW11	C	2/18/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW11	C	3/9/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW11	C	3/29/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW11	C	4/28/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW11	C	5/24/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW11	C	6/16/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW11	C	6/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW11	C	7/15/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW11	C	3/15/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW11	C	4/26/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW11	C	7/24/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW11	C	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW11	C	2/18/2021	Barium, total	mg/L	0.160
UA	APW11	C	3/9/2021	Barium, total	mg/L	0.0770
UA	APW11	C	3/29/2021	Barium, total	mg/L	0.0710
UA	APW11	C	4/28/2021	Barium, total	mg/L	0.0480
UA	APW11	C	5/24/2021	Barium, total	mg/L	0.0500
UA	APW11	C	6/16/2021	Barium, total	mg/L	0.0470
UA	APW11	C	6/30/2021	Barium, total	mg/L	0.0420
UA	APW11	C	7/15/2021	Barium, total	mg/L	0.0420
UA	APW11	C	3/15/2023	Barium, total	mg/L	0.0450
UA	APW11	C	4/26/2023	Barium, total	mg/L	0.0430

Attachment 8. Aqueous Data
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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW11	C	7/24/2023	Barium, total	mg/L	0.0492
UA	APW11	C	10/10/2023	Barium, total	mg/L	0.0448
UA	APW11	C	2/18/2021	Calcium, total	mg/L	96.0
UA	APW11	C	3/9/2021	Calcium, total	mg/L	120
UA	APW11	C	3/29/2021	Calcium, total	mg/L	130
UA	APW11	C	4/28/2021	Calcium, total	mg/L	120
UA	APW11	C	5/24/2021	Calcium, total	mg/L	130
UA	APW11	C	6/16/2021	Calcium, total	mg/L	130
UA	APW11	C	6/30/2021	Calcium, total	mg/L	120
UA	APW11	C	7/15/2021	Calcium, total	mg/L	120
UA	APW11	C	3/15/2023	Calcium, total	mg/L	110
UA	APW11	C	4/26/2023	Calcium, total	mg/L	120
UA	APW11	C	7/24/2023	Calcium, total	mg/L	122
UA	APW11	C	10/10/2023	Calcium, total	mg/L	126
UA	APW11	C	2/18/2021	Chloride, total	mg/L	47.0
UA	APW11	C	3/9/2021	Chloride, total	mg/L	26.0
UA	APW11	C	3/29/2021	Chloride, total	mg/L	26.0
UA	APW11	C	4/28/2021	Chloride, total	mg/L	26.0
UA	APW11	C	5/24/2021	Chloride, total	mg/L	27.0
UA	APW11	C	6/16/2021	Chloride, total	mg/L	26.0
UA	APW11	C	6/30/2021	Chloride, total	mg/L	33.0
UA	APW11	C	7/15/2021	Chloride, total	mg/L	31.0
UA	APW11	C	3/15/2023	Chloride, total	mg/L	23.0
UA	APW11	C	4/26/2023	Chloride, total	mg/L	26.0
UA	APW11	C	7/24/2023	Chloride, total	mg/L	25.0
UA	APW11	C	10/10/2023	Chloride, total	mg/L	26.0
UA	APW11	C	4/26/2023	Ferrous Iron, dissolved	mg/L	0.920
UA	APW11	C	7/24/2023	Ferrous Iron, dissolved	mg/L	1.04
UA	APW11	C	4/26/2023	Iron, dissolved	mg/L	0.940
UA	APW11	C	7/24/2023	Iron, dissolved	mg/L	1.08
UA	APW11	C	2/18/2021	Lithium, total	mg/L	0.0210
UA	APW11	C	3/9/2021	Lithium, total	mg/L	0.0240
UA	APW11	C	3/29/2021	Lithium, total	mg/L	0.0280
UA	APW11	C	4/28/2021	Lithium, total	mg/L	0.0210
UA	APW11	C	5/24/2021	Lithium, total	mg/L	0.0240
UA	APW11	C	6/16/2021	Lithium, total	mg/L	0.0240
UA	APW11	C	6/30/2021	Lithium, total	mg/L	0.0380
UA	APW11	C	7/15/2021	Lithium, total	mg/L	0.0300
UA	APW11	C	3/15/2023	Lithium, total	mg/L	0.0190
UA	APW11	C	4/26/2023	Lithium, total	mg/L	0.0200
UA	APW11	C	7/24/2023	Lithium, total	mg/L	0.0199
UA	APW11	C	10/10/2023	Lithium, total	mg/L	0.0201
UA	APW11	C	2/18/2021	Magnesium, total	mg/L	50.0
UA	APW11	C	3/9/2021	Magnesium, total	mg/L	54.0
UA	APW11	C	3/29/2021	Magnesium, total	mg/L	53.0
UA	APW11	C	4/28/2021	Magnesium, total	mg/L	58.0

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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW11	C	5/24/2021	Magnesium, total	mg/L	58.0
UA	APW11	C	6/16/2021	Magnesium, total	mg/L	58.0
UA	APW11	C	6/30/2021	Magnesium, total	mg/L	57.0
UA	APW11	C	7/15/2021	Magnesium, total	mg/L	55.0
UA	APW11	C	3/15/2023	Magnesium, total	mg/L	55.0
UA	APW11	C	4/26/2023	Magnesium, total	mg/L	57.0
UA	APW11	C	7/24/2023	Magnesium, total	mg/L	52.7
UA	APW11	C	10/10/2023	Magnesium, total	mg/L	53.6
UA	APW11	C	4/26/2023	Manganese, dissolved	mg/L	0.840
UA	APW11	C	7/24/2023	Manganese, dissolved	mg/L	0.947
UA	APW11	C	7/24/2023	Phosphate, dissolved	mg/L	0.0210
UA	APW11	C	2/18/2021	Potassium, total	mg/L	4.10
UA	APW11	C	3/9/2021	Potassium, total	mg/L	2.60
UA	APW11	C	3/29/2021	Potassium, total	mg/L	2.30
UA	APW11	C	4/28/2021	Potassium, total	mg/L	1.50
UA	APW11	C	5/24/2021	Potassium, total	mg/L	1.70
UA	APW11	C	6/16/2021	Potassium, total	mg/L	1.80
UA	APW11	C	6/30/2021	Potassium, total	mg/L	1.50
UA	APW11	C	7/15/2021	Potassium, total	mg/L	1.40
UA	APW11	C	3/15/2023	Potassium, total	mg/L	1.50
UA	APW11	C	4/26/2023	Potassium, total	mg/L	1.90
UA	APW11	C	7/24/2023	Potassium, total	mg/L	2.10
UA	APW11	C	10/10/2023	Potassium, total	mg/L	1.62
UA	APW11	C	4/26/2023	Silicon, dissolved	mg/L	10.0
UA	APW11	C	7/24/2023	Silicon, dissolved	mg/L	9.54
UA	APW11	C	2/18/2021	Sodium, total	mg/L	110
UA	APW11	C	3/9/2021	Sodium, total	mg/L	110
UA	APW11	C	3/29/2021	Sodium, total	mg/L	91.0
UA	APW11	C	4/28/2021	Sodium, total	mg/L	100
UA	APW11	C	5/24/2021	Sodium, total	mg/L	110
UA	APW11	C	6/16/2021	Sodium, total	mg/L	100
UA	APW11	C	6/30/2021	Sodium, total	mg/L	100
UA	APW11	C	7/15/2021	Sodium, total	mg/L	97.0
UA	APW11	C	3/15/2023	Sodium, total	mg/L	93.0
UA	APW11	C	4/26/2023	Sodium, total	mg/L	93.0
UA	APW11	C	7/24/2023	Sodium, total	mg/L	89.5
UA	APW11	C	10/10/2023	Sodium, total	mg/L	92.1
UA	APW11	C	2/18/2021	Sulfate, total	mg/L	280
UA	APW11	C	3/9/2021	Sulfate, total	mg/L	290
UA	APW11	C	3/29/2021	Sulfate, total	mg/L	270
UA	APW11	C	4/28/2021	Sulfate, total	mg/L	280
UA	APW11	C	5/24/2021	Sulfate, total	mg/L	300
UA	APW11	C	6/16/2021	Sulfate, total	mg/L	290
UA	APW11	C	6/30/2021	Sulfate, total	mg/L	280
UA	APW11	C	7/15/2021	Sulfate, total	mg/L	140
UA	APW11	C	3/15/2023	Sulfate, total	mg/L	270

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW11	C	4/26/2023	Sulfate, total	mg/L	260
UA	APW11	C	7/24/2023	Sulfate, total	mg/L	268
UA	APW11	C	10/10/2023	Sulfate, total	mg/L	277
UA	APW11	C	2/18/2021	Total Dissolved Solids	mg/L	780
UA	APW11	C	3/9/2021	Total Dissolved Solids	mg/L	940
UA	APW11	C	3/29/2021	Total Dissolved Solids	mg/L	820
UA	APW11	C	4/28/2021	Total Dissolved Solids	mg/L	920
UA	APW11	C	5/24/2021	Total Dissolved Solids	mg/L	850
UA	APW11	C	6/16/2021	Total Dissolved Solids	mg/L	850
UA	APW11	C	6/30/2021	Total Dissolved Solids	mg/L	860
UA	APW11	C	7/15/2021	Total Dissolved Solids	mg/L	810
UA	APW11	C	3/15/2023	Total Dissolved Solids	mg/L	820
UA	APW11	C	4/26/2023	Total Dissolved Solids	mg/L	920
UA	APW11	C	7/24/2023	Total Dissolved Solids	mg/L	840
UA	APW11	C	10/10/2023	Total Dissolved Solids	mg/L	835
UA	APW13	C	2/22/2021	pH (field)	SU	7.1
UA	APW13	C	3/10/2021	pH (field)	SU	7.2
UA	APW13	C	3/31/2021	pH (field)	SU	6.4
UA	APW13	C	4/29/2021	pH (field)	SU	7.2
UA	APW13	C	5/25/2021	pH (field)	SU	7.3
UA	APW13	C	6/17/2021	pH (field)	SU	7.2
UA	APW13	C	6/30/2021	pH (field)	SU	7.3
UA	APW13	C	7/15/2021	pH (field)	SU	7.3
UA	APW13	C	3/14/2023	pH (field)	SU	7.2
UA	APW13	C	4/27/2023	pH (field)	SU	7.3
UA	APW13	C	7/31/2023	pH (field)	SU	6.9
UA	APW13	C	10/10/2023	pH (field)	SU	7.2
UA	APW13	C	2/22/2021	Oxidation Reduction Potential	mV	-102
UA	APW13	C	3/10/2021	Oxidation Reduction Potential	mV	-80.2
UA	APW13	C	3/31/2021	Oxidation Reduction Potential	mV	-9.40
UA	APW13	C	4/29/2021	Oxidation Reduction Potential	mV	-96.2
UA	APW13	C	5/25/2021	Oxidation Reduction Potential	mV	-95.6
UA	APW13	C	6/17/2021	Oxidation Reduction Potential	mV	-75.3
UA	APW13	C	6/30/2021	Oxidation Reduction Potential	mV	-78.8
UA	APW13	C	7/15/2021	Oxidation Reduction Potential	mV	-90.0
UA	APW13	C	4/27/2023	Oxidation Reduction Potential	mV	-25.3
UA	APW13	C	7/31/2023	Oxidation Reduction Potential	mV	109
UA	APW13	C	10/10/2023	Oxidation Reduction Potential	mV	-31.0
UA	APW13	C	2/22/2021	Eh	V	0.095
UA	APW13	C	3/10/2021	Eh	V	0.12
UA	APW13	C	3/31/2021	Eh	V	0.19
UA	APW13	C	4/29/2021	Eh	V	0.099
UA	APW13	C	5/25/2021	Eh	V	0.097
UA	APW13	C	6/17/2021	Eh	V	0.12
UA	APW13	C	6/30/2021	Eh	V	0.11
UA	APW13	C	7/15/2021	Eh	V	0.10

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW13	C	4/27/2023	Eh	V	0.17
UA	APW13	C	7/31/2023	Eh	V	0.30
UA	APW13	C	10/10/2023	Eh	V	0.17
UA	APW13	C	2/22/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW13	C	3/10/2021	Alkalinity, bicarbonate	mg/L CaCO3	450
UA	APW13	C	3/31/2021	Alkalinity, bicarbonate	mg/L CaCO3	490
UA	APW13	C	4/29/2021	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW13	C	5/25/2021	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW13	C	6/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	510
UA	APW13	C	6/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	490
UA	APW13	C	7/15/2021	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW13	C	3/14/2023	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW13	C	4/27/2023	Alkalinity, bicarbonate	mg/L CaCO3	490
UA	APW13	C	7/31/2023	Alkalinity, bicarbonate	mg/L CaCO3	504
UA	APW13	C	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	522
UA	APW13	C	2/22/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW13	C	3/10/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW13	C	3/31/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW13	C	4/29/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW13	C	5/25/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW13	C	6/17/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW13	C	6/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW13	C	7/15/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW13	C	3/14/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW13	C	4/27/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW13	C	7/31/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW13	C	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW13	C	2/22/2021	Barium, total	mg/L	0.0550
UA	APW13	C	3/10/2021	Barium, total	mg/L	0.0540
UA	APW13	C	3/31/2021	Barium, total	mg/L	0.0570
UA	APW13	C	4/29/2021	Barium, total	mg/L	0.0500
UA	APW13	C	5/25/2021	Barium, total	mg/L	0.0510
UA	APW13	C	6/17/2021	Barium, total	mg/L	0.0510
UA	APW13	C	6/30/2021	Barium, total	mg/L	0.0510
UA	APW13	C	7/15/2021	Barium, total	mg/L	0.0500
UA	APW13	C	3/14/2023	Barium, total	mg/L	0.0570
UA	APW13	C	4/27/2023	Barium, total	mg/L	0.0500
UA	APW13	C	7/31/2023	Barium, total	mg/L	0.0720
UA	APW13	C	10/10/2023	Barium, total	mg/L	0.0642
UA	APW13	C	2/22/2021	Calcium, total	mg/L	110
UA	APW13	C	3/10/2021	Calcium, total	mg/L	120
UA	APW13	C	3/31/2021	Calcium, total	mg/L	110
UA	APW13	C	4/29/2021	Calcium, total	mg/L	110
UA	APW13	C	5/25/2021	Calcium, total	mg/L	120
UA	APW13	C	6/17/2021	Calcium, total	mg/L	130
UA	APW13	C	6/30/2021	Calcium, total	mg/L	120

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW13	C	7/15/2021	Calcium, total	mg/L	110
UA	APW13	C	3/14/2023	Calcium, total	mg/L	120
UA	APW13	C	4/27/2023	Calcium, total	mg/L	120
UA	APW13	C	7/31/2023	Calcium, total	mg/L	121
UA	APW13	C	10/10/2023	Calcium, total	mg/L	120
UA	APW13	C	2/22/2021	Chloride, total	mg/L	57.0
UA	APW13	C	3/10/2021	Chloride, total	mg/L	71.0
UA	APW13	C	3/31/2021	Chloride, total	mg/L	46.0
UA	APW13	C	4/29/2021	Chloride, total	mg/L	48.0
UA	APW13	C	5/25/2021	Chloride, total	mg/L	64.0
UA	APW13	C	6/17/2021	Chloride, total	mg/L	53.0
UA	APW13	C	6/30/2021	Chloride, total	mg/L	45.0
UA	APW13	C	7/15/2021	Chloride, total	mg/L	55.0
UA	APW13	C	3/14/2023	Chloride, total	mg/L	47.0
UA	APW13	C	4/27/2023	Chloride, total	mg/L	51.0
UA	APW13	C	7/31/2023	Chloride, total	mg/L	48.0
UA	APW13	C	10/10/2023	Chloride, total	mg/L	53.0
UA	APW13	C	4/27/2023	Ferrous Iron, dissolved	mg/L	1.30
UA	APW13	C	7/31/2023	Ferrous Iron, dissolved	mg/L	4.84
UA	APW13	C	4/27/2023	Iron, dissolved	mg/L	1.30
UA	APW13	C	7/31/2023	Iron, dissolved	mg/L	1.44
UA	APW13	C	2/22/2021	Lithium, total	mg/L	0.0420
UA	APW13	C	3/10/2021	Lithium, total	mg/L	0.0440
UA	APW13	C	3/31/2021	Lithium, total	mg/L	0.0410
UA	APW13	C	4/29/2021	Lithium, total	mg/L	0.0320
UA	APW13	C	5/25/2021	Lithium, total	mg/L	0.0300
UA	APW13	C	6/17/2021	Lithium, total	mg/L	0.0270
UA	APW13	C	6/30/2021	Lithium, total	mg/L	0.0540
UA	APW13	C	7/15/2021	Lithium, total	mg/L	0.0360
UA	APW13	C	3/14/2023	Lithium, total	mg/L	0.0250
UA	APW13	C	4/27/2023	Lithium, total	mg/L	0.0210
UA	APW13	C	7/31/2023	Lithium, total	mg/L	0.0230
UA	APW13	C	10/10/2023	Lithium, total	mg/L	0.0240
UA	APW13	C	2/22/2021	Magnesium, total	mg/L	58.0
UA	APW13	C	3/10/2021	Magnesium, total	mg/L	61.0
UA	APW13	C	3/31/2021	Magnesium, total	mg/L	56.0
UA	APW13	C	4/29/2021	Magnesium, total	mg/L	60.0
UA	APW13	C	5/25/2021	Magnesium, total	mg/L	60.0
UA	APW13	C	6/17/2021	Magnesium, total	mg/L	65.0
UA	APW13	C	6/30/2021	Magnesium, total	mg/L	61.0
UA	APW13	C	7/15/2021	Magnesium, total	mg/L	62.0
UA	APW13	C	3/14/2023	Magnesium, total	mg/L	68.0
UA	APW13	C	4/27/2023	Magnesium, total	mg/L	61.0
UA	APW13	C	7/31/2023	Magnesium, total	mg/L	61.7
UA	APW13	C	10/10/2023	Magnesium, total	mg/L	57.5
UA	APW13	C	4/27/2023	Manganese, dissolved	mg/L	0.580

Attachment 8. Aqueous Data
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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW13	C	7/31/2023	Manganese, dissolved	mg/L	0.598
UA	APW13	C	7/31/2023	Phosphate, dissolved	mg/L	<0.005
UA	APW13	C	2/22/2021	Potassium, total	mg/L	2.10
UA	APW13	C	3/10/2021	Potassium, total	mg/L	2.20
UA	APW13	C	3/31/2021	Potassium, total	mg/L	2.10
UA	APW13	C	4/29/2021	Potassium, total	mg/L	1.90
UA	APW13	C	5/25/2021	Potassium, total	mg/L	1.80
UA	APW13	C	6/17/2021	Potassium, total	mg/L	1.90
UA	APW13	C	6/30/2021	Potassium, total	mg/L	1.80
UA	APW13	C	7/15/2021	Potassium, total	mg/L	1.70
UA	APW13	C	3/14/2023	Potassium, total	mg/L	2.10
UA	APW13	C	4/27/2023	Potassium, total	mg/L	1.80
UA	APW13	C	7/31/2023	Potassium, total	mg/L	1.94
UA	APW13	C	10/10/2023	Potassium, total	mg/L	1.93
UA	APW13	C	4/27/2023	Silicon, dissolved	mg/L	11.0
UA	APW13	C	7/31/2023	Silicon, dissolved	mg/L	8.15
UA	APW13	C	2/22/2021	Sodium, total	mg/L	120
UA	APW13	C	3/10/2021	Sodium, total	mg/L	120
UA	APW13	C	3/31/2021	Sodium, total	mg/L	120
UA	APW13	C	4/29/2021	Sodium, total	mg/L	130
UA	APW13	C	5/25/2021	Sodium, total	mg/L	110
UA	APW13	C	6/17/2021	Sodium, total	mg/L	120
UA	APW13	C	6/30/2021	Sodium, total	mg/L	120
UA	APW13	C	7/15/2021	Sodium, total	mg/L	120
UA	APW13	C	3/14/2023	Sodium, total	mg/L	140
UA	APW13	C	4/27/2023	Sodium, total	mg/L	120
UA	APW13	C	7/31/2023	Sodium, total	mg/L	122
UA	APW13	C	10/10/2023	Sodium, total	mg/L	124
UA	APW13	C	2/22/2021	Sulfate, total	mg/L	220
UA	APW13	C	3/10/2021	Sulfate, total	mg/L	210
UA	APW13	C	3/31/2021	Sulfate, total	mg/L	210
UA	APW13	C	4/29/2021	Sulfate, total	mg/L	210
UA	APW13	C	5/25/2021	Sulfate, total	mg/L	220
UA	APW13	C	6/17/2021	Sulfate, total	mg/L	220
UA	APW13	C	6/30/2021	Sulfate, total	mg/L	230
UA	APW13	C	7/15/2021	Sulfate, total	mg/L	210
UA	APW13	C	3/14/2023	Sulfate, total	mg/L	240
UA	APW13	C	4/27/2023	Sulfate, total	mg/L	250
UA	APW13	C	7/31/2023	Sulfate, total	mg/L	233
UA	APW13	C	10/10/2023	Sulfate, total	mg/L	234
UA	APW13	C	2/22/2021	Total Dissolved Solids	mg/L	760
UA	APW13	C	3/10/2021	Total Dissolved Solids	mg/L	850
UA	APW13	C	3/31/2021	Total Dissolved Solids	mg/L	880
UA	APW13	C	4/29/2021	Total Dissolved Solids	mg/L	840
UA	APW13	C	5/25/2021	Total Dissolved Solids	mg/L	880
UA	APW13	C	6/17/2021	Total Dissolved Solids	mg/L	830

Attachment 8. Aqueous Data
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Newton Primary Ash Pond
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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW13	C	6/30/2021	Total Dissolved Solids	mg/L	790
UA	APW13	C	7/15/2021	Total Dissolved Solids	mg/L	820
UA	APW13	C	3/14/2023	Total Dissolved Solids	mg/L	890
UA	APW13	C	4/27/2023	Total Dissolved Solids	mg/L	940
UA	APW13	C	7/31/2023	Total Dissolved Solids	mg/L	875
UA	APW13	C	10/10/2023	Total Dissolved Solids	mg/L	936
UA	APW14	C	2/22/2021	pH (field)	SU	7.5
UA	APW14	C	3/10/2021	pH (field)	SU	7.4
UA	APW14	C	3/31/2021	pH (field)	SU	6.5
UA	APW14	C	4/28/2021	pH (field)	SU	7.4
UA	APW14	C	5/25/2021	pH (field)	SU	7.5
UA	APW14	C	6/17/2021	pH (field)	SU	7.4
UA	APW14	C	6/30/2021	pH (field)	SU	7.5
UA	APW14	C	7/15/2021	pH (field)	SU	7.4
UA	APW14	C	3/14/2023	pH (field)	SU	7.4
UA	APW14	C	4/28/2023	pH (field)	SU	7.3
UA	APW14	C	7/31/2023	pH (field)	SU	7.0
UA	APW14	C	10/10/2023	pH (field)	SU	7.3
UA	APW14	C	2/22/2021	Oxidation Reduction Potential	mV	-113
UA	APW14	C	3/10/2021	Oxidation Reduction Potential	mV	-104
UA	APW14	C	3/31/2021	Oxidation Reduction Potential	mV	-46.7
UA	APW14	C	4/28/2021	Oxidation Reduction Potential	mV	-120
UA	APW14	C	5/25/2021	Oxidation Reduction Potential	mV	-145
UA	APW14	C	6/17/2021	Oxidation Reduction Potential	mV	-97.8
UA	APW14	C	6/30/2021	Oxidation Reduction Potential	mV	-123
UA	APW14	C	7/15/2021	Oxidation Reduction Potential	mV	-144
UA	APW14	C	4/28/2023	Oxidation Reduction Potential	mV	-95.0
UA	APW14	C	7/31/2023	Oxidation Reduction Potential	mV	117
UA	APW14	C	10/10/2023	Oxidation Reduction Potential	mV	-68.0
UA	APW14	C	2/22/2021	Eh	V	0.084
UA	APW14	C	3/10/2021	Eh	V	0.092
UA	APW14	C	3/31/2021	Eh	V	0.15
UA	APW14	C	4/28/2021	Eh	V	0.074
UA	APW14	C	5/25/2021	Eh	V	0.047
UA	APW14	C	6/17/2021	Eh	V	0.096
UA	APW14	C	6/30/2021	Eh	V	0.071
UA	APW14	C	7/15/2021	Eh	V	0.048
UA	APW14	C	4/28/2023	Eh	V	0.10
UA	APW14	C	7/31/2023	Eh	V	0.31
UA	APW14	C	10/10/2023	Eh	V	0.13
UA	APW14	C	2/22/2021	Alkalinity, bicarbonate	mg/L CaCO3	410
UA	APW14	C	3/10/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW14	C	3/31/2021	Alkalinity, bicarbonate	mg/L CaCO3	440
UA	APW14	C	4/28/2021	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW14	C	5/25/2021	Alkalinity, bicarbonate	mg/L CaCO3	920
UA	APW14	C	6/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	490

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW14	C	6/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	440
UA	APW14	C	7/15/2021	Alkalinity, bicarbonate	mg/L CaCO3	480
UA	APW14	C	3/14/2023	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW14	C	4/28/2023	Alkalinity, bicarbonate	mg/L CaCO3	460
UA	APW14	C	7/31/2023	Alkalinity, bicarbonate	mg/L CaCO3	450
UA	APW14	C	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	484
UA	APW14	C	2/22/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW14	C	3/10/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW14	C	3/31/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW14	C	4/28/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW14	C	5/25/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW14	C	6/17/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW14	C	6/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW14	C	7/15/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW14	C	3/14/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW14	C	4/28/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW14	C	7/31/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW14	C	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW14	C	2/22/2021	Barium, total	mg/L	0.140
UA	APW14	C	3/10/2021	Barium, total	mg/L	0.0990
UA	APW14	C	3/31/2021	Barium, total	mg/L	0.0920
UA	APW14	C	4/28/2021	Barium, total	mg/L	0.100
UA	APW14	C	5/25/2021	Barium, total	mg/L	0.0980
UA	APW14	C	6/17/2021	Barium, total	mg/L	0.0860
UA	APW14	C	6/30/2021	Barium, total	mg/L	0.0820
UA	APW14	C	7/15/2021	Barium, total	mg/L	0.0700
UA	APW14	C	3/14/2023	Barium, total	mg/L	0.110
UA	APW14	C	4/28/2023	Barium, total	mg/L	0.0650
UA	APW14	C	7/31/2023	Barium, total	mg/L	0.0649
UA	APW14	C	10/10/2023	Barium, total	mg/L	0.0758
UA	APW14	C	2/22/2021	Calcium, total	mg/L	120
UA	APW14	C	3/10/2021	Calcium, total	mg/L	130
UA	APW14	C	3/31/2021	Calcium, total	mg/L	130
UA	APW14	C	4/28/2021	Calcium, total	mg/L	130
UA	APW14	C	5/25/2021	Calcium, total	mg/L	130
UA	APW14	C	6/17/2021	Calcium, total	mg/L	140
UA	APW14	C	6/30/2021	Calcium, total	mg/L	150
UA	APW14	C	7/15/2021	Calcium, total	mg/L	130
UA	APW14	C	3/14/2023	Calcium, total	mg/L	140
UA	APW14	C	4/28/2023	Calcium, total	mg/L	130
UA	APW14	C	7/31/2023	Calcium, total	mg/L	133
UA	APW14	C	10/10/2023	Calcium, total	mg/L	138
UA	APW14	C	2/22/2021	Chloride, total	mg/L	55.0
UA	APW14	C	3/10/2021	Chloride, total	mg/L	65.0
UA	APW14	C	3/31/2021	Chloride, total	mg/L	46.0
UA	APW14	C	4/28/2021	Chloride, total	mg/L	44.0

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW14	C	5/25/2021	Chloride, total	mg/L	43.0
UA	APW14	C	6/17/2021	Chloride, total	mg/L	45.0
UA	APW14	C	6/30/2021	Chloride, total	mg/L	49.0
UA	APW14	C	7/15/2021	Chloride, total	mg/L	53.0
UA	APW14	C	3/14/2023	Chloride, total	mg/L	39.0
UA	APW14	C	4/28/2023	Chloride, total	mg/L	46.0
UA	APW14	C	7/31/2023	Chloride, total	mg/L	42.0
UA	APW14	C	10/10/2023	Chloride, total	mg/L	41.0
UA	APW14	C	4/28/2023	Ferrous Iron, dissolved	mg/L	3.80
UA	APW14	C	7/31/2023	Ferrous Iron, dissolved	mg/L	<0.1
UA	APW14	C	4/28/2023	Iron, dissolved	mg/L	3.60
UA	APW14	C	7/31/2023	Iron, dissolved	mg/L	3.13
UA	APW14	C	2/22/2021	Lithium, total	mg/L	0.0510
UA	APW14	C	3/10/2021	Lithium, total	mg/L	0.0440
UA	APW14	C	3/31/2021	Lithium, total	mg/L	0.0340
UA	APW14	C	4/28/2021	Lithium, total	mg/L	0.0300
UA	APW14	C	5/25/2021	Lithium, total	mg/L	0.0290
UA	APW14	C	6/17/2021	Lithium, total	mg/L	0.0240
UA	APW14	C	6/30/2021	Lithium, total	mg/L	0.0470
UA	APW14	C	7/15/2021	Lithium, total	mg/L	0.0320
UA	APW14	C	3/14/2023	Lithium, total	mg/L	0.0180
UA	APW14	C	4/28/2023	Lithium, total	mg/L	0.0160
UA	APW14	C	7/31/2023	Lithium, total	mg/L	0.0207
UA	APW14	C	10/10/2023	Lithium, total	mg/L	0.0205
UA	APW14	C	2/22/2021	Magnesium, total	mg/L	58.0
UA	APW14	C	3/10/2021	Magnesium, total	mg/L	64.0
UA	APW14	C	3/31/2021	Magnesium, total	mg/L	61.0
UA	APW14	C	4/28/2021	Magnesium, total	mg/L	66.0
UA	APW14	C	5/25/2021	Magnesium, total	mg/L	63.0
UA	APW14	C	6/17/2021	Magnesium, total	mg/L	69.0
UA	APW14	C	6/30/2021	Magnesium, total	mg/L	76.0
UA	APW14	C	7/15/2021	Magnesium, total	mg/L	69.0
UA	APW14	C	3/14/2023	Magnesium, total	mg/L	74.0
UA	APW14	C	4/28/2023	Magnesium, total	mg/L	66.0
UA	APW14	C	7/31/2023	Magnesium, total	mg/L	67.6
UA	APW14	C	10/10/2023	Magnesium, total	mg/L	63.1
UA	APW14	C	4/28/2023	Manganese, dissolved	mg/L	0.220
UA	APW14	C	7/31/2023	Manganese, dissolved	mg/L	0.207
UA	APW14	C	7/31/2023	Phosphate, dissolved	mg/L	<0.005
UA	APW14	C	2/22/2021	Potassium, total	mg/L	5.30
UA	APW14	C	3/10/2021	Potassium, total	mg/L	4.00
UA	APW14	C	3/31/2021	Potassium, total	mg/L	3.20
UA	APW14	C	4/28/2021	Potassium, total	mg/L	4.00
UA	APW14	C	5/25/2021	Potassium, total	mg/L	3.10
UA	APW14	C	6/17/2021	Potassium, total	mg/L	2.80
UA	APW14	C	6/30/2021	Potassium, total	mg/L	3.00

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW14	C	7/15/2021	Potassium, total	mg/L	2.30
UA	APW14	C	3/14/2023	Potassium, total	mg/L	2.00
UA	APW14	C	4/28/2023	Potassium, total	mg/L	1.60
UA	APW14	C	7/31/2023	Potassium, total	mg/L	2.00
UA	APW14	C	10/10/2023	Potassium, total	mg/L	1.92
UA	APW14	C	4/28/2023	Silicon, dissolved	mg/L	9.20
UA	APW14	C	7/31/2023	Silicon, dissolved	mg/L	7.08
UA	APW14	C	2/22/2021	Sodium, total	mg/L	130
UA	APW14	C	3/10/2021	Sodium, total	mg/L	130
UA	APW14	C	3/31/2021	Sodium, total	mg/L	130
UA	APW14	C	4/28/2021	Sodium, total	mg/L	140
UA	APW14	C	5/25/2021	Sodium, total	mg/L	130
UA	APW14	C	6/17/2021	Sodium, total	mg/L	130
UA	APW14	C	6/30/2021	Sodium, total	mg/L	150
UA	APW14	C	7/15/2021	Sodium, total	mg/L	140
UA	APW14	C	3/14/2023	Sodium, total	mg/L	150
UA	APW14	C	4/28/2023	Sodium, total	mg/L	130
UA	APW14	C	7/31/2023	Sodium, total	mg/L	126
UA	APW14	C	10/10/2023	Sodium, total	mg/L	133
UA	APW14	C	2/22/2021	Sulfate, total	mg/L	320
UA	APW14	C	3/10/2021	Sulfate, total	mg/L	340
UA	APW14	C	3/31/2021	Sulfate, total	mg/L	330
UA	APW14	C	4/28/2021	Sulfate, total	mg/L	320
UA	APW14	C	5/25/2021	Sulfate, total	mg/L	320
UA	APW14	C	6/17/2021	Sulfate, total	mg/L	310
UA	APW14	C	6/30/2021	Sulfate, total	mg/L	330
UA	APW14	C	7/15/2021	Sulfate, total	mg/L	330
UA	APW14	C	3/14/2023	Sulfate, total	mg/L	330
UA	APW14	C	4/28/2023	Sulfate, total	mg/L	380
UA	APW14	C	7/31/2023	Sulfate, total	mg/L	370
UA	APW14	C	10/10/2023	Sulfate, total	mg/L	358
UA	APW14	C	2/22/2021	Total Dissolved Solids	mg/L	830
UA	APW14	C	3/10/2021	Total Dissolved Solids	mg/L	970
UA	APW14	C	3/31/2021	Total Dissolved Solids	mg/L	1,000
UA	APW14	C	4/28/2021	Total Dissolved Solids	mg/L	1,000
UA	APW14	C	5/25/2021	Total Dissolved Solids	mg/L	920
UA	APW14	C	6/17/2021	Total Dissolved Solids	mg/L	940
UA	APW14	C	6/30/2021	Total Dissolved Solids	mg/L	860
UA	APW14	C	7/15/2021	Total Dissolved Solids	mg/L	970
UA	APW14	C	3/14/2023	Total Dissolved Solids	mg/L	960
UA	APW14	C	4/28/2023	Total Dissolved Solids	mg/L	980
UA	APW14	C	7/31/2023	Total Dissolved Solids	mg/L	990
UA	APW14	C	10/10/2023	Total Dissolved Solids	mg/L	990
UA	APW15	C	2/23/2021	pH (field)	SU	7.0
UA	APW15	C	3/10/2021	pH (field)	SU	7.2
UA	APW15	C	3/31/2021	pH (field)	SU	6.5

Attachment 8. Aqueous Data
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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW15	C	4/28/2021	pH (field)	SU	7.2
UA	APW15	C	5/24/2021	pH (field)	SU	7.3
UA	APW15	C	6/17/2021	pH (field)	SU	7.3
UA	APW15	C	6/30/2021	pH (field)	SU	7.1
UA	APW15	C	7/14/2021	pH (field)	SU	7.2
UA	APW15	C	3/14/2023	pH (field)	SU	7.2
UA	APW15	C	4/26/2023	pH (field)	SU	7.2
UA	APW15	C	8/1/2023	pH (field)	SU	6.9
UA	APW15	C	10/10/2023	pH (field)	SU	7.1
UA	APW15	C	2/23/2021	Oxidation Reduction Potential	mV	-98.5
UA	APW15	C	3/10/2021	Oxidation Reduction Potential	mV	-108
UA	APW15	C	3/31/2021	Oxidation Reduction Potential	mV	-61.8
UA	APW15	C	4/28/2021	Oxidation Reduction Potential	mV	-122
UA	APW15	C	5/24/2021	Oxidation Reduction Potential	mV	-128
UA	APW15	C	6/17/2021	Oxidation Reduction Potential	mV	-136
UA	APW15	C	6/30/2021	Oxidation Reduction Potential	mV	-133
UA	APW15	C	7/14/2021	Oxidation Reduction Potential	mV	-142
UA	APW15	C	4/26/2023	Oxidation Reduction Potential	mV	-126
UA	APW15	C	8/1/2023	Oxidation Reduction Potential	mV	-62.0
UA	APW15	C	10/10/2023	Oxidation Reduction Potential	mV	-104
UA	APW15	C	2/23/2021	Eh	V	0.098
UA	APW15	C	3/10/2021	Eh	V	0.088
UA	APW15	C	3/31/2021	Eh	V	0.13
UA	APW15	C	4/28/2021	Eh	V	0.073
UA	APW15	C	5/24/2021	Eh	V	0.065
UA	APW15	C	6/17/2021	Eh	V	0.056
UA	APW15	C	6/30/2021	Eh	V	0.060
UA	APW15	C	7/14/2021	Eh	V	0.050
UA	APW15	C	4/26/2023	Eh	V	0.069
UA	APW15	C	8/1/2023	Eh	V	0.13
UA	APW15	C	10/10/2023	Eh	V	0.092
UA	APW15	C	2/23/2021	Alkalinity, bicarbonate	mg/L CaCO3	710
UA	APW15	C	3/10/2021	Alkalinity, bicarbonate	mg/L CaCO3	700
UA	APW15	C	3/31/2021	Alkalinity, bicarbonate	mg/L CaCO3	710
UA	APW15	C	4/28/2021	Alkalinity, bicarbonate	mg/L CaCO3	720
UA	APW15	C	5/24/2021	Alkalinity, bicarbonate	mg/L CaCO3	1,400
UA	APW15	C	6/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	710
UA	APW15	C	6/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	700
UA	APW15	C	7/14/2021	Alkalinity, bicarbonate	mg/L CaCO3	710
UA	APW15	C	3/14/2023	Alkalinity, bicarbonate	mg/L CaCO3	710
UA	APW15	C	4/26/2023	Alkalinity, bicarbonate	mg/L CaCO3	590
UA	APW15	C	8/1/2023	Alkalinity, bicarbonate	mg/L CaCO3	742
UA	APW15	C	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	760
UA	APW15	C	2/23/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW15	C	3/10/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW15	C	3/31/2021	Alkalinity, carbonate	mg/L CaCO3	0

Attachment 8. Aqueous Data
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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW15	C	4/28/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW15	C	5/24/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW15	C	6/17/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW15	C	6/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW15	C	7/14/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW15	C	3/14/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW15	C	4/26/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW15	C	8/1/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW15	C	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW15	C	2/23/2021	Barium, total	mg/L	0.560
UA	APW15	C	3/10/2021	Barium, total	mg/L	0.610
UA	APW15	C	3/31/2021	Barium, total	mg/L	0.630
UA	APW15	C	4/28/2021	Barium, total	mg/L	0.600
UA	APW15	C	5/24/2021	Barium, total	mg/L	0.570
UA	APW15	C	6/17/2021	Barium, total	mg/L	0.600
UA	APW15	C	6/30/2021	Barium, total	mg/L	0.600
UA	APW15	C	7/14/2021	Barium, total	mg/L	0.600
UA	APW15	C	3/14/2023	Barium, total	mg/L	0.560
UA	APW15	C	4/26/2023	Barium, total	mg/L	0.530
UA	APW15	C	8/1/2023	Barium, total	mg/L	0.640
UA	APW15	C	10/10/2023	Barium, total	mg/L	0.708
UA	APW15	C	2/23/2021	Calcium, total	mg/L	93.0
UA	APW15	C	3/10/2021	Calcium, total	mg/L	100
UA	APW15	C	3/31/2021	Calcium, total	mg/L	100
UA	APW15	C	4/28/2021	Calcium, total	mg/L	96.0
UA	APW15	C	5/24/2021	Calcium, total	mg/L	98.0
UA	APW15	C	6/17/2021	Calcium, total	mg/L	95.0
UA	APW15	C	6/30/2021	Calcium, total	mg/L	98.0
UA	APW15	C	7/14/2021	Calcium, total	mg/L	96.0
UA	APW15	C	3/14/2023	Calcium, total	mg/L	99.0
UA	APW15	C	4/26/2023	Calcium, total	mg/L	91.0
UA	APW15	C	8/1/2023	Calcium, total	mg/L	100
UA	APW15	C	10/10/2023	Calcium, total	mg/L	96.0
UA	APW15	C	2/23/2021	Chloride, total	mg/L	260
UA	APW15	C	3/10/2021	Chloride, total	mg/L	250
UA	APW15	C	3/31/2021	Chloride, total	mg/L	240
UA	APW15	C	4/28/2021	Chloride, total	mg/L	230
UA	APW15	C	5/24/2021	Chloride, total	mg/L	230
UA	APW15	C	6/17/2021	Chloride, total	mg/L	240
UA	APW15	C	6/30/2021	Chloride, total	mg/L	230
UA	APW15	C	7/14/2021	Chloride, total	mg/L	130
UA	APW15	C	3/14/2023	Chloride, total	mg/L	230
UA	APW15	C	4/26/2023	Chloride, total	mg/L	270
UA	APW15	C	8/1/2023	Chloride, total	mg/L	235
UA	APW15	C	10/10/2023	Chloride, total	mg/L	227
UA	APW15	C	4/26/2023	Ferrous Iron, dissolved	mg/L	6.00

Attachment 8. Aqueous Data
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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW15	C	8/1/2023	Ferrous Iron, dissolved	mg/L	<0.1
UA	APW15	C	4/26/2023	Iron, dissolved	mg/L	9.00
UA	APW15	C	8/1/2023	Iron, dissolved	mg/L	10.5
UA	APW15	C	2/23/2021	Lithium, total	mg/L	<0.0099
UA	APW15	C	3/10/2021	Lithium, total	mg/L	<0.0099
UA	APW15	C	3/31/2021	Lithium, total	mg/L	<0.0099
UA	APW15	C	4/28/2021	Lithium, total	mg/L	<0.0099
UA	APW15	C	5/24/2021	Lithium, total	mg/L	<0.0099
UA	APW15	C	6/17/2021	Lithium, total	mg/L	0.0220
UA	APW15	C	6/30/2021	Lithium, total	mg/L	0.0220
UA	APW15	C	7/14/2021	Lithium, total	mg/L	<0.0099
UA	APW15	C	3/14/2023	Lithium, total	mg/L	0.00660
UA	APW15	C	4/26/2023	Lithium, total	mg/L	0.00640
UA	APW15	C	8/1/2023	Lithium, total	mg/L	0.00610
UA	APW15	C	10/10/2023	Lithium, total	mg/L	0.00730
UA	APW15	C	2/23/2021	Magnesium, total	mg/L	39.0
UA	APW15	C	3/10/2021	Magnesium, total	mg/L	43.0
UA	APW15	C	3/31/2021	Magnesium, total	mg/L	42.0
UA	APW15	C	4/28/2021	Magnesium, total	mg/L	41.0
UA	APW15	C	5/24/2021	Magnesium, total	mg/L	41.0
UA	APW15	C	6/17/2021	Magnesium, total	mg/L	37.0
UA	APW15	C	6/30/2021	Magnesium, total	mg/L	42.0
UA	APW15	C	7/14/2021	Magnesium, total	mg/L	41.0
UA	APW15	C	3/14/2023	Magnesium, total	mg/L	46.0
UA	APW15	C	4/26/2023	Magnesium, total	mg/L	38.0
UA	APW15	C	8/1/2023	Magnesium, total	mg/L	39.9
UA	APW15	C	10/10/2023	Magnesium, total	mg/L	37.4
UA	APW15	C	4/26/2023	Manganese, dissolved	mg/L	0.0830
UA	APW15	C	8/1/2023	Manganese, dissolved	mg/L	0.0865
UA	APW15	C	8/1/2023	Phosphate, dissolved	mg/L	1.44
UA	APW15	C	2/23/2021	Potassium, total	mg/L	3.10
UA	APW15	C	3/10/2021	Potassium, total	mg/L	3.50
UA	APW15	C	3/31/2021	Potassium, total	mg/L	3.40
UA	APW15	C	4/28/2021	Potassium, total	mg/L	3.30
UA	APW15	C	5/24/2021	Potassium, total	mg/L	3.20
UA	APW15	C	6/17/2021	Potassium, total	mg/L	2.90
UA	APW15	C	6/30/2021	Potassium, total	mg/L	2.80
UA	APW15	C	7/14/2021	Potassium, total	mg/L	2.80
UA	APW15	C	3/14/2023	Potassium, total	mg/L	3.20
UA	APW15	C	4/26/2023	Potassium, total	mg/L	3.00
UA	APW15	C	8/1/2023	Potassium, total	mg/L	3.35
UA	APW15	C	10/10/2023	Potassium, total	mg/L	3.67
UA	APW15	C	4/26/2023	Silicon, dissolved	mg/L	7.80
UA	APW15	C	8/1/2023	Silicon, dissolved	mg/L	7.02
UA	APW15	C	2/23/2021	Sodium, total	mg/L	260
UA	APW15	C	3/10/2021	Sodium, total	mg/L	280

Attachment 8. Aqueous Data
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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW15	C	3/31/2021	Sodium, total	mg/L	270
UA	APW15	C	4/28/2021	Sodium, total	mg/L	280
UA	APW15	C	5/24/2021	Sodium, total	mg/L	300
UA	APW15	C	6/17/2021	Sodium, total	mg/L	260
UA	APW15	C	6/30/2021	Sodium, total	mg/L	280
UA	APW15	C	7/14/2021	Sodium, total	mg/L	290
UA	APW15	C	3/14/2023	Sodium, total	mg/L	320
UA	APW15	C	4/26/2023	Sodium, total	mg/L	290
UA	APW15	C	8/1/2023	Sodium, total	mg/L	298
UA	APW15	C	10/10/2023	Sodium, total	mg/L	301
UA	APW15	C	2/23/2021	Sulfate, total	mg/L	<0.18
UA	APW15	C	3/10/2021	Sulfate, total	mg/L	<0.18
UA	APW15	C	3/31/2021	Sulfate, total	mg/L	<0.18
UA	APW15	C	4/28/2021	Sulfate, total	mg/L	<0.18
UA	APW15	C	5/24/2021	Sulfate, total	mg/L	<0.18
UA	APW15	C	6/17/2021	Sulfate, total	mg/L	<0.18
UA	APW15	C	6/30/2021	Sulfate, total	mg/L	<0.18
UA	APW15	C	7/14/2021	Sulfate, total	mg/L	<0.18
UA	APW15	C	3/14/2023	Sulfate, total	mg/L	0.600
UA	APW15	C	4/26/2023	Sulfate, total	mg/L	0.400
UA	APW15	C	8/1/2023	Sulfate, total	mg/L	16.0
UA	APW15	C	10/10/2023	Sulfate, total	mg/L	12.0
UA	APW15	C	2/23/2021	Total Dissolved Solids	mg/L	1,100
UA	APW15	C	3/10/2021	Total Dissolved Solids	mg/L	1,100
UA	APW15	C	3/31/2021	Total Dissolved Solids	mg/L	1,100
UA	APW15	C	4/28/2021	Total Dissolved Solids	mg/L	1,200
UA	APW15	C	5/24/2021	Total Dissolved Solids	mg/L	1,000
UA	APW15	C	6/17/2021	Total Dissolved Solids	mg/L	1,000
UA	APW15	C	6/30/2021	Total Dissolved Solids	mg/L	1,000
UA	APW15	C	7/14/2021	Total Dissolved Solids	mg/L	1,200
UA	APW15	C	3/14/2023	Total Dissolved Solids	mg/L	1,100
UA	APW15	C	4/26/2023	Total Dissolved Solids	mg/L	1,100
UA	APW15	C	8/1/2023	Total Dissolved Solids	mg/L	1,120
UA	APW15	C	10/10/2023	Total Dissolved Solids	mg/L	1,140
UA	APW16	C	2/23/2021	pH (field)	SU	7.4
UA	APW16	C	3/10/2021	pH (field)	SU	7.5
UA	APW16	C	3/30/2021	pH (field)	SU	7.0
UA	APW16	C	4/28/2021	pH (field)	SU	7.4
UA	APW16	C	5/24/2021	pH (field)	SU	7.6
UA	APW16	C	6/16/2021	pH (field)	SU	7.4
UA	APW16	C	6/30/2021	pH (field)	SU	7.0
UA	APW16	C	7/15/2021	pH (field)	SU	7.4
UA	APW16	C	3/15/2023	pH (field)	SU	7.4
UA	APW16	C	4/25/2023	pH (field)	SU	7.7
UA	APW16	C	7/31/2023	pH (field)	SU	7.1
UA	APW16	C	10/10/2023	pH (field)	SU	7.4

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW16	C	2/23/2021	Oxidation Reduction Potential	mV	-71.4
UA	APW16	C	3/10/2021	Oxidation Reduction Potential	mV	-132
UA	APW16	C	3/30/2021	Oxidation Reduction Potential	mV	-99.5
UA	APW16	C	4/28/2021	Oxidation Reduction Potential	mV	-129
UA	APW16	C	5/24/2021	Oxidation Reduction Potential	mV	-132
UA	APW16	C	6/16/2021	Oxidation Reduction Potential	mV	-123
UA	APW16	C	6/30/2021	Oxidation Reduction Potential	mV	-119
UA	APW16	C	7/15/2021	Oxidation Reduction Potential	mV	-143
UA	APW16	C	4/25/2023	Oxidation Reduction Potential	mV	-104
UA	APW16	C	7/31/2023	Oxidation Reduction Potential	mV	108
UA	APW16	C	10/10/2023	Oxidation Reduction Potential	mV	-70.0
UA	APW16	C	2/23/2021	Eh	V	0.13
UA	APW16	C	3/10/2021	Eh	V	0.064
UA	APW16	C	3/30/2021	Eh	V	0.097
UA	APW16	C	4/28/2021	Eh	V	0.066
UA	APW16	C	5/24/2021	Eh	V	0.063
UA	APW16	C	6/16/2021	Eh	V	0.071
UA	APW16	C	6/30/2021	Eh	V	0.075
UA	APW16	C	7/15/2021	Eh	V	0.049
UA	APW16	C	4/25/2023	Eh	V	0.092
UA	APW16	C	7/31/2023	Eh	V	0.30
UA	APW16	C	10/10/2023	Eh	V	0.13
UA	APW16	C	2/23/2021	Alkalinity, bicarbonate	mg/L CaCO3	610
UA	APW16	C	3/10/2021	Alkalinity, bicarbonate	mg/L CaCO3	590
UA	APW16	C	3/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	640
UA	APW16	C	4/28/2021	Alkalinity, bicarbonate	mg/L CaCO3	650
UA	APW16	C	5/24/2021	Alkalinity, bicarbonate	mg/L CaCO3	1,300
UA	APW16	C	6/16/2021	Alkalinity, bicarbonate	mg/L CaCO3	650
UA	APW16	C	6/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	510
UA	APW16	C	7/15/2021	Alkalinity, bicarbonate	mg/L CaCO3	650
UA	APW16	C	3/15/2023	Alkalinity, bicarbonate	mg/L CaCO3	650
UA	APW16	C	4/25/2023	Alkalinity, bicarbonate	mg/L CaCO3	560
UA	APW16	C	7/31/2023	Alkalinity, bicarbonate	mg/L CaCO3	628
UA	APW16	C	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	656
UA	APW16	C	2/23/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW16	C	3/10/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW16	C	3/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW16	C	4/28/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW16	C	5/24/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW16	C	6/16/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW16	C	6/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW16	C	7/15/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW16	C	3/15/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW16	C	4/25/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW16	C	7/31/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW16	C	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW16	C	2/23/2021	Barium, total	mg/L	0.620
UA	APW16	C	3/10/2021	Barium, total	mg/L	0.660
UA	APW16	C	3/30/2021	Barium, total	mg/L	0.660
UA	APW16	C	4/28/2021	Barium, total	mg/L	0.620
UA	APW16	C	5/24/2021	Barium, total	mg/L	0.610
UA	APW16	C	6/16/2021	Barium, total	mg/L	0.570
UA	APW16	C	6/30/2021	Barium, total	mg/L	0.550
UA	APW16	C	7/15/2021	Barium, total	mg/L	0.560
UA	APW16	C	3/15/2023	Barium, total	mg/L	0.520
UA	APW16	C	4/25/2023	Barium, total	mg/L	0.540
UA	APW16	C	7/31/2023	Barium, total	mg/L	0.658
UA	APW16	C	10/10/2023	Barium, total	mg/L	0.597
UA	APW16	C	2/23/2021	Calcium, total	mg/L	92.0
UA	APW16	C	3/10/2021	Calcium, total	mg/L	99.0
UA	APW16	C	3/30/2021	Calcium, total	mg/L	97.0
UA	APW16	C	4/28/2021	Calcium, total	mg/L	96.0
UA	APW16	C	5/24/2021	Calcium, total	mg/L	100
UA	APW16	C	6/16/2021	Calcium, total	mg/L	100
UA	APW16	C	6/30/2021	Calcium, total	mg/L	96.0
UA	APW16	C	7/15/2021	Calcium, total	mg/L	95.0
UA	APW16	C	3/15/2023	Calcium, total	mg/L	95.0
UA	APW16	C	4/25/2023	Calcium, total	mg/L	96.0
UA	APW16	C	7/31/2023	Calcium, total	mg/L	94.0
UA	APW16	C	10/10/2023	Calcium, total	mg/L	92.9
UA	APW16	C	2/23/2021	Chloride, total	mg/L	71.0
UA	APW16	C	3/10/2021	Chloride, total	mg/L	71.0
UA	APW16	C	3/30/2021	Chloride, total	mg/L	71.0
UA	APW16	C	4/28/2021	Chloride, total	mg/L	75.0
UA	APW16	C	5/24/2021	Chloride, total	mg/L	74.0
UA	APW16	C	6/16/2021	Chloride, total	mg/L	73.0
UA	APW16	C	6/30/2021	Chloride, total	mg/L	59.0
UA	APW16	C	7/15/2021	Chloride, total	mg/L	77.0
UA	APW16	C	3/15/2023	Chloride, total	mg/L	65.0
UA	APW16	C	4/25/2023	Chloride, total	mg/L	71.0
UA	APW16	C	7/31/2023	Chloride, total	mg/L	64.0
UA	APW16	C	10/10/2023	Chloride, total	mg/L	69.0
UA	APW16	C	4/25/2023	Ferrous Iron, dissolved	mg/L	2.30
UA	APW16	C	7/31/2023	Ferrous Iron, dissolved	mg/L	5.59
UA	APW16	C	4/25/2023	Iron, dissolved	mg/L	2.00
UA	APW16	C	7/31/2023	Iron, dissolved	mg/L	2.89
UA	APW16	C	2/23/2021	Lithium, total	mg/L	<0.0099
UA	APW16	C	3/10/2021	Lithium, total	mg/L	<0.0099
UA	APW16	C	3/30/2021	Lithium, total	mg/L	<0.0099
UA	APW16	C	4/28/2021	Lithium, total	mg/L	<0.0099
UA	APW16	C	5/24/2021	Lithium, total	mg/L	<0.0099
UA	APW16	C	6/16/2021	Lithium, total	mg/L	<0.0099

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW16	C	6/30/2021	Lithium, total	mg/L	<0.0099
UA	APW16	C	7/15/2021	Lithium, total	mg/L	<0.0099
UA	APW16	C	3/15/2023	Lithium, total	mg/L	<0.005
UA	APW16	C	4/25/2023	Lithium, total	mg/L	<0.005
UA	APW16	C	7/31/2023	Lithium, total	mg/L	0.00250
UA	APW16	C	10/10/2023	Lithium, total	mg/L	0.00290
UA	APW16	C	2/23/2021	Magnesium, total	mg/L	43.0
UA	APW16	C	3/10/2021	Magnesium, total	mg/L	46.0
UA	APW16	C	3/30/2021	Magnesium, total	mg/L	43.0
UA	APW16	C	4/28/2021	Magnesium, total	mg/L	45.0
UA	APW16	C	5/24/2021	Magnesium, total	mg/L	46.0
UA	APW16	C	6/16/2021	Magnesium, total	mg/L	44.0
UA	APW16	C	6/30/2021	Magnesium, total	mg/L	44.0
UA	APW16	C	7/15/2021	Magnesium, total	mg/L	45.0
UA	APW16	C	3/15/2023	Magnesium, total	mg/L	48.0
UA	APW16	C	4/25/2023	Magnesium, total	mg/L	44.0
UA	APW16	C	7/31/2023	Magnesium, total	mg/L	42.7
UA	APW16	C	10/10/2023	Magnesium, total	mg/L	39.6
UA	APW16	C	4/25/2023	Manganese, dissolved	mg/L	0.0190
UA	APW16	C	7/31/2023	Manganese, dissolved	mg/L	0.0270
UA	APW16	C	7/31/2023	Phosphate, dissolved	mg/L	1.47
UA	APW16	C	2/23/2021	Potassium, total	mg/L	2.20
UA	APW16	C	3/10/2021	Potassium, total	mg/L	2.50
UA	APW16	C	3/30/2021	Potassium, total	mg/L	2.40
UA	APW16	C	4/28/2021	Potassium, total	mg/L	1.90
UA	APW16	C	5/24/2021	Potassium, total	mg/L	2.00
UA	APW16	C	6/16/2021	Potassium, total	mg/L	1.90
UA	APW16	C	6/30/2021	Potassium, total	mg/L	2.00
UA	APW16	C	7/15/2021	Potassium, total	mg/L	1.80
UA	APW16	C	3/15/2023	Potassium, total	mg/L	1.90
UA	APW16	C	4/25/2023	Potassium, total	mg/L	1.80
UA	APW16	C	7/31/2023	Potassium, total	mg/L	1.96
UA	APW16	C	10/10/2023	Potassium, total	mg/L	2.00
UA	APW16	C	4/25/2023	Silicon, dissolved	mg/L	6.70
UA	APW16	C	7/31/2023	Silicon, dissolved	mg/L	5.21
UA	APW16	C	2/23/2021	Sodium, total	mg/L	130
UA	APW16	C	3/10/2021	Sodium, total	mg/L	150
UA	APW16	C	3/30/2021	Sodium, total	mg/L	150
UA	APW16	C	4/28/2021	Sodium, total	mg/L	140
UA	APW16	C	5/24/2021	Sodium, total	mg/L	150
UA	APW16	C	6/16/2021	Sodium, total	mg/L	140
UA	APW16	C	6/30/2021	Sodium, total	mg/L	140
UA	APW16	C	7/15/2021	Sodium, total	mg/L	150
UA	APW16	C	3/15/2023	Sodium, total	mg/L	160
UA	APW16	C	4/25/2023	Sodium, total	mg/L	140
UA	APW16	C	7/31/2023	Sodium, total	mg/L	135

Attachment 8. Aqueous Data
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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW16	C	10/10/2023	Sodium, total	mg/L	138
UA	APW16	C	2/23/2021	Sulfate, total	mg/L	1.90
UA	APW16	C	3/10/2021	Sulfate, total	mg/L	<0.18
UA	APW16	C	3/30/2021	Sulfate, total	mg/L	<0.18
UA	APW16	C	4/28/2021	Sulfate, total	mg/L	<0.18
UA	APW16	C	5/24/2021	Sulfate, total	mg/L	<0.18
UA	APW16	C	6/16/2021	Sulfate, total	mg/L	<0.18
UA	APW16	C	6/30/2021	Sulfate, total	mg/L	<0.18
UA	APW16	C	7/15/2021	Sulfate, total	mg/L	<0.18
UA	APW16	C	3/15/2023	Sulfate, total	mg/L	0.930
UA	APW16	C	4/25/2023	Sulfate, total	mg/L	0.650
UA	APW16	C	7/31/2023	Sulfate, total	mg/L	14.0
UA	APW16	C	10/10/2023	Sulfate, total	mg/L	8.00
UA	APW16	C	2/23/2021	Total Dissolved Solids	mg/L	780
UA	APW16	C	3/10/2021	Total Dissolved Solids	mg/L	750
UA	APW16	C	3/30/2021	Total Dissolved Solids	mg/L	740
UA	APW16	C	4/28/2021	Total Dissolved Solids	mg/L	750
UA	APW16	C	5/24/2021	Total Dissolved Solids	mg/L	810
UA	APW16	C	6/16/2021	Total Dissolved Solids	mg/L	720
UA	APW16	C	6/30/2021	Total Dissolved Solids	mg/L	610
UA	APW16	C	7/15/2021	Total Dissolved Solids	mg/L	690
UA	APW16	C	3/15/2023	Total Dissolved Solids	mg/L	1,300
UA	APW16	C	4/25/2023	Total Dissolved Solids	mg/L	800
UA	APW16	C	7/31/2023	Total Dissolved Solids	mg/L	665
UA	APW16	C	10/10/2023	Total Dissolved Solids	mg/L	768
UA	APW17	C	2/23/2021	pH (field)	SU	7.4
UA	APW17	C	3/10/2021	pH (field)	SU	7.7
UA	APW17	C	3/30/2021	pH (field)	SU	7.1
UA	APW17	C	4/29/2021	pH (field)	SU	7.4
UA	APW17	C	5/24/2021	pH (field)	SU	7.4
UA	APW17	C	6/16/2021	pH (field)	SU	7.4
UA	APW17	C	6/30/2021	pH (field)	SU	7.4
UA	APW17	C	7/15/2021	pH (field)	SU	7.4
UA	APW17	C	3/15/2023	pH (field)	SU	7.5
UA	APW17	C	4/25/2023	pH (field)	SU	7.6
UA	APW17	C	7/25/2023	pH (field)	SU	6.9
UA	APW17	C	10/10/2023	pH (field)	SU	7.5
UA	APW17	C	2/23/2021	Oxidation Reduction Potential	mV	-22.5
UA	APW17	C	3/10/2021	Oxidation Reduction Potential	mV	-132
UA	APW17	C	3/30/2021	Oxidation Reduction Potential	mV	-87.2
UA	APW17	C	4/29/2021	Oxidation Reduction Potential	mV	-126
UA	APW17	C	5/24/2021	Oxidation Reduction Potential	mV	197
UA	APW17	C	6/16/2021	Oxidation Reduction Potential	mV	-130
UA	APW17	C	6/30/2021	Oxidation Reduction Potential	mV	-138
UA	APW17	C	7/15/2021	Oxidation Reduction Potential	mV	-110
UA	APW17	C	4/25/2023	Oxidation Reduction Potential	mV	-97.2

Attachment 8. Aqueous Data
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Newton Primary Ash Pond
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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW17	C	7/25/2023	Oxidation Reduction Potential	mV	50.0
UA	APW17	C	10/10/2023	Oxidation Reduction Potential	mV	-73.0
UA	APW17	C	2/23/2021	Eh	V	0.17
UA	APW17	C	3/10/2021	Eh	V	0.064
UA	APW17	C	3/30/2021	Eh	V	0.11
UA	APW17	C	4/29/2021	Eh	V	0.069
UA	APW17	C	5/24/2021	Eh	V	0.39
UA	APW17	C	6/16/2021	Eh	V	0.061
UA	APW17	C	6/30/2021	Eh	V	0.054
UA	APW17	C	7/15/2021	Eh	V	0.083
UA	APW17	C	4/25/2023	Eh	V	0.098
UA	APW17	C	7/25/2023	Eh	V	0.24
UA	APW17	C	10/10/2023	Eh	V	0.12
UA	APW17	C	2/23/2021	Alkalinity, bicarbonate	mg/L CaCO3	540
UA	APW17	C	3/10/2021	Alkalinity, bicarbonate	mg/L CaCO3	610
UA	APW17	C	3/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	520
UA	APW17	C	4/29/2021	Alkalinity, bicarbonate	mg/L CaCO3	540
UA	APW17	C	5/24/2021	Alkalinity, bicarbonate	mg/L CaCO3	1,000
UA	APW17	C	6/16/2021	Alkalinity, bicarbonate	mg/L CaCO3	540
UA	APW17	C	6/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW17	C	7/15/2021	Alkalinity, bicarbonate	mg/L CaCO3	520
UA	APW17	C	3/15/2023	Alkalinity, bicarbonate	mg/L CaCO3	550
UA	APW17	C	4/25/2023	Alkalinity, bicarbonate	mg/L CaCO3	450
UA	APW17	C	7/25/2023	Alkalinity, bicarbonate	mg/L CaCO3	534
UA	APW17	C	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	560
UA	APW17	C	2/23/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW17	C	3/10/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW17	C	3/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW17	C	4/29/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW17	C	5/24/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW17	C	6/16/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW17	C	6/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW17	C	7/15/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW17	C	3/15/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW17	C	4/25/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW17	C	7/25/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW17	C	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW17	C	2/23/2021	Barium, total	mg/L	0.540
UA	APW17	C	3/10/2021	Barium, total	mg/L	0.570
UA	APW17	C	3/30/2021	Barium, total	mg/L	0.630
UA	APW17	C	4/29/2021	Barium, total	mg/L	0.600
UA	APW17	C	5/24/2021	Barium, total	mg/L	0.590
UA	APW17	C	6/16/2021	Barium, total	mg/L	0.620
UA	APW17	C	6/30/2021	Barium, total	mg/L	0.610
UA	APW17	C	7/15/2021	Barium, total	mg/L	0.610
UA	APW17	C	3/15/2023	Barium, total	mg/L	0.600

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW17	C	4/25/2023	Barium, total	mg/L	0.550
UA	APW17	C	7/25/2023	Barium, total	mg/L	0.609
UA	APW17	C	10/10/2023	Barium, total	mg/L	0.741
UA	APW17	C	2/23/2021	Calcium, total	mg/L	100
UA	APW17	C	3/10/2021	Calcium, total	mg/L	110
UA	APW17	C	3/30/2021	Calcium, total	mg/L	110
UA	APW17	C	4/29/2021	Calcium, total	mg/L	120
UA	APW17	C	5/24/2021	Calcium, total	mg/L	110
UA	APW17	C	6/16/2021	Calcium, total	mg/L	120
UA	APW17	C	6/30/2021	Calcium, total	mg/L	110
UA	APW17	C	7/15/2021	Calcium, total	mg/L	110
UA	APW17	C	3/15/2023	Calcium, total	mg/L	110
UA	APW17	C	4/25/2023	Calcium, total	mg/L	110
UA	APW17	C	7/25/2023	Calcium, total	mg/L	106
UA	APW17	C	10/10/2023	Calcium, total	mg/L	107
UA	APW17	C	2/23/2021	Chloride, total	mg/L	64.0
UA	APW17	C	3/10/2021	Chloride, total	mg/L	60.0
UA	APW17	C	3/30/2021	Chloride, total	mg/L	57.0
UA	APW17	C	4/29/2021	Chloride, total	mg/L	55.0
UA	APW17	C	5/24/2021	Chloride, total	mg/L	88.0
UA	APW17	C	6/16/2021	Chloride, total	mg/L	54.0
UA	APW17	C	6/30/2021	Chloride, total	mg/L	49.0
UA	APW17	C	7/15/2021	Chloride, total	mg/L	31.0
UA	APW17	C	3/15/2023	Chloride, total	mg/L	51.0
UA	APW17	C	4/25/2023	Chloride, total	mg/L	56.0
UA	APW17	C	7/25/2023	Chloride, total	mg/L	53.0
UA	APW17	C	10/10/2023	Chloride, total	mg/L	59.0
UA	APW17	C	4/25/2023	Ferrous Iron, dissolved	mg/L	1.90
UA	APW17	C	7/25/2023	Ferrous Iron, dissolved	mg/L	3.20
UA	APW17	C	4/25/2023	Iron, dissolved	mg/L	1.90
UA	APW17	C	7/25/2023	Iron, dissolved	mg/L	2.18
UA	APW17	C	2/23/2021	Lithium, total	mg/L	<0.0099
UA	APW17	C	3/10/2021	Lithium, total	mg/L	<0.0099
UA	APW17	C	3/30/2021	Lithium, total	mg/L	<0.0099
UA	APW17	C	4/29/2021	Lithium, total	mg/L	<0.0099
UA	APW17	C	5/24/2021	Lithium, total	mg/L	<0.0099
UA	APW17	C	6/16/2021	Lithium, total	mg/L	<0.0099
UA	APW17	C	6/30/2021	Lithium, total	mg/L	<0.0099
UA	APW17	C	7/15/2021	Lithium, total	mg/L	<0.0099
UA	APW17	C	3/15/2023	Lithium, total	mg/L	<0.005
UA	APW17	C	4/25/2023	Lithium, total	mg/L	<0.005
UA	APW17	C	7/25/2023	Lithium, total	mg/L	0.00250
UA	APW17	C	10/10/2023	Lithium, total	mg/L	0.00240
UA	APW17	C	2/23/2021	Magnesium, total	mg/L	48.0
UA	APW17	C	3/10/2021	Magnesium, total	mg/L	49.0
UA	APW17	C	3/30/2021	Magnesium, total	mg/L	42.0

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Newton Primary Ash Pond
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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW17	C	4/29/2021	Magnesium, total	mg/L	50.0
UA	APW17	C	5/24/2021	Magnesium, total	mg/L	47.0
UA	APW17	C	6/16/2021	Magnesium, total	mg/L	50.0
UA	APW17	C	6/30/2021	Magnesium, total	mg/L	48.0
UA	APW17	C	7/15/2021	Magnesium, total	mg/L	48.0
UA	APW17	C	3/15/2023	Magnesium, total	mg/L	53.0
UA	APW17	C	4/25/2023	Magnesium, total	mg/L	47.0
UA	APW17	C	7/25/2023	Magnesium, total	mg/L	44.7
UA	APW17	C	10/10/2023	Magnesium, total	mg/L	42.3
UA	APW17	C	4/25/2023	Manganese, dissolved	mg/L	0.0250
UA	APW17	C	7/25/2023	Manganese, dissolved	mg/L	0.0191
UA	APW17	C	7/25/2023	Phosphate, dissolved	mg/L	1.60
UA	APW17	C	2/23/2021	Potassium, total	mg/L	2.20
UA	APW17	C	3/10/2021	Potassium, total	mg/L	2.20
UA	APW17	C	3/30/2021	Potassium, total	mg/L	1.90
UA	APW17	C	4/29/2021	Potassium, total	mg/L	1.90
UA	APW17	C	5/24/2021	Potassium, total	mg/L	1.80
UA	APW17	C	6/16/2021	Potassium, total	mg/L	1.80
UA	APW17	C	6/30/2021	Potassium, total	mg/L	1.70
UA	APW17	C	7/15/2021	Potassium, total	mg/L	1.80
UA	APW17	C	3/15/2023	Potassium, total	mg/L	1.80
UA	APW17	C	4/25/2023	Potassium, total	mg/L	1.60
UA	APW17	C	7/25/2023	Potassium, total	mg/L	1.83
UA	APW17	C	10/10/2023	Potassium, total	mg/L	1.90
UA	APW17	C	4/25/2023	Silicon, dissolved	mg/L	7.70
UA	APW17	C	7/25/2023	Silicon, dissolved	mg/L	6.71
UA	APW17	C	2/23/2021	Sodium, total	mg/L	89.0
UA	APW17	C	3/10/2021	Sodium, total	mg/L	91.0
UA	APW17	C	3/30/2021	Sodium, total	mg/L	82.0
UA	APW17	C	4/29/2021	Sodium, total	mg/L	97.0
UA	APW17	C	5/24/2021	Sodium, total	mg/L	91.0
UA	APW17	C	6/16/2021	Sodium, total	mg/L	95.0
UA	APW17	C	6/30/2021	Sodium, total	mg/L	94.0
UA	APW17	C	7/15/2021	Sodium, total	mg/L	96.0
UA	APW17	C	3/15/2023	Sodium, total	mg/L	100
UA	APW17	C	4/25/2023	Sodium, total	mg/L	93.0
UA	APW17	C	7/25/2023	Sodium, total	mg/L	90.1
UA	APW17	C	10/10/2023	Sodium, total	mg/L	89.1
UA	APW17	C	2/23/2021	Sulfate, total	mg/L	34.0
UA	APW17	C	3/10/2021	Sulfate, total	mg/L	30.0
UA	APW17	C	3/30/2021	Sulfate, total	mg/L	31.0
UA	APW17	C	4/29/2021	Sulfate, total	mg/L	36.0
UA	APW17	C	5/24/2021	Sulfate, total	mg/L	40.0
UA	APW17	C	6/16/2021	Sulfate, total	mg/L	40.0
UA	APW17	C	6/30/2021	Sulfate, total	mg/L	41.0
UA	APW17	C	7/15/2021	Sulfate, total	mg/L	<4.6

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW17	C	3/15/2023	Sulfate, total	mg/L	49.0
UA	APW17	C	4/25/2023	Sulfate, total	mg/L	52.0
UA	APW17	C	7/25/2023	Sulfate, total	mg/L	56.0
UA	APW17	C	10/10/2023	Sulfate, total	mg/L	64.0
UA	APW17	C	2/23/2021	Total Dissolved Solids	mg/L	680
UA	APW17	C	3/10/2021	Total Dissolved Solids	mg/L	650
UA	APW17	C	3/30/2021	Total Dissolved Solids	mg/L	620
UA	APW17	C	4/29/2021	Total Dissolved Solids	mg/L	630
UA	APW17	C	5/24/2021	Total Dissolved Solids	mg/L	670
UA	APW17	C	6/16/2021	Total Dissolved Solids	mg/L	640
UA	APW17	C	6/30/2021	Total Dissolved Solids	mg/L	630
UA	APW17	C	7/15/2021	Total Dissolved Solids	mg/L	650
UA	APW17	C	3/15/2023	Total Dissolved Solids	mg/L	660
UA	APW17	C	4/25/2023	Total Dissolved Solids	mg/L	700
UA	APW17	C	7/25/2023	Total Dissolved Solids	mg/L	670
UA	APW17	C	10/10/2023	Total Dissolved Solids	mg/L	692
UA	APW18	C	2/23/2021	pH (field)	SU	7.9
UA	APW18	C	3/10/2021	pH (field)	SU	7.8
UA	APW18	C	3/30/2021	pH (field)	SU	7.3
UA	APW18	C	4/29/2021	pH (field)	SU	7.6
UA	APW18	C	5/24/2021	pH (field)	SU	7.6
UA	APW18	C	6/16/2021	pH (field)	SU	7.6
UA	APW18	C	6/30/2021	pH (field)	SU	7.6
UA	APW18	C	7/15/2021	pH (field)	SU	7.6
UA	APW18	C	3/15/2023	pH (field)	SU	7.8
UA	APW18	C	4/25/2023	pH (field)	SU	7.8
UA	APW18	C	7/25/2023	pH (field)	SU	7.2
UA	APW18	C	10/10/2023	pH (field)	SU	8.1
UA	APW18	C	2/23/2021	Oxidation Reduction Potential	mV	-141
UA	APW18	C	3/10/2021	Oxidation Reduction Potential	mV	-150
UA	APW18	C	3/30/2021	Oxidation Reduction Potential	mV	-110
UA	APW18	C	4/29/2021	Oxidation Reduction Potential	mV	-154
UA	APW18	C	5/24/2021	Oxidation Reduction Potential	mV	120
UA	APW18	C	6/16/2021	Oxidation Reduction Potential	mV	-171
UA	APW18	C	6/30/2021	Oxidation Reduction Potential	mV	-182
UA	APW18	C	7/15/2021	Oxidation Reduction Potential	mV	-154
UA	APW18	C	4/25/2023	Oxidation Reduction Potential	mV	-137
UA	APW18	C	7/25/2023	Oxidation Reduction Potential	mV	48.0
UA	APW18	C	10/10/2023	Oxidation Reduction Potential	mV	-100
UA	APW18	C	2/23/2021	Eh	V	0.055
UA	APW18	C	3/10/2021	Eh	V	0.046
UA	APW18	C	3/30/2021	Eh	V	0.086
UA	APW18	C	4/29/2021	Eh	V	0.041
UA	APW18	C	5/24/2021	Eh	V	0.31
UA	APW18	C	6/16/2021	Eh	V	0.019
UA	APW18	C	6/30/2021	Eh	V	0.0089

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW18	C	7/15/2021	Eh	V	0.038
UA	APW18	C	4/25/2023	Eh	V	0.058
UA	APW18	C	7/25/2023	Eh	V	0.24
UA	APW18	C	10/10/2023	Eh	V	0.097
UA	APW18	C	2/23/2021	Alkalinity, bicarbonate	mg/L CaCO3	380
UA	APW18	C	3/10/2021	Alkalinity, bicarbonate	mg/L CaCO3	450
UA	APW18	C	3/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	440
UA	APW18	C	4/29/2021	Alkalinity, bicarbonate	mg/L CaCO3	480
UA	APW18	C	5/24/2021	Alkalinity, bicarbonate	mg/L CaCO3	950
UA	APW18	C	6/16/2021	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW18	C	6/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	480
UA	APW18	C	7/15/2021	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW18	C	3/15/2023	Alkalinity, bicarbonate	mg/L CaCO3	500
UA	APW18	C	4/25/2023	Alkalinity, bicarbonate	mg/L CaCO3	440
UA	APW18	C	7/25/2023	Alkalinity, bicarbonate	mg/L CaCO3	517
UA	APW18	C	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	530
UA	APW18	C	2/23/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW18	C	3/10/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW18	C	3/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW18	C	4/29/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW18	C	5/24/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW18	C	6/16/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW18	C	6/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW18	C	7/15/2021	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW18	C	3/15/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW18	C	4/25/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW18	C	7/25/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW18	C	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0
UA	APW18	C	2/23/2021	Barium, total	mg/L	0.180
UA	APW18	C	3/10/2021	Barium, total	mg/L	0.360
UA	APW18	C	3/30/2021	Barium, total	mg/L	0.340
UA	APW18	C	4/29/2021	Barium, total	mg/L	0.340
UA	APW18	C	5/24/2021	Barium, total	mg/L	0.350
UA	APW18	C	6/16/2021	Barium, total	mg/L	0.360
UA	APW18	C	6/30/2021	Barium, total	mg/L	0.360
UA	APW18	C	7/15/2021	Barium, total	mg/L	0.330
UA	APW18	C	3/15/2023	Barium, total	mg/L	0.360
UA	APW18	C	4/25/2023	Barium, total	mg/L	0.350
UA	APW18	C	7/25/2023	Barium, total	mg/L	0.368
UA	APW18	C	10/10/2023	Barium, total	mg/L	0.443
UA	APW18	C	2/23/2021	Calcium, total	mg/L	49.0
UA	APW18	C	3/10/2021	Calcium, total	mg/L	62.0
UA	APW18	C	3/30/2021	Calcium, total	mg/L	60.0
UA	APW18	C	4/29/2021	Calcium, total	mg/L	60.0
UA	APW18	C	5/24/2021	Calcium, total	mg/L	59.0
UA	APW18	C	6/16/2021	Calcium, total	mg/L	64.0

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW18	C	6/30/2021	Calcium, total	mg/L	60.0
UA	APW18	C	7/15/2021	Calcium, total	mg/L	64.0
UA	APW18	C	3/15/2023	Calcium, total	mg/L	75.0
UA	APW18	C	4/25/2023	Calcium, total	mg/L	75.0
UA	APW18	C	7/25/2023	Calcium, total	mg/L	73.2
UA	APW18	C	10/10/2023	Calcium, total	mg/L	75.5
UA	APW18	C	2/23/2021	Chloride, total	mg/L	79.0
UA	APW18	C	3/10/2021	Chloride, total	mg/L	42.0
UA	APW18	C	3/30/2021	Chloride, total	mg/L	35.0
UA	APW18	C	4/29/2021	Chloride, total	mg/L	40.0
UA	APW18	C	5/24/2021	Chloride, total	mg/L	35.0
UA	APW18	C	6/16/2021	Chloride, total	mg/L	29.0
UA	APW18	C	6/30/2021	Chloride, total	mg/L	28.0
UA	APW18	C	7/15/2021	Chloride, total	mg/L	31.0
UA	APW18	C	3/15/2023	Chloride, total	mg/L	23.0
UA	APW18	C	4/25/2023	Chloride, total	mg/L	24.0
UA	APW18	C	7/25/2023	Chloride, total	mg/L	26.0
UA	APW18	C	10/10/2023	Chloride, total	mg/L	23.0
UA	APW18	C	4/25/2023	Ferrous Iron, dissolved	mg/L	1.30
UA	APW18	C	7/25/2023	Ferrous Iron, dissolved	mg/L	1.42
UA	APW18	C	4/25/2023	Iron, dissolved	mg/L	1.40
UA	APW18	C	7/25/2023	Iron, dissolved	mg/L	1.40
UA	APW18	C	2/23/2021	Lithium, total	mg/L	<0.0099
UA	APW18	C	3/10/2021	Lithium, total	mg/L	<0.0099
UA	APW18	C	3/30/2021	Lithium, total	mg/L	<0.0099
UA	APW18	C	4/29/2021	Lithium, total	mg/L	<0.0099
UA	APW18	C	5/24/2021	Lithium, total	mg/L	<0.0099
UA	APW18	C	6/16/2021	Lithium, total	mg/L	<0.0099
UA	APW18	C	6/30/2021	Lithium, total	mg/L	<0.0099
UA	APW18	C	7/15/2021	Lithium, total	mg/L	<0.0099
UA	APW18	C	3/15/2023	Lithium, total	mg/L	<0.005
UA	APW18	C	4/25/2023	Lithium, total	mg/L	0.00520
UA	APW18	C	7/25/2023	Lithium, total	mg/L	0.00520
UA	APW18	C	10/10/2023	Lithium, total	mg/L	0.00520
UA	APW18	C	2/23/2021	Magnesium, total	mg/L	25.0
UA	APW18	C	3/10/2021	Magnesium, total	mg/L	33.0
UA	APW18	C	3/30/2021	Magnesium, total	mg/L	32.0
UA	APW18	C	4/29/2021	Magnesium, total	mg/L	35.0
UA	APW18	C	5/24/2021	Magnesium, total	mg/L	35.0
UA	APW18	C	6/16/2021	Magnesium, total	mg/L	37.0
UA	APW18	C	6/30/2021	Magnesium, total	mg/L	38.0
UA	APW18	C	7/15/2021	Magnesium, total	mg/L	39.0
UA	APW18	C	3/15/2023	Magnesium, total	mg/L	44.0
UA	APW18	C	4/25/2023	Magnesium, total	mg/L	40.0
UA	APW18	C	7/25/2023	Magnesium, total	mg/L	36.8
UA	APW18	C	10/10/2023	Magnesium, total	mg/L	37.6

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW18	C	4/25/2023	Manganese, dissolved	mg/L	0.0480
UA	APW18	C	7/25/2023	Manganese, dissolved	mg/L	0.0453
UA	APW18	C	7/25/2023	Phosphate, dissolved	mg/L	0.860
UA	APW18	C	2/23/2021	Potassium, total	mg/L	14.0
UA	APW18	C	3/10/2021	Potassium, total	mg/L	11.0
UA	APW18	C	3/30/2021	Potassium, total	mg/L	10.0
UA	APW18	C	4/29/2021	Potassium, total	mg/L	11.0
UA	APW18	C	5/24/2021	Potassium, total	mg/L	10.0
UA	APW18	C	6/16/2021	Potassium, total	mg/L	8.80
UA	APW18	C	6/30/2021	Potassium, total	mg/L	7.60
UA	APW18	C	7/15/2021	Potassium, total	mg/L	8.10
UA	APW18	C	3/15/2023	Potassium, total	mg/L	3.20
UA	APW18	C	4/25/2023	Potassium, total	mg/L	2.60
UA	APW18	C	7/25/2023	Potassium, total	mg/L	2.76
UA	APW18	C	10/10/2023	Potassium, total	mg/L	2.34
UA	APW18	C	4/25/2023	Silicon, dissolved	mg/L	6.70
UA	APW18	C	7/25/2023	Silicon, dissolved	mg/L	6.08
UA	APW18	C	2/23/2021	Sodium, total	mg/L	130
UA	APW18	C	3/10/2021	Sodium, total	mg/L	120
UA	APW18	C	3/30/2021	Sodium, total	mg/L	120
UA	APW18	C	4/29/2021	Sodium, total	mg/L	140
UA	APW18	C	5/24/2021	Sodium, total	mg/L	120
UA	APW18	C	6/16/2021	Sodium, total	mg/L	120
UA	APW18	C	6/30/2021	Sodium, total	mg/L	120
UA	APW18	C	7/15/2021	Sodium, total	mg/L	120
UA	APW18	C	3/15/2023	Sodium, total	mg/L	120
UA	APW18	C	4/25/2023	Sodium, total	mg/L	110
UA	APW18	C	7/25/2023	Sodium, total	mg/L	107
UA	APW18	C	10/10/2023	Sodium, total	mg/L	104
UA	APW18	C	2/23/2021	Sulfate, total	mg/L	26.0
UA	APW18	C	3/10/2021	Sulfate, total	mg/L	12.0
UA	APW18	C	3/30/2021	Sulfate, total	mg/L	9.40
UA	APW18	C	4/29/2021	Sulfate, total	mg/L	<0.18
UA	APW18	C	5/24/2021	Sulfate, total	mg/L	<0.18
UA	APW18	C	6/16/2021	Sulfate, total	mg/L	4.80
UA	APW18	C	6/30/2021	Sulfate, total	mg/L	2.20
UA	APW18	C	7/15/2021	Sulfate, total	mg/L	1.90
UA	APW18	C	3/15/2023	Sulfate, total	mg/L	51.0
UA	APW18	C	4/25/2023	Sulfate, total	mg/L	52.0
UA	APW18	C	7/25/2023	Sulfate, total	mg/L	49.0
UA	APW18	C	10/10/2023	Sulfate, total	mg/L	49.0
UA	APW18	C	2/23/2021	Total Dissolved Solids	mg/L	560
UA	APW18	C	3/10/2021	Total Dissolved Solids	mg/L	610
UA	APW18	C	3/30/2021	Total Dissolved Solids	mg/L	580
UA	APW18	C	4/29/2021	Total Dissolved Solids	mg/L	490
UA	APW18	C	5/24/2021	Total Dissolved Solids	mg/L	650

Attachment 8. Aqueous Data
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HSU	Location	Well Type	Date	Parameter	Unit	Result
UA	APW18	C	6/16/2021	Total Dissolved Solids	mg/L	550
UA	APW18	C	6/30/2021	Total Dissolved Solids	mg/L	450
UA	APW18	C	7/15/2021	Total Dissolved Solids	mg/L	520
UA	APW18	C	3/15/2023	Total Dissolved Solids	mg/L	630
UA	APW18	C	4/25/2023	Total Dissolved Solids	mg/L	660
UA	APW18	C	7/25/2023	Total Dissolved Solids	mg/L	535
UA	APW18	C	10/10/2023	Total Dissolved Solids	mg/L	614
UD	APW02	C	11/30/2010	pH (field)	SU	5.4
UD	APW02	C	2/8/2011	pH (field)	SU	6.9
UD	APW02	C	5/4/2011	pH (field)	SU	6.8
UD	APW02	C	7/12/2011	pH (field)	SU	6.8
UD	APW02	C	10/11/2011	pH (field)	SU	6.9
UD	APW02	C	1/31/2012	pH (field)	SU	6.9
UD	APW02	C	4/10/2012	pH (field)	SU	6.8
UD	APW02	C	7/17/2012	pH (field)	SU	6.9
UD	APW02	C	3/14/2014	pH (field)	SU	6.9
UD	APW02	C	4/9/2014	pH (field)	SU	6.9
UD	APW02	C	8/14/2014	pH (field)	SU	6.9
UD	APW02	C	10/17/2014	pH (field)	SU	7.1
UD	APW02	C	1/13/2015	pH (field)	SU	6.9
UD	APW02	C	4/21/2015	pH (field)	SU	6.9
UD	APW02	C	7/15/2015	pH (field)	SU	7.0
UD	APW02	C	10/7/2015	pH (field)	SU	6.7
UD	APW02	C	10/27/2020	pH (field)	SU	7.0
UD	APW02	C	2/10/2021	pH (field)	SU	6.7
UD	APW02	C	2/17/2021	pH (field)	SU	6.6
UD	APW02	C	3/10/2021	pH (field)	SU	7.0
UD	APW02	C	3/30/2021	pH (field)	SU	6.6
UD	APW02	C	4/29/2021	pH (field)	SU	6.7
UD	APW02	C	5/25/2021	pH (field)	SU	6.7
UD	APW02	C	6/16/2021	pH (field)	SU	6.6
UD	APW02	C	6/30/2021	pH (field)	SU	6.6
UD	APW02	C	7/15/2021	pH (field)	SU	6.6
UD	APW02	C	11/9/2021	pH (field)	SU	6.7
UD	APW02	C	2/22/2022	pH (field)	SU	6.8
UD	APW02	C	5/24/2022	pH (field)	SU	7.0
UD	APW02	C	8/17/2022	pH (field)	SU	6.8
UD	APW02	C	11/1/2022	pH (field)	SU	6.9
UD	APW02	C	2/1/2023	pH (field)	SU	7.0
UD	APW02	C	3/15/2023	pH (field)	SU	6.8
UD	APW02	C	4/27/2023	pH (field)	SU	6.7
UD	APW02	C	8/17/2023	pH (field)	SU	6.7
UD	APW02	C	10/10/2023	pH (field)	SU	6.7
UD	APW02	C	2/17/2021	Oxidation Reduction Potential	mV	90.3
UD	APW02	C	3/10/2021	Oxidation Reduction Potential	mV	62.6
UD	APW02	C	3/30/2021	Oxidation Reduction Potential	mV	82.0

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW02	C	4/29/2021	Oxidation Reduction Potential	mV	164
UD	APW02	C	5/25/2021	Oxidation Reduction Potential	mV	116
UD	APW02	C	6/16/2021	Oxidation Reduction Potential	mV	52.9
UD	APW02	C	6/30/2021	Oxidation Reduction Potential	mV	82.3
UD	APW02	C	7/15/2021	Oxidation Reduction Potential	mV	57.6
UD	APW02	C	2/22/2022	Oxidation Reduction Potential	mV	27.6
UD	APW02	C	5/24/2022	Oxidation Reduction Potential	mV	-5.10
UD	APW02	C	8/17/2022	Oxidation Reduction Potential	mV	63.7
UD	APW02	C	11/1/2022	Oxidation Reduction Potential	mV	-5.00
UD	APW02	C	2/1/2023	Oxidation Reduction Potential	mV	86.0
UD	APW02	C	4/27/2023	Oxidation Reduction Potential	mV	80.8
UD	APW02	C	8/17/2023	Oxidation Reduction Potential	mV	93.0
UD	APW02	C	10/10/2023	Oxidation Reduction Potential	mV	11.0
UD	APW02	C	2/17/2021	Eh	V	0.29
UD	APW02	C	3/10/2021	Eh	V	0.26
UD	APW02	C	3/30/2021	Eh	V	0.28
UD	APW02	C	4/29/2021	Eh	V	0.36
UD	APW02	C	5/25/2021	Eh	V	0.30
UD	APW02	C	6/16/2021	Eh	V	0.24
UD	APW02	C	6/30/2021	Eh	V	0.27
UD	APW02	C	7/15/2021	Eh	V	0.24
UD	APW02	C	2/22/2022	Eh	V	0.22
UD	APW02	C	5/24/2022	Eh	V	0.19
UD	APW02	C	8/17/2022	Eh	V	0.26
UD	APW02	C	11/1/2022	Eh	V	0.19
UD	APW02	C	2/1/2023	Eh	V	0.28
UD	APW02	C	4/27/2023	Eh	V	0.28
UD	APW02	C	8/17/2023	Eh	V	0.29
UD	APW02	C	10/10/2023	Eh	V	0.20
UD	APW02	C	2/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	450
UD	APW02	C	3/10/2021	Alkalinity, bicarbonate	mg/L CaCO3	610
UD	APW02	C	3/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	620
UD	APW02	C	4/29/2021	Alkalinity, bicarbonate	mg/L CaCO3	610
UD	APW02	C	5/25/2021	Alkalinity, bicarbonate	mg/L CaCO3	1,300
UD	APW02	C	6/16/2021	Alkalinity, bicarbonate	mg/L CaCO3	650
UD	APW02	C	6/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	640
UD	APW02	C	7/15/2021	Alkalinity, bicarbonate	mg/L CaCO3	640
UD	APW02	C	3/15/2023	Alkalinity, bicarbonate	mg/L CaCO3	640
UD	APW02	C	4/27/2023	Alkalinity, bicarbonate	mg/L CaCO3	640
UD	APW02	C	8/17/2023	Alkalinity, bicarbonate	mg/L CaCO3	614
UD	APW02	C	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	648
UD	APW02	C	2/17/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW02	C	3/10/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW02	C	3/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW02	C	4/29/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW02	C	5/25/2021	Alkalinity, carbonate	mg/L CaCO3	0

Attachment 8. Aqueous Data
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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW02	C	6/16/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW02	C	6/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW02	C	7/15/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW02	C	3/15/2023	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW02	C	4/27/2023	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW02	C	8/17/2023	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW02	C	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW02	C	2/17/2021	Barium, total	mg/L	0.00840
UD	APW02	C	3/10/2021	Barium, total	mg/L	0.00910
UD	APW02	C	3/30/2021	Barium, total	mg/L	0.00750
UD	APW02	C	4/29/2021	Barium, total	mg/L	0.0130
UD	APW02	C	5/25/2021	Barium, total	mg/L	0.0150
UD	APW02	C	6/16/2021	Barium, total	mg/L	0.0220
UD	APW02	C	6/30/2021	Barium, total	mg/L	0.0360
UD	APW02	C	7/15/2021	Barium, total	mg/L	0.0250
UD	APW02	C	3/15/2023	Barium, total	mg/L	0.0200
UD	APW02	C	4/27/2023	Barium, total	mg/L	0.0240
UD	APW02	C	8/17/2023	Barium, total	mg/L	0.00760
UD	APW02	C	10/10/2023	Barium, total	mg/L	0.0136
UD	APW02	C	2/17/2021	Calcium, total	mg/L	430
UD	APW02	C	3/10/2021	Calcium, total	mg/L	530
UD	APW02	C	3/30/2021	Calcium, total	mg/L	490
UD	APW02	C	4/29/2021	Calcium, total	mg/L	490
UD	APW02	C	5/25/2021	Calcium, total	mg/L	520
UD	APW02	C	6/16/2021	Calcium, total	mg/L	540
UD	APW02	C	6/30/2021	Calcium, total	mg/L	510
UD	APW02	C	7/15/2021	Calcium, total	mg/L	480
UD	APW02	C	3/15/2023	Calcium, total	mg/L	490
UD	APW02	C	4/27/2023	Calcium, total	mg/L	460
UD	APW02	C	8/17/2023	Calcium, total	mg/L	475
UD	APW02	C	10/10/2023	Calcium, total	mg/L	506
UD	APW02	C	2/17/2021	Chloride, total	mg/L	84.0
UD	APW02	C	3/10/2021	Chloride, total	mg/L	120
UD	APW02	C	3/30/2021	Chloride, total	mg/L	110
UD	APW02	C	4/29/2021	Chloride, total	mg/L	130
UD	APW02	C	5/25/2021	Chloride, total	mg/L	120
UD	APW02	C	6/16/2021	Chloride, total	mg/L	110
UD	APW02	C	6/30/2021	Chloride, total	mg/L	110
UD	APW02	C	7/15/2021	Chloride, total	mg/L	120
UD	APW02	C	3/15/2023	Chloride, total	mg/L	100
UD	APW02	C	4/27/2023	Chloride, total	mg/L	110
UD	APW02	C	8/17/2023	Chloride, total	mg/L	102
UD	APW02	C	10/10/2023	Chloride, total	mg/L	100
UD	APW02	C	4/27/2023	Ferrous Iron, dissolved	mg/L	<0.02
UD	APW02	C	8/17/2023	Ferrous Iron, dissolved	mg/L	<0.1
UD	APW02	C	11/30/2010	Iron, dissolved	mg/L	0.121

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW02	C	2/8/2011	Iron, dissolved	mg/L	<0.01
UD	APW02	C	5/4/2011	Iron, dissolved	mg/L	0.140
UD	APW02	C	7/12/2011	Iron, dissolved	mg/L	0.0190
UD	APW02	C	10/11/2011	Iron, dissolved	mg/L	<0.01
UD	APW02	C	1/31/2012	Iron, dissolved	mg/L	<0.01
UD	APW02	C	4/10/2012	Iron, dissolved	mg/L	0.120
UD	APW02	C	7/17/2012	Iron, dissolved	mg/L	0.0140
UD	APW02	C	4/27/2023	Iron, dissolved	mg/L	0.140
UD	APW02	C	8/17/2023	Iron, dissolved	mg/L	0.0210
UD	APW02	C	2/17/2021	Lithium, total	mg/L	0.0790
UD	APW02	C	3/10/2021	Lithium, total	mg/L	0.110
UD	APW02	C	3/30/2021	Lithium, total	mg/L	0.120
UD	APW02	C	4/29/2021	Lithium, total	mg/L	0.110
UD	APW02	C	5/25/2021	Lithium, total	mg/L	0.120
UD	APW02	C	6/16/2021	Lithium, total	mg/L	0.120
UD	APW02	C	6/30/2021	Lithium, total	mg/L	0.300
UD	APW02	C	7/15/2021	Lithium, total	mg/L	0.210
UD	APW02	C	3/15/2023	Lithium, total	mg/L	0.100
UD	APW02	C	4/27/2023	Lithium, total	mg/L	0.0980
UD	APW02	C	8/17/2023	Lithium, total	mg/L	0.190
UD	APW02	C	10/10/2023	Lithium, total	mg/L	0.105
UD	APW02	C	2/17/2021	Magnesium, total	mg/L	380
UD	APW02	C	3/10/2021	Magnesium, total	mg/L	490
UD	APW02	C	3/30/2021	Magnesium, total	mg/L	420
UD	APW02	C	4/29/2021	Magnesium, total	mg/L	470
UD	APW02	C	5/25/2021	Magnesium, total	mg/L	430
UD	APW02	C	6/16/2021	Magnesium, total	mg/L	470
UD	APW02	C	6/30/2021	Magnesium, total	mg/L	460
UD	APW02	C	7/15/2021	Magnesium, total	mg/L	440
UD	APW02	C	3/15/2023	Magnesium, total	mg/L	480
UD	APW02	C	4/27/2023	Magnesium, total	mg/L	430
UD	APW02	C	8/17/2023	Magnesium, total	mg/L	429
UD	APW02	C	10/10/2023	Magnesium, total	mg/L	471
UD	APW02	C	11/30/2010	Manganese, dissolved	mg/L	0.907
UD	APW02	C	2/8/2011	Manganese, dissolved	mg/L	0.170
UD	APW02	C	5/4/2011	Manganese, dissolved	mg/L	0.240
UD	APW02	C	7/12/2011	Manganese, dissolved	mg/L	0.630
UD	APW02	C	10/11/2011	Manganese, dissolved	mg/L	0.910
UD	APW02	C	1/31/2012	Manganese, dissolved	mg/L	0.710
UD	APW02	C	4/10/2012	Manganese, dissolved	mg/L	0.450
UD	APW02	C	7/17/2012	Manganese, dissolved	mg/L	0.650
UD	APW02	C	3/14/2014	Manganese, dissolved	mg/L	0.0740
UD	APW02	C	4/9/2014	Manganese, dissolved	mg/L	0.170
UD	APW02	C	8/14/2014	Manganese, dissolved	mg/L	0.430
UD	APW02	C	10/17/2014	Manganese, dissolved	mg/L	0.130
UD	APW02	C	1/13/2015	Manganese, dissolved	mg/L	0.120

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW02	C	4/21/2015	Manganese, dissolved	mg/L	0.0610
UD	APW02	C	7/15/2015	Manganese, dissolved	mg/L	0.390
UD	APW02	C	10/7/2015	Manganese, dissolved	mg/L	1.20
UD	APW02	C	1/19/2016	Manganese, dissolved	mg/L	0.0610
UD	APW02	C	4/26/2016	Manganese, dissolved	mg/L	0.0240
UD	APW02	C	7/26/2016	Manganese, dissolved	mg/L	0.140
UD	APW02	C	10/18/2016	Manganese, dissolved	mg/L	0.210
UD	APW02	C	1/20/2017	Manganese, dissolved	mg/L	0.00890
UD	APW02	C	4/18/2017	Manganese, dissolved	mg/L	0.160
UD	APW02	C	8/3/2017	Manganese, dissolved	mg/L	0.470
UD	APW02	C	11/18/2017	Manganese, dissolved	mg/L	0.270
UD	APW02	C	2/23/2018	Manganese, dissolved	mg/L	0.0150
UD	APW02	C	5/21/2018	Manganese, dissolved	mg/L	0.310
UD	APW02	C	8/23/2018	Manganese, dissolved	mg/L	1.40
UD	APW02	C	1/11/2019	Manganese, dissolved	mg/L	0.0330
UD	APW02	C	2/19/2019	Manganese, dissolved	mg/L	0.0380
UD	APW02	C	5/21/2019	Manganese, dissolved	mg/L	0.780
UD	APW02	C	8/23/2019	Manganese, dissolved	mg/L	0.340
UD	APW02	C	11/19/2019	Manganese, dissolved	mg/L	0.430
UD	APW02	C	2/4/2020	Manganese, dissolved	mg/L	0.00440
UD	APW02	C	5/21/2020	Manganese, dissolved	mg/L	0.210
UD	APW02	C	7/30/2020	Manganese, dissolved	mg/L	0.980
UD	APW02	C	10/27/2020	Manganese, dissolved	mg/L	0.600
UD	APW02	C	2/10/2021	Manganese, dissolved	mg/L	0.120
UD	APW02	C	5/25/2021	Manganese, dissolved	mg/L	0.470
UD	APW02	C	11/9/2021	Manganese, dissolved	mg/L	0.590
UD	APW02	C	2/22/2022	Manganese, dissolved	mg/L	0.0110
UD	APW02	C	5/24/2022	Manganese, dissolved	mg/L	0.200
UD	APW02	C	8/17/2022	Manganese, dissolved	mg/L	0.380
UD	APW02	C	11/1/2022	Manganese, dissolved	mg/L	0.580
UD	APW02	C	2/1/2023	Manganese, dissolved	mg/L	0.0600
UD	APW02	C	4/27/2023	Manganese, dissolved	mg/L	0.650
UD	APW02	C	8/17/2023	Manganese, dissolved	mg/L	0.120
UD	APW02	C	10/10/2023	Manganese, dissolved	mg/L	0.224
UD	APW02	C	8/17/2023	Phosphate, dissolved	mg/L	<0.005
UD	APW02	C	2/17/2021	Potassium, total	mg/L	3.90
UD	APW02	C	3/10/2021	Potassium, total	mg/L	6.70
UD	APW02	C	3/30/2021	Potassium, total	mg/L	6.00
UD	APW02	C	4/29/2021	Potassium, total	mg/L	5.70
UD	APW02	C	5/25/2021	Potassium, total	mg/L	6.50
UD	APW02	C	6/16/2021	Potassium, total	mg/L	6.60
UD	APW02	C	6/30/2021	Potassium, total	mg/L	6.10
UD	APW02	C	7/15/2021	Potassium, total	mg/L	6.70
UD	APW02	C	3/15/2023	Potassium, total	mg/L	6.20
UD	APW02	C	4/27/2023	Potassium, total	mg/L	5.80
UD	APW02	C	8/17/2023	Potassium, total	mg/L	6.43

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW02	C	10/10/2023	Potassium, total	mg/L	7.07
UD	APW02	C	4/27/2023	Silicon, dissolved	mg/L	8.20
UD	APW02	C	8/17/2023	Silicon, dissolved	mg/L	7.86
UD	APW02	C	2/17/2021	Sodium, total	mg/L	400
UD	APW02	C	3/10/2021	Sodium, total	mg/L	410
UD	APW02	C	3/30/2021	Sodium, total	mg/L	360
UD	APW02	C	4/29/2021	Sodium, total	mg/L	380
UD	APW02	C	5/25/2021	Sodium, total	mg/L	350
UD	APW02	C	6/16/2021	Sodium, total	mg/L	370
UD	APW02	C	6/30/2021	Sodium, total	mg/L	380
UD	APW02	C	7/15/2021	Sodium, total	mg/L	360
UD	APW02	C	3/15/2023	Sodium, total	mg/L	410
UD	APW02	C	4/27/2023	Sodium, total	mg/L	360
UD	APW02	C	8/17/2023	Sodium, total	mg/L	394
UD	APW02	C	10/10/2023	Sodium, total	mg/L	441
UD	APW02	C	2/17/2021	Sulfate, total	mg/L	2,900
UD	APW02	C	3/10/2021	Sulfate, total	mg/L	3,200
UD	APW02	C	3/30/2021	Sulfate, total	mg/L	3,100
UD	APW02	C	4/29/2021	Sulfate, total	mg/L	1,500
UD	APW02	C	5/25/2021	Sulfate, total	mg/L	3,200
UD	APW02	C	6/16/2021	Sulfate, total	mg/L	3,100
UD	APW02	C	6/30/2021	Sulfate, total	mg/L	3,200
UD	APW02	C	7/15/2021	Sulfate, total	mg/L	3,100
UD	APW02	C	3/15/2023	Sulfate, total	mg/L	3,000
UD	APW02	C	4/27/2023	Sulfate, total	mg/L	3,100
UD	APW02	C	8/17/2023	Sulfate, total	mg/L	2,860
UD	APW02	C	10/10/2023	Sulfate, total	mg/L	2,900
UD	APW02	C	11/30/2010	Total Dissolved Solids	mg/L	1,910
UD	APW02	C	2/8/2011	Total Dissolved Solids	mg/L	5,000
UD	APW02	C	5/4/2011	Total Dissolved Solids	mg/L	5,100
UD	APW02	C	7/12/2011	Total Dissolved Solids	mg/L	5,100
UD	APW02	C	10/11/2011	Total Dissolved Solids	mg/L	5,000
UD	APW02	C	1/31/2012	Total Dissolved Solids	mg/L	5,000
UD	APW02	C	4/10/2012	Total Dissolved Solids	mg/L	4,900
UD	APW02	C	7/17/2012	Total Dissolved Solids	mg/L	5,200
UD	APW02	C	3/14/2014	Total Dissolved Solids	mg/L	4,900
UD	APW02	C	4/9/2014	Total Dissolved Solids	mg/L	5,000
UD	APW02	C	8/14/2014	Total Dissolved Solids	mg/L	5,200
UD	APW02	C	10/17/2014	Total Dissolved Solids	mg/L	5,000
UD	APW02	C	1/13/2015	Total Dissolved Solids	mg/L	4,800
UD	APW02	C	4/21/2015	Total Dissolved Solids	mg/L	5,300
UD	APW02	C	7/15/2015	Total Dissolved Solids	mg/L	5,200
UD	APW02	C	10/7/2015	Total Dissolved Solids	mg/L	5,000
UD	APW02	C	10/27/2020	Total Dissolved Solids	mg/L	5,300
UD	APW02	C	2/10/2021	Total Dissolved Solids	mg/L	5,000
UD	APW02	C	2/17/2021	Total Dissolved Solids	mg/L	4,800

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW02	C	3/10/2021	Total Dissolved Solids	mg/L	5,100
UD	APW02	C	3/30/2021	Total Dissolved Solids	mg/L	5,200
UD	APW02	C	4/29/2021	Total Dissolved Solids	mg/L	5,100
UD	APW02	C	5/25/2021	Total Dissolved Solids	mg/L	5,200
UD	APW02	C	6/16/2021	Total Dissolved Solids	mg/L	5,000
UD	APW02	C	6/30/2021	Total Dissolved Solids	mg/L	4,900
UD	APW02	C	7/15/2021	Total Dissolved Solids	mg/L	5,400
UD	APW02	C	11/9/2021	Total Dissolved Solids	mg/L	5,400
UD	APW02	C	2/22/2022	Total Dissolved Solids	mg/L	5,000
UD	APW02	C	5/24/2022	Total Dissolved Solids	mg/L	5,300
UD	APW02	C	8/17/2022	Total Dissolved Solids	mg/L	5,500
UD	APW02	C	11/1/2022	Total Dissolved Solids	mg/L	5,400
UD	APW02	C	2/1/2023	Total Dissolved Solids	mg/L	5,500
UD	APW02	C	3/15/2023	Total Dissolved Solids	mg/L	5,200
UD	APW02	C	4/27/2023	Total Dissolved Solids	mg/L	5,400
UD	APW02	C	8/17/2023	Total Dissolved Solids	mg/L	3,660
UD	APW02	C	10/10/2023	Total Dissolved Solids	mg/L	3,890
UD	APW03	C	11/30/2010	pH (field)	SU	6.1
UD	APW03	C	2/8/2011	pH (field)	SU	7.3
UD	APW03	C	5/4/2011	pH (field)	SU	7.3
UD	APW03	C	7/12/2011	pH (field)	SU	7.3
UD	APW03	C	10/11/2011	pH (field)	SU	7.2
UD	APW03	C	1/31/2012	pH (field)	SU	7.2
UD	APW03	C	4/10/2012	pH (field)	SU	7.3
UD	APW03	C	7/17/2012	pH (field)	SU	7.2
UD	APW03	C	3/14/2014	pH (field)	SU	7.2
UD	APW03	C	4/9/2014	pH (field)	SU	7.4
UD	APW03	C	8/14/2014	pH (field)	SU	7.3
UD	APW03	C	10/17/2014	pH (field)	SU	7.7
UD	APW03	C	1/13/2015	pH (field)	SU	7.4
UD	APW03	C	4/20/2015	pH (field)	SU	7.0
UD	APW03	C	7/15/2015	pH (field)	SU	6.9
UD	APW03	C	10/7/2015	pH (field)	SU	7.3
UD	APW03	C	10/27/2020	pH (field)	SU	7.2
UD	APW03	C	2/10/2021	pH (field)	SU	7.2
UD	APW03	C	2/18/2021	pH (field)	SU	6.7
UD	APW03	C	3/10/2021	pH (field)	SU	7.2
UD	APW03	C	3/31/2021	pH (field)	SU	6.3
UD	APW03	C	4/29/2021	pH (field)	SU	7.0
UD	APW03	C	5/25/2021	pH (field)	SU	7.0
UD	APW03	C	6/17/2021	pH (field)	SU	7.0
UD	APW03	C	6/30/2021	pH (field)	SU	7.0
UD	APW03	C	7/15/2021	pH (field)	SU	6.9
UD	APW03	C	11/9/2021	pH (field)	SU	7.0
UD	APW03	C	2/22/2022	pH (field)	SU	7.1
UD	APW03	C	5/24/2022	pH (field)	SU	7.1

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW03	C	8/17/2022	pH (field)	SU	7.1
UD	APW03	C	11/1/2022	pH (field)	SU	7.3
UD	APW03	C	2/1/2023	pH (field)	SU	7.8
UD	APW03	C	3/14/2023	pH (field)	SU	7.0
UD	APW03	C	4/25/2023	pH (field)	SU	7.0
UD	APW03	C	7/31/2023	pH (field)	SU	6.8
UD	APW03	C	10/10/2023	pH (field)	SU	6.9
UD	APW03	C	2/18/2021	Oxidation Reduction Potential	mV	225
UD	APW03	C	3/10/2021	Oxidation Reduction Potential	mV	30.7
UD	APW03	C	3/31/2021	Oxidation Reduction Potential	mV	28.9
UD	APW03	C	4/29/2021	Oxidation Reduction Potential	mV	114
UD	APW03	C	5/25/2021	Oxidation Reduction Potential	mV	132
UD	APW03	C	6/17/2021	Oxidation Reduction Potential	mV	166
UD	APW03	C	6/30/2021	Oxidation Reduction Potential	mV	37.8
UD	APW03	C	7/15/2021	Oxidation Reduction Potential	mV	-28.6
UD	APW03	C	2/22/2022	Oxidation Reduction Potential	mV	110
UD	APW03	C	5/24/2022	Oxidation Reduction Potential	mV	26.7
UD	APW03	C	8/17/2022	Oxidation Reduction Potential	mV	5.80
UD	APW03	C	11/1/2022	Oxidation Reduction Potential	mV	36.0
UD	APW03	C	2/1/2023	Oxidation Reduction Potential	mV	-31.0
UD	APW03	C	4/25/2023	Oxidation Reduction Potential	mV	141
UD	APW03	C	7/31/2023	Oxidation Reduction Potential	mV	64.0
UD	APW03	C	10/10/2023	Oxidation Reduction Potential	mV	-10.0
UD	APW03	C	2/18/2021	Eh	V	0.43
UD	APW03	C	3/10/2021	Eh	V	0.23
UD	APW03	C	3/31/2021	Eh	V	0.23
UD	APW03	C	4/29/2021	Eh	V	0.31
UD	APW03	C	5/25/2021	Eh	V	0.32
UD	APW03	C	6/17/2021	Eh	V	0.36
UD	APW03	C	6/30/2021	Eh	V	0.23
UD	APW03	C	7/15/2021	Eh	V	0.15
UD	APW03	C	2/22/2022	Eh	V	0.31
UD	APW03	C	5/24/2022	Eh	V	0.22
UD	APW03	C	8/17/2022	Eh	V	0.19
UD	APW03	C	11/1/2022	Eh	V	0.23
UD	APW03	C	2/1/2023	Eh	V	0.17
UD	APW03	C	4/25/2023	Eh	V	0.34
UD	APW03	C	7/31/2023	Eh	V	0.26
UD	APW03	C	10/10/2023	Eh	V	0.18
UD	APW03	C	2/18/2021	Alkalinity, bicarbonate	mg/L CaCO3	420
UD	APW03	C	3/10/2021	Alkalinity, bicarbonate	mg/L CaCO3	440
UD	APW03	C	3/31/2021	Alkalinity, bicarbonate	mg/L CaCO3	400
UD	APW03	C	4/29/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UD	APW03	C	5/25/2021	Alkalinity, bicarbonate	mg/L CaCO3	820
UD	APW03	C	6/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	420
UD	APW03	C	6/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	390

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW03	C	7/15/2021	Alkalinity, bicarbonate	mg/L CaCO3	410
UD	APW03	C	3/14/2023	Alkalinity, bicarbonate	mg/L CaCO3	480
UD	APW03	C	4/25/2023	Alkalinity, bicarbonate	mg/L CaCO3	390
UD	APW03	C	7/31/2023	Alkalinity, bicarbonate	mg/L CaCO3	446
UD	APW03	C	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	480
UD	APW03	C	2/18/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW03	C	3/10/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW03	C	3/31/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW03	C	4/29/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW03	C	5/25/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW03	C	6/17/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW03	C	6/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW03	C	7/15/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW03	C	3/14/2023	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW03	C	4/25/2023	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW03	C	7/31/2023	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW03	C	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW03	C	2/18/2021	Barium, total	mg/L	0.0770
UD	APW03	C	3/10/2021	Barium, total	mg/L	0.0730
UD	APW03	C	3/31/2021	Barium, total	mg/L	0.0700
UD	APW03	C	4/29/2021	Barium, total	mg/L	0.0680
UD	APW03	C	5/25/2021	Barium, total	mg/L	0.0630
UD	APW03	C	6/17/2021	Barium, total	mg/L	0.0810
UD	APW03	C	6/30/2021	Barium, total	mg/L	0.0590
UD	APW03	C	7/15/2021	Barium, total	mg/L	0.0670
UD	APW03	C	3/14/2023	Barium, total	mg/L	0.0730
UD	APW03	C	4/25/2023	Barium, total	mg/L	0.0780
UD	APW03	C	7/31/2023	Barium, total	mg/L	0.0942
UD	APW03	C	10/10/2023	Barium, total	mg/L	0.110
UD	APW03	C	2/18/2021	Calcium, total	mg/L	120
UD	APW03	C	3/10/2021	Calcium, total	mg/L	110
UD	APW03	C	3/31/2021	Calcium, total	mg/L	110
UD	APW03	C	4/29/2021	Calcium, total	mg/L	110
UD	APW03	C	5/25/2021	Calcium, total	mg/L	110
UD	APW03	C	6/17/2021	Calcium, total	mg/L	120
UD	APW03	C	6/30/2021	Calcium, total	mg/L	110
UD	APW03	C	7/15/2021	Calcium, total	mg/L	110
UD	APW03	C	3/14/2023	Calcium, total	mg/L	96.0
UD	APW03	C	4/25/2023	Calcium, total	mg/L	96.0
UD	APW03	C	7/31/2023	Calcium, total	mg/L	96.5
UD	APW03	C	10/10/2023	Calcium, total	mg/L	92.5
UD	APW03	C	2/18/2021	Chloride, total	mg/L	8.10
UD	APW03	C	3/10/2021	Chloride, total	mg/L	8.70
UD	APW03	C	3/31/2021	Chloride, total	mg/L	8.60
UD	APW03	C	4/29/2021	Chloride, total	mg/L	8.20
UD	APW03	C	5/25/2021	Chloride, total	mg/L	8.00

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW03	C	6/17/2021	Chloride, total	mg/L	8.30
UD	APW03	C	6/30/2021	Chloride, total	mg/L	11.0
UD	APW03	C	7/15/2021	Chloride, total	mg/L	8.50
UD	APW03	C	3/14/2023	Chloride, total	mg/L	7.10
UD	APW03	C	4/25/2023	Chloride, total	mg/L	6.90
UD	APW03	C	7/31/2023	Chloride, total	mg/L	10.0
UD	APW03	C	10/10/2023	Chloride, total	mg/L	7.00
UD	APW03	C	4/25/2023	Ferrous Iron, dissolved	mg/L	<0.02
UD	APW03	C	7/31/2023	Ferrous Iron, dissolved	mg/L	3.80
UD	APW03	C	11/30/2010	Iron, dissolved	mg/L	0
UD	APW03	C	2/8/2011	Iron, dissolved	mg/L	<0.01
UD	APW03	C	5/4/2011	Iron, dissolved	mg/L	0.0340
UD	APW03	C	7/12/2011	Iron, dissolved	mg/L	<0.01
UD	APW03	C	10/11/2011	Iron, dissolved	mg/L	<0.01
UD	APW03	C	1/31/2012	Iron, dissolved	mg/L	<0.01
UD	APW03	C	4/10/2012	Iron, dissolved	mg/L	0.0460
UD	APW03	C	7/17/2012	Iron, dissolved	mg/L	<0.01
UD	APW03	C	4/25/2023	Iron, dissolved	mg/L	0.00680
UD	APW03	C	7/31/2023	Iron, dissolved	mg/L	0.0342
UD	APW03	C	2/18/2021	Lithium, total	mg/L	0.0220
UD	APW03	C	3/10/2021	Lithium, total	mg/L	0.0240
UD	APW03	C	3/31/2021	Lithium, total	mg/L	<0.0099
UD	APW03	C	4/29/2021	Lithium, total	mg/L	<0.0099
UD	APW03	C	5/25/2021	Lithium, total	mg/L	0.0230
UD	APW03	C	6/17/2021	Lithium, total	mg/L	0.0200
UD	APW03	C	6/30/2021	Lithium, total	mg/L	0.0350
UD	APW03	C	7/15/2021	Lithium, total	mg/L	0.0300
UD	APW03	C	3/14/2023	Lithium, total	mg/L	0.00960
UD	APW03	C	4/25/2023	Lithium, total	mg/L	0.0100
UD	APW03	C	7/31/2023	Lithium, total	mg/L	0.0139
UD	APW03	C	10/10/2023	Lithium, total	mg/L	0.0111
UD	APW03	C	2/18/2021	Magnesium, total	mg/L	63.0
UD	APW03	C	3/10/2021	Magnesium, total	mg/L	63.0
UD	APW03	C	3/31/2021	Magnesium, total	mg/L	61.0
UD	APW03	C	4/29/2021	Magnesium, total	mg/L	65.0
UD	APW03	C	5/25/2021	Magnesium, total	mg/L	62.0
UD	APW03	C	6/17/2021	Magnesium, total	mg/L	65.0
UD	APW03	C	6/30/2021	Magnesium, total	mg/L	62.0
UD	APW03	C	7/15/2021	Magnesium, total	mg/L	64.0
UD	APW03	C	3/14/2023	Magnesium, total	mg/L	63.0
UD	APW03	C	4/25/2023	Magnesium, total	mg/L	58.0
UD	APW03	C	7/31/2023	Magnesium, total	mg/L	54.3
UD	APW03	C	10/10/2023	Magnesium, total	mg/L	52.7
UD	APW03	C	11/30/2010	Manganese, dissolved	mg/L	0.113
UD	APW03	C	2/8/2011	Manganese, dissolved	mg/L	0.0880
UD	APW03	C	5/4/2011	Manganese, dissolved	mg/L	0.0490

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW03	C	7/12/2011	Manganese, dissolved	mg/L	0.0440
UD	APW03	C	10/11/2011	Manganese, dissolved	mg/L	0.0240
UD	APW03	C	1/31/2012	Manganese, dissolved	mg/L	0.0320
UD	APW03	C	4/10/2012	Manganese, dissolved	mg/L	0.0490
UD	APW03	C	7/17/2012	Manganese, dissolved	mg/L	0.0180
UD	APW03	C	3/14/2014	Manganese, dissolved	mg/L	0.0240
UD	APW03	C	4/9/2014	Manganese, dissolved	mg/L	0.0280
UD	APW03	C	8/14/2014	Manganese, dissolved	mg/L	0.410
UD	APW03	C	10/17/2014	Manganese, dissolved	mg/L	0.0160
UD	APW03	C	1/13/2015	Manganese, dissolved	mg/L	0.0350
UD	APW03	C	4/20/2015	Manganese, dissolved	mg/L	0.0430
UD	APW03	C	7/15/2015	Manganese, dissolved	mg/L	0.0440
UD	APW03	C	10/7/2015	Manganese, dissolved	mg/L	0.0600
UD	APW03	C	1/19/2016	Manganese, dissolved	mg/L	0.0190
UD	APW03	C	4/26/2016	Manganese, dissolved	mg/L	0.0120
UD	APW03	C	7/26/2016	Manganese, dissolved	mg/L	0.0220
UD	APW03	C	10/18/2016	Manganese, dissolved	mg/L	0.0190
UD	APW03	C	1/20/2017	Manganese, dissolved	mg/L	0.0190
UD	APW03	C	4/18/2017	Manganese, dissolved	mg/L	0.0250
UD	APW03	C	8/3/2017	Manganese, dissolved	mg/L	0.0270
UD	APW03	C	11/18/2017	Manganese, dissolved	mg/L	0.0940
UD	APW03	C	2/23/2018	Manganese, dissolved	mg/L	0.0180
UD	APW03	C	5/21/2018	Manganese, dissolved	mg/L	0.0440
UD	APW03	C	8/16/2018	Manganese, dissolved	mg/L	0.0240
UD	APW03	C	1/11/2019	Manganese, dissolved	mg/L	0.0420
UD	APW03	C	2/20/2019	Manganese, dissolved	mg/L	0.0220
UD	APW03	C	5/21/2019	Manganese, dissolved	mg/L	0.0870
UD	APW03	C	8/23/2019	Manganese, dissolved	mg/L	0.0400
UD	APW03	C	11/19/2019	Manganese, dissolved	mg/L	0.0280
UD	APW03	C	2/4/2020	Manganese, dissolved	mg/L	0.0210
UD	APW03	C	5/21/2020	Manganese, dissolved	mg/L	0.0110
UD	APW03	C	7/30/2020	Manganese, dissolved	mg/L	0.0180
UD	APW03	C	10/27/2020	Manganese, dissolved	mg/L	0.0170
UD	APW03	C	2/10/2021	Manganese, dissolved	mg/L	0.00540
UD	APW03	C	5/25/2021	Manganese, dissolved	mg/L	0.00840
UD	APW03	C	11/9/2021	Manganese, dissolved	mg/L	0.0460
UD	APW03	C	2/22/2022	Manganese, dissolved	mg/L	0.0150
UD	APW03	C	5/24/2022	Manganese, dissolved	mg/L	0.0160
UD	APW03	C	8/17/2022	Manganese, dissolved	mg/L	0.0320
UD	APW03	C	11/1/2022	Manganese, dissolved	mg/L	0.0190
UD	APW03	C	2/1/2023	Manganese, dissolved	mg/L	0.0170
UD	APW03	C	4/25/2023	Manganese, dissolved	mg/L	0.0350
UD	APW03	C	7/31/2023	Manganese, dissolved	mg/L	0.0363
UD	APW03	C	10/10/2023	Manganese, dissolved	mg/L	0.0176
UD	APW03	C	7/31/2023	Phosphate, dissolved	mg/L	0.157
UD	APW03	C	2/18/2021	Potassium, total	mg/L	0.930

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW03	C	3/10/2021	Potassium, total	mg/L	0.810
UD	APW03	C	3/31/2021	Potassium, total	mg/L	0.980
UD	APW03	C	4/29/2021	Potassium, total	mg/L	0.670
UD	APW03	C	5/25/2021	Potassium, total	mg/L	0.730
UD	APW03	C	6/17/2021	Potassium, total	mg/L	0.840
UD	APW03	C	6/30/2021	Potassium, total	mg/L	0.810
UD	APW03	C	7/15/2021	Potassium, total	mg/L	0.860
UD	APW03	C	3/14/2023	Potassium, total	mg/L	0.370
UD	APW03	C	4/25/2023	Potassium, total	mg/L	0.310
UD	APW03	C	7/31/2023	Potassium, total	mg/L	0.602
UD	APW03	C	10/10/2023	Potassium, total	mg/L	0.463
UD	APW03	C	4/25/2023	Silicon, dissolved	mg/L	14.0
UD	APW03	C	7/31/2023	Silicon, dissolved	mg/L	11.8
UD	APW03	C	2/18/2021	Sodium, total	mg/L	52.0
UD	APW03	C	3/10/2021	Sodium, total	mg/L	49.0
UD	APW03	C	3/31/2021	Sodium, total	mg/L	52.0
UD	APW03	C	4/29/2021	Sodium, total	mg/L	55.0
UD	APW03	C	5/25/2021	Sodium, total	mg/L	50.0
UD	APW03	C	6/17/2021	Sodium, total	mg/L	52.0
UD	APW03	C	6/30/2021	Sodium, total	mg/L	52.0
UD	APW03	C	7/15/2021	Sodium, total	mg/L	55.0
UD	APW03	C	3/14/2023	Sodium, total	mg/L	67.0
UD	APW03	C	4/25/2023	Sodium, total	mg/L	61.0
UD	APW03	C	7/31/2023	Sodium, total	mg/L	56.2
UD	APW03	C	10/10/2023	Sodium, total	mg/L	61.8
UD	APW03	C	2/18/2021	Sulfate, total	mg/L	180
UD	APW03	C	3/10/2021	Sulfate, total	mg/L	180
UD	APW03	C	3/31/2021	Sulfate, total	mg/L	170
UD	APW03	C	4/29/2021	Sulfate, total	mg/L	170
UD	APW03	C	5/25/2021	Sulfate, total	mg/L	170
UD	APW03	C	6/17/2021	Sulfate, total	mg/L	170
UD	APW03	C	6/30/2021	Sulfate, total	mg/L	160
UD	APW03	C	7/15/2021	Sulfate, total	mg/L	190
UD	APW03	C	3/14/2023	Sulfate, total	mg/L	110
UD	APW03	C	4/25/2023	Sulfate, total	mg/L	120
UD	APW03	C	7/31/2023	Sulfate, total	mg/L	118
UD	APW03	C	10/10/2023	Sulfate, total	mg/L	113
UD	APW03	C	11/30/2010	Total Dissolved Solids	mg/L	647
UD	APW03	C	2/8/2011	Total Dissolved Solids	mg/L	590
UD	APW03	C	5/4/2011	Total Dissolved Solids	mg/L	640
UD	APW03	C	7/12/2011	Total Dissolved Solids	mg/L	600
UD	APW03	C	10/11/2011	Total Dissolved Solids	mg/L	610
UD	APW03	C	1/31/2012	Total Dissolved Solids	mg/L	560
UD	APW03	C	4/10/2012	Total Dissolved Solids	mg/L	570
UD	APW03	C	7/17/2012	Total Dissolved Solids	mg/L	590
UD	APW03	C	3/14/2014	Total Dissolved Solids	mg/L	580

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW03	C	4/9/2014	Total Dissolved Solids	mg/L	540
UD	APW03	C	8/14/2014	Total Dissolved Solids	mg/L	800
UD	APW03	C	10/17/2014	Total Dissolved Solids	mg/L	580
UD	APW03	C	1/13/2015	Total Dissolved Solids	mg/L	3,000
UD	APW03	C	4/20/2015	Total Dissolved Solids	mg/L	580
UD	APW03	C	7/15/2015	Total Dissolved Solids	mg/L	580
UD	APW03	C	10/7/2015	Total Dissolved Solids	mg/L	680
UD	APW03	C	10/27/2020	Total Dissolved Solids	mg/L	690
UD	APW03	C	2/10/2021	Total Dissolved Solids	mg/L	660
UD	APW03	C	2/18/2021	Total Dissolved Solids	mg/L	620
UD	APW03	C	3/10/2021	Total Dissolved Solids	mg/L	720
UD	APW03	C	3/31/2021	Total Dissolved Solids	mg/L	720
UD	APW03	C	4/29/2021	Total Dissolved Solids	mg/L	660
UD	APW03	C	5/25/2021	Total Dissolved Solids	mg/L	760
UD	APW03	C	6/17/2021	Total Dissolved Solids	mg/L	660
UD	APW03	C	6/30/2021	Total Dissolved Solids	mg/L	600
UD	APW03	C	7/15/2021	Total Dissolved Solids	mg/L	710
UD	APW03	C	11/9/2021	Total Dissolved Solids	mg/L	700
UD	APW03	C	2/22/2022	Total Dissolved Solids	mg/L	580
UD	APW03	C	5/24/2022	Total Dissolved Solids	mg/L	650
UD	APW03	C	8/17/2022	Total Dissolved Solids	mg/L	520
UD	APW03	C	11/1/2022	Total Dissolved Solids	mg/L	640
UD	APW03	C	2/1/2023	Total Dissolved Solids	mg/L	720
UD	APW03	C	3/14/2023	Total Dissolved Solids	mg/L	800
UD	APW03	C	4/25/2023	Total Dissolved Solids	mg/L	740
UD	APW03	C	7/31/2023	Total Dissolved Solids	mg/L	620
UD	APW03	C	10/10/2023	Total Dissolved Solids	mg/L	628
UD	APW04	C	11/30/2010	pH (field)	SU	5.7
UD	APW04	C	2/8/2011	pH (field)	SU	7.1
UD	APW04	C	5/4/2011	pH (field)	SU	6.9
UD	APW04	C	7/12/2011	pH (field)	SU	7.0
UD	APW04	C	10/11/2011	pH (field)	SU	7.1
UD	APW04	C	1/31/2012	pH (field)	SU	7.0
UD	APW04	C	4/10/2012	pH (field)	SU	7.0
UD	APW04	C	7/17/2012	pH (field)	SU	7.0
UD	APW04	C	3/14/2014	pH (field)	SU	7.1
UD	APW04	C	4/9/2014	pH (field)	SU	7.3
UD	APW04	C	8/14/2014	pH (field)	SU	6.5
UD	APW04	C	10/17/2014	pH (field)	SU	7.3
UD	APW04	C	1/13/2015	pH (field)	SU	7.2
UD	APW04	C	4/20/2015	pH (field)	SU	7.0
UD	APW04	C	7/15/2015	pH (field)	SU	7.0
UD	APW04	C	10/7/2015	pH (field)	SU	7.0
UD	APW04	C	10/27/2020	pH (field)	SU	7.0
UD	APW04	C	2/10/2021	pH (field)	SU	7.1
UD	APW04	C	2/18/2021	pH (field)	SU	6.5

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Geochemical Conceptual Site Model
Newton Primary Ash Pond
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Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW04	C	3/11/2021	pH (field)	SU	6.9
UD	APW04	C	3/31/2021	pH (field)	SU	6.1
UD	APW04	C	4/29/2021	pH (field)	SU	6.9
UD	APW04	C	5/25/2021	pH (field)	SU	6.9
UD	APW04	C	6/17/2021	pH (field)	SU	6.8
UD	APW04	C	6/30/2021	pH (field)	SU	6.8
UD	APW04	C	7/15/2021	pH (field)	SU	6.8
UD	APW04	C	11/9/2021	pH (field)	SU	6.9
UD	APW04	C	2/22/2022	pH (field)	SU	7.0
UD	APW04	C	5/24/2022	pH (field)	SU	7.2
UD	APW04	C	8/17/2022	pH (field)	SU	6.6
UD	APW04	C	11/1/2022	pH (field)	SU	7.2
UD	APW04	C	2/2/2023	pH (field)	SU	8.4
UD	APW04	C	3/14/2023	pH (field)	SU	7.4
UD	APW04	C	4/25/2023	pH (field)	SU	6.9
UD	APW04	C	7/31/2023	pH (field)	SU	6.6
UD	APW04	C	10/10/2023	pH (field)	SU	6.8
UD	APW04	C	2/18/2021	Oxidation Reduction Potential	mV	217
UD	APW04	C	3/11/2021	Oxidation Reduction Potential	mV	224
UD	APW04	C	3/31/2021	Oxidation Reduction Potential	mV	55.0
UD	APW04	C	4/29/2021	Oxidation Reduction Potential	mV	140
UD	APW04	C	5/25/2021	Oxidation Reduction Potential	mV	166
UD	APW04	C	6/17/2021	Oxidation Reduction Potential	mV	169
UD	APW04	C	6/30/2021	Oxidation Reduction Potential	mV	141
UD	APW04	C	7/15/2021	Oxidation Reduction Potential	mV	78.1
UD	APW04	C	2/22/2022	Oxidation Reduction Potential	mV	135
UD	APW04	C	5/24/2022	Oxidation Reduction Potential	mV	41.4
UD	APW04	C	8/17/2022	Oxidation Reduction Potential	mV	46.8
UD	APW04	C	11/1/2022	Oxidation Reduction Potential	mV	80.0
UD	APW04	C	2/2/2023	Oxidation Reduction Potential	mV	34.0
UD	APW04	C	4/25/2023	Oxidation Reduction Potential	mV	171
UD	APW04	C	7/31/2023	Oxidation Reduction Potential	mV	92.0
UD	APW04	C	10/10/2023	Oxidation Reduction Potential	mV	19.0
UD	APW04	C	2/18/2021	Eh	V	0.42
UD	APW04	C	3/11/2021	Eh	V	0.42
UD	APW04	C	3/31/2021	Eh	V	0.25
UD	APW04	C	4/29/2021	Eh	V	0.33
UD	APW04	C	5/25/2021	Eh	V	0.36
UD	APW04	C	6/17/2021	Eh	V	0.36
UD	APW04	C	6/30/2021	Eh	V	0.33
UD	APW04	C	7/15/2021	Eh	V	0.26
UD	APW04	C	2/22/2022	Eh	V	0.33
UD	APW04	C	5/24/2022	Eh	V	0.24
UD	APW04	C	8/17/2022	Eh	V	0.24
UD	APW04	C	11/1/2022	Eh	V	0.27
UD	APW04	C	2/2/2023	Eh	V	0.23

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW04	C	4/25/2023	Eh	V	0.37
UD	APW04	C	7/31/2023	Eh	V	0.28
UD	APW04	C	10/10/2023	Eh	V	0.21
UD	APW04	C	2/18/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UD	APW04	C	3/11/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UD	APW04	C	3/31/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UD	APW04	C	4/29/2021	Alkalinity, bicarbonate	mg/L CaCO3	450
UD	APW04	C	5/25/2021	Alkalinity, bicarbonate	mg/L CaCO3	920
UD	APW04	C	6/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	480
UD	APW04	C	6/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	460
UD	APW04	C	7/15/2021	Alkalinity, bicarbonate	mg/L CaCO3	480
UD	APW04	C	3/14/2023	Alkalinity, bicarbonate	mg/L CaCO3	490
UD	APW04	C	4/25/2023	Alkalinity, bicarbonate	mg/L CaCO3	440
UD	APW04	C	7/31/2023	Alkalinity, bicarbonate	mg/L CaCO3	511
UD	APW04	C	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	528
UD	APW04	C	2/18/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW04	C	3/11/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW04	C	3/31/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW04	C	4/29/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW04	C	5/25/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW04	C	6/17/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW04	C	6/30/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW04	C	7/15/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW04	C	3/14/2023	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW04	C	4/25/2023	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW04	C	7/31/2023	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW04	C	10/10/2023	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW04	C	2/18/2021	Barium, total	mg/L	0.0210
UD	APW04	C	3/11/2021	Barium, total	mg/L	0.0220
UD	APW04	C	3/31/2021	Barium, total	mg/L	0.0180
UD	APW04	C	4/29/2021	Barium, total	mg/L	0.0130
UD	APW04	C	5/25/2021	Barium, total	mg/L	0.0260
UD	APW04	C	6/17/2021	Barium, total	mg/L	0.0260
UD	APW04	C	6/30/2021	Barium, total	mg/L	0.0320
UD	APW04	C	7/15/2021	Barium, total	mg/L	0.0250
UD	APW04	C	3/14/2023	Barium, total	mg/L	0.0370
UD	APW04	C	4/25/2023	Barium, total	mg/L	0.0220
UD	APW04	C	7/31/2023	Barium, total	mg/L	0.0247
UD	APW04	C	10/10/2023	Barium, total	mg/L	0.0200
UD	APW04	C	2/18/2021	Calcium, total	mg/L	230
UD	APW04	C	3/11/2021	Calcium, total	mg/L	220
UD	APW04	C	3/31/2021	Calcium, total	mg/L	210
UD	APW04	C	4/29/2021	Calcium, total	mg/L	220
UD	APW04	C	5/25/2021	Calcium, total	mg/L	220
UD	APW04	C	6/17/2021	Calcium, total	mg/L	240
UD	APW04	C	6/30/2021	Calcium, total	mg/L	220

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW04	C	7/15/2021	Calcium, total	mg/L	210
UD	APW04	C	3/14/2023	Calcium, total	mg/L	220
UD	APW04	C	4/25/2023	Calcium, total	mg/L	210
UD	APW04	C	7/31/2023	Calcium, total	mg/L	211
UD	APW04	C	10/10/2023	Calcium, total	mg/L	206
UD	APW04	C	2/18/2021	Chloride, total	mg/L	36.0
UD	APW04	C	3/11/2021	Chloride, total	mg/L	33.0
UD	APW04	C	3/31/2021	Chloride, total	mg/L	37.0
UD	APW04	C	4/29/2021	Chloride, total	mg/L	29.0
UD	APW04	C	5/25/2021	Chloride, total	mg/L	32.0
UD	APW04	C	6/17/2021	Chloride, total	mg/L	29.0
UD	APW04	C	6/30/2021	Chloride, total	mg/L	27.0
UD	APW04	C	7/15/2021	Chloride, total	mg/L	34.0
UD	APW04	C	3/14/2023	Chloride, total	mg/L	31.0
UD	APW04	C	4/25/2023	Chloride, total	mg/L	34.0
UD	APW04	C	7/31/2023	Chloride, total	mg/L	36.0
UD	APW04	C	10/10/2023	Chloride, total	mg/L	34.0
UD	APW04	C	4/25/2023	Ferrous Iron, dissolved	mg/L	<0.02
UD	APW04	C	7/31/2023	Ferrous Iron, dissolved	mg/L	3.54
UD	APW04	C	11/30/2010	Iron, dissolved	mg/L	0
UD	APW04	C	2/8/2011	Iron, dissolved	mg/L	<0.01
UD	APW04	C	5/4/2011	Iron, dissolved	mg/L	0.0610
UD	APW04	C	7/12/2011	Iron, dissolved	mg/L	<0.01
UD	APW04	C	10/11/2011	Iron, dissolved	mg/L	<0.01
UD	APW04	C	1/31/2012	Iron, dissolved	mg/L	<0.01
UD	APW04	C	4/10/2012	Iron, dissolved	mg/L	0.0360
UD	APW04	C	7/17/2012	Iron, dissolved	mg/L	<0.01
UD	APW04	C	4/25/2023	Iron, dissolved	mg/L	0.00950
UD	APW04	C	7/31/2023	Iron, dissolved	mg/L	0.0280
UD	APW04	C	2/18/2021	Lithium, total	mg/L	0.0220
UD	APW04	C	3/11/2021	Lithium, total	mg/L	0.0240
UD	APW04	C	3/31/2021	Lithium, total	mg/L	0.0210
UD	APW04	C	4/29/2021	Lithium, total	mg/L	<0.0099
UD	APW04	C	5/25/2021	Lithium, total	mg/L	0.0210
UD	APW04	C	6/17/2021	Lithium, total	mg/L	0.0210
UD	APW04	C	6/30/2021	Lithium, total	mg/L	0.0450
UD	APW04	C	7/15/2021	Lithium, total	mg/L	0.0340
UD	APW04	C	3/14/2023	Lithium, total	mg/L	0.0190
UD	APW04	C	4/25/2023	Lithium, total	mg/L	0.0180
UD	APW04	C	7/31/2023	Lithium, total	mg/L	0.0225
UD	APW04	C	10/10/2023	Lithium, total	mg/L	0.0218
UD	APW04	C	2/18/2021	Magnesium, total	mg/L	180
UD	APW04	C	3/11/2021	Magnesium, total	mg/L	180
UD	APW04	C	3/31/2021	Magnesium, total	mg/L	170
UD	APW04	C	4/29/2021	Magnesium, total	mg/L	180
UD	APW04	C	5/25/2021	Magnesium, total	mg/L	170

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW04	C	6/17/2021	Magnesium, total	mg/L	190
UD	APW04	C	6/30/2021	Magnesium, total	mg/L	170
UD	APW04	C	7/15/2021	Magnesium, total	mg/L	170
UD	APW04	C	3/14/2023	Magnesium, total	mg/L	200
UD	APW04	C	4/25/2023	Magnesium, total	mg/L	170
UD	APW04	C	7/31/2023	Magnesium, total	mg/L	174
UD	APW04	C	10/10/2023	Magnesium, total	mg/L	167
UD	APW04	C	11/30/2010	Manganese, dissolved	mg/L	0.176
UD	APW04	C	2/8/2011	Manganese, dissolved	mg/L	0.210
UD	APW04	C	5/4/2011	Manganese, dissolved	mg/L	0.240
UD	APW04	C	7/12/2011	Manganese, dissolved	mg/L	0.260
UD	APW04	C	10/11/2011	Manganese, dissolved	mg/L	0.270
UD	APW04	C	1/31/2012	Manganese, dissolved	mg/L	0.220
UD	APW04	C	4/10/2012	Manganese, dissolved	mg/L	0.250
UD	APW04	C	7/17/2012	Manganese, dissolved	mg/L	0.140
UD	APW04	C	3/14/2014	Manganese, dissolved	mg/L	0.250
UD	APW04	C	4/9/2014	Manganese, dissolved	mg/L	0.250
UD	APW04	C	8/14/2014	Manganese, dissolved	mg/L	0.290
UD	APW04	C	10/17/2014	Manganese, dissolved	mg/L	1.30
UD	APW04	C	1/13/2015	Manganese, dissolved	mg/L	0.210
UD	APW04	C	4/20/2015	Manganese, dissolved	mg/L	0.280
UD	APW04	C	7/15/2015	Manganese, dissolved	mg/L	0.250
UD	APW04	C	10/7/2015	Manganese, dissolved	mg/L	0.420
UD	APW04	C	1/19/2016	Manganese, dissolved	mg/L	0.110
UD	APW04	C	4/26/2016	Manganese, dissolved	mg/L	0.110
UD	APW04	C	7/26/2016	Manganese, dissolved	mg/L	0.340
UD	APW04	C	10/18/2016	Manganese, dissolved	mg/L	0.330
UD	APW04	C	1/20/2017	Manganese, dissolved	mg/L	0.140
UD	APW04	C	4/18/2017	Manganese, dissolved	mg/L	0.280
UD	APW04	C	8/3/2017	Manganese, dissolved	mg/L	0.330
UD	APW04	C	11/18/2017	Manganese, dissolved	mg/L	0.970
UD	APW04	C	2/23/2018	Manganese, dissolved	mg/L	0.200
UD	APW04	C	5/21/2018	Manganese, dissolved	mg/L	0.170
UD	APW04	C	8/16/2018	Manganese, dissolved	mg/L	0.630
UD	APW04	C	1/11/2019	Manganese, dissolved	mg/L	0.100
UD	APW04	C	2/20/2019	Manganese, dissolved	mg/L	0.100
UD	APW04	C	5/21/2019	Manganese, dissolved	mg/L	0.280
UD	APW04	C	8/23/2019	Manganese, dissolved	mg/L	0.140
UD	APW04	C	11/19/2019	Manganese, dissolved	mg/L	1.20
UD	APW04	C	2/4/2020	Manganese, dissolved	mg/L	0.790
UD	APW04	C	5/21/2020	Manganese, dissolved	mg/L	0.120
UD	APW04	C	7/30/2020	Manganese, dissolved	mg/L	1.20
UD	APW04	C	10/27/2020	Manganese, dissolved	mg/L	0.0790
UD	APW04	C	2/10/2021	Manganese, dissolved	mg/L	0.0570
UD	APW04	C	5/25/2021	Manganese, dissolved	mg/L	0.350
UD	APW04	C	11/9/2021	Manganese, dissolved	mg/L	0.260

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW04	C	2/22/2022	Manganese, dissolved	mg/L	0.190
UD	APW04	C	5/24/2022	Manganese, dissolved	mg/L	0.300
UD	APW04	C	8/17/2022	Manganese, dissolved	mg/L	0.420
UD	APW04	C	11/1/2022	Manganese, dissolved	mg/L	0.310
UD	APW04	C	2/2/2023	Manganese, dissolved	mg/L	0.400
UD	APW04	C	4/25/2023	Manganese, dissolved	mg/L	0.370
UD	APW04	C	7/31/2023	Manganese, dissolved	mg/L	0.499
UD	APW04	C	10/10/2023	Manganese, dissolved	mg/L	0.357
UD	APW04	C	7/31/2023	Phosphate, dissolved	mg/L	0.0150
UD	APW04	C	2/18/2021	Potassium, total	mg/L	1.50
UD	APW04	C	3/11/2021	Potassium, total	mg/L	1.50
UD	APW04	C	3/31/2021	Potassium, total	mg/L	1.30
UD	APW04	C	4/29/2021	Potassium, total	mg/L	1.20
UD	APW04	C	5/25/2021	Potassium, total	mg/L	1.60
UD	APW04	C	6/17/2021	Potassium, total	mg/L	1.50
UD	APW04	C	6/30/2021	Potassium, total	mg/L	1.30
UD	APW04	C	7/15/2021	Potassium, total	mg/L	1.50
UD	APW04	C	3/14/2023	Potassium, total	mg/L	1.80
UD	APW04	C	4/25/2023	Potassium, total	mg/L	1.30
UD	APW04	C	7/31/2023	Potassium, total	mg/L	1.72
UD	APW04	C	10/10/2023	Potassium, total	mg/L	1.76
UD	APW04	C	4/25/2023	Silicon, dissolved	mg/L	8.90
UD	APW04	C	7/31/2023	Silicon, dissolved	mg/L	7.61
UD	APW04	C	2/18/2021	Sodium, total	mg/L	93.0
UD	APW04	C	3/11/2021	Sodium, total	mg/L	92.0
UD	APW04	C	3/31/2021	Sodium, total	mg/L	93.0
UD	APW04	C	4/29/2021	Sodium, total	mg/L	96.0
UD	APW04	C	5/25/2021	Sodium, total	mg/L	90.0
UD	APW04	C	6/17/2021	Sodium, total	mg/L	97.0
UD	APW04	C	6/30/2021	Sodium, total	mg/L	95.0
UD	APW04	C	7/15/2021	Sodium, total	mg/L	94.0
UD	APW04	C	3/14/2023	Sodium, total	mg/L	110
UD	APW04	C	4/25/2023	Sodium, total	mg/L	90.0
UD	APW04	C	7/31/2023	Sodium, total	mg/L	90.6
UD	APW04	C	10/10/2023	Sodium, total	mg/L	92.1
UD	APW04	C	2/18/2021	Sulfate, total	mg/L	860
UD	APW04	C	3/11/2021	Sulfate, total	mg/L	970
UD	APW04	C	3/31/2021	Sulfate, total	mg/L	960
UD	APW04	C	4/29/2021	Sulfate, total	mg/L	990
UD	APW04	C	5/25/2021	Sulfate, total	mg/L	900
UD	APW04	C	6/17/2021	Sulfate, total	mg/L	950
UD	APW04	C	6/30/2021	Sulfate, total	mg/L	910
UD	APW04	C	7/15/2021	Sulfate, total	mg/L	920
UD	APW04	C	3/14/2023	Sulfate, total	mg/L	760
UD	APW04	C	4/25/2023	Sulfate, total	mg/L	840
UD	APW04	C	7/31/2023	Sulfate, total	mg/L	808

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW04	C	10/10/2023	Sulfate, total	mg/L	808
UD	APW04	C	11/30/2010	Total Dissolved Solids	mg/L	1,920
UD	APW04	C	2/8/2011	Total Dissolved Solids	mg/L	2,300
UD	APW04	C	5/4/2011	Total Dissolved Solids	mg/L	2,400
UD	APW04	C	7/12/2011	Total Dissolved Solids	mg/L	2,300
UD	APW04	C	10/11/2011	Total Dissolved Solids	mg/L	2,200
UD	APW04	C	1/31/2012	Total Dissolved Solids	mg/L	2,400
UD	APW04	C	4/10/2012	Total Dissolved Solids	mg/L	2,200
UD	APW04	C	7/17/2012	Total Dissolved Solids	mg/L	2,400
UD	APW04	C	3/14/2014	Total Dissolved Solids	mg/L	2,400
UD	APW04	C	4/9/2014	Total Dissolved Solids	mg/L	2,300
UD	APW04	C	8/14/2014	Total Dissolved Solids	mg/L	2,400
UD	APW04	C	10/17/2014	Total Dissolved Solids	mg/L	2,400
UD	APW04	C	1/13/2015	Total Dissolved Solids	mg/L	2,300
UD	APW04	C	4/20/2015	Total Dissolved Solids	mg/L	3,100
UD	APW04	C	7/15/2015	Total Dissolved Solids	mg/L	2,400
UD	APW04	C	10/7/2015	Total Dissolved Solids	mg/L	2,300
UD	APW04	C	10/27/2020	Total Dissolved Solids	mg/L	1,800
UD	APW04	C	2/10/2021	Total Dissolved Solids	mg/L	1,700
UD	APW04	C	2/18/2021	Total Dissolved Solids	mg/L	1,700
UD	APW04	C	3/11/2021	Total Dissolved Solids	mg/L	1,800
UD	APW04	C	3/31/2021	Total Dissolved Solids	mg/L	2,000
UD	APW04	C	4/29/2021	Total Dissolved Solids	mg/L	1,800
UD	APW04	C	5/25/2021	Total Dissolved Solids	mg/L	1,800
UD	APW04	C	6/17/2021	Total Dissolved Solids	mg/L	1,800
UD	APW04	C	6/30/2021	Total Dissolved Solids	mg/L	1,700
UD	APW04	C	7/15/2021	Total Dissolved Solids	mg/L	1,900
UD	APW04	C	11/9/2021	Total Dissolved Solids	mg/L	1,800
UD	APW04	C	2/22/2022	Total Dissolved Solids	mg/L	1,700
UD	APW04	C	5/24/2022	Total Dissolved Solids	mg/L	1,800
UD	APW04	C	8/17/2022	Total Dissolved Solids	mg/L	1,600
UD	APW04	C	11/1/2022	Total Dissolved Solids	mg/L	1,800
UD	APW04	C	2/2/2023	Total Dissolved Solids	mg/L	1,900
UD	APW04	C	3/14/2023	Total Dissolved Solids	mg/L	1,600
UD	APW04	C	4/25/2023	Total Dissolved Solids	mg/L	1,800
UD	APW04	C	7/31/2023	Total Dissolved Solids	mg/L	1,770
UD	APW04	C	10/10/2023	Total Dissolved Solids	mg/L	1,710
UD	APW05S	C	2/17/2021	pH (field)	SU	6.6
UD	APW05S	C	3/10/2021	pH (field)	SU	7.0
UD	APW05S	C	4/29/2021	pH (field)	SU	6.8
UD	APW05S	C	5/25/2021	pH (field)	SU	6.9
UD	APW05S	C	6/17/2021	pH (field)	SU	6.8
UD	APW05S	C	6/30/2021	pH (field)	SU	6.7
UD	APW05S	C	7/15/2021	pH (field)	SU	6.8
UD	APW05S	C	3/14/2023	pH (field)	SU	7.1
UD	APW05S	C	4/26/2023	pH (field)	SU	6.6

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Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW05S	C	7/25/2023	pH (field)	SU	6.9
UD	APW05S	C	10/10/2023	pH (field)	SU	6.7
UD	APW05S	C	2/17/2021	Oxidation Reduction Potential	mV	202
UD	APW05S	C	3/10/2021	Oxidation Reduction Potential	mV	16.3
UD	APW05S	C	4/29/2021	Oxidation Reduction Potential	mV	4.70
UD	APW05S	C	5/25/2021	Oxidation Reduction Potential	mV	-37.0
UD	APW05S	C	6/17/2021	Oxidation Reduction Potential	mV	-8.80
UD	APW05S	C	6/30/2021	Oxidation Reduction Potential	mV	2.80
UD	APW05S	C	7/15/2021	Oxidation Reduction Potential	mV	-35.6
UD	APW05S	C	4/26/2023	Oxidation Reduction Potential	mV	97.0
UD	APW05S	C	7/25/2023	Oxidation Reduction Potential	mV	36.0
UD	APW05S	C	10/10/2023	Oxidation Reduction Potential	mV	-2.00
UD	APW05S	C	2/17/2021	Eh	V	0.40
UD	APW05S	C	3/10/2021	Eh	V	0.21
UD	APW05S	C	4/29/2021	Eh	V	0.20
UD	APW05S	C	5/25/2021	Eh	V	0.15
UD	APW05S	C	6/17/2021	Eh	V	0.18
UD	APW05S	C	6/30/2021	Eh	V	0.19
UD	APW05S	C	7/15/2021	Eh	V	0.15
UD	APW05S	C	4/26/2023	Eh	V	0.29
UD	APW05S	C	7/25/2023	Eh	V	0.23
UD	APW05S	C	10/10/2023	Eh	V	0.19
UD	APW05S	C	2/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	540
UD	APW05S	C	3/10/2021	Alkalinity, bicarbonate	mg/L CaCO3	560
UD	APW05S	C	4/29/2021	Alkalinity, bicarbonate	mg/L CaCO3	490
UD	APW05S	C	5/25/2021	Alkalinity, bicarbonate	mg/L CaCO3	1,100
UD	APW05S	C	6/17/2021	Alkalinity, bicarbonate	mg/L CaCO3	540
UD	APW05S	C	6/30/2021	Alkalinity, bicarbonate	mg/L CaCO3	490
UD	APW05S	C	7/15/2021	Alkalinity, bicarbonate	mg/L CaCO3	520
UD	APW05S	C	3/14/2023	Alkalinity, bicarbonate	mg/L CaCO3	550
UD	APW05S	C	4/26/2023	Alkalinity, bicarbonate	mg/L CaCO3	520
UD	APW05S	C	7/25/2023	Alkalinity, bicarbonate	mg/L CaCO3	541
UD	APW05S	C	10/10/2023	Alkalinity, bicarbonate	mg/L CaCO3	558
UD	APW05S	C	2/17/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW05S	C	3/10/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW05S	C	4/29/2021	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW05S	C	44341	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW05S	C	44364	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW05S	C	44377	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW05S	C	44392	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW05S	C	44999	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW05S	C	45042	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW05S	C	45132	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW05S	C	45209	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW05S	C	44244	Barium, total	mg/L	0.0480
UD	APW05S	C	44265	Barium, total	mg/L	0.0510

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW05S	C	44315	Barium, total	mg/L	0.0480
UD	APW05S	C	44341	Barium, total	mg/L	0.0530
UD	APW05S	C	44364	Barium, total	mg/L	0.0510
UD	APW05S	C	44377	Barium, total	mg/L	0.0510
UD	APW05S	C	44392	Barium, total	mg/L	0.0500
UD	APW05S	C	44999	Barium, total	mg/L	0.0920
UD	APW05S	C	45042	Barium, total	mg/L	0.0350
UD	APW05S	C	45132	Barium, total	mg/L	0.0328
UD	APW05S	C	45209	Barium, total	mg/L	0.0478
UD	APW05S	C	44244	Calcium, total	mg/L	390
UD	APW05S	C	44265	Calcium, total	mg/L	420
UD	APW05S	C	44315	Calcium, total	mg/L	420
UD	APW05S	C	44341	Calcium, total	mg/L	420
UD	APW05S	C	44364	Calcium, total	mg/L	410
UD	APW05S	C	44377	Calcium, total	mg/L	380
UD	APW05S	C	44392	Calcium, total	mg/L	370
UD	APW05S	C	44999	Calcium, total	mg/L	430
UD	APW05S	C	45042	Calcium, total	mg/L	390
UD	APW05S	C	45132	Calcium, total	mg/L	355
UD	APW05S	C	45209	Calcium, total	mg/L	373
UD	APW05S	C	44244	Chloride, total	mg/L	550
UD	APW05S	C	44265	Chloride, total	mg/L	190
UD	APW05S	C	44315	Chloride, total	mg/L	200
UD	APW05S	C	44341	Chloride, total	mg/L	210
UD	APW05S	C	44364	Chloride, total	mg/L	190
UD	APW05S	C	44377	Chloride, total	mg/L	180
UD	APW05S	C	44392	Chloride, total	mg/L	260
UD	APW05S	C	44999	Chloride, total	mg/L	200
UD	APW05S	C	45042	Chloride, total	mg/L	200
UD	APW05S	C	45132	Chloride, total	mg/L	123
UD	APW05S	C	45209	Chloride, total	mg/L	112
UD	APW05S	C	45042	Ferrous Iron, dissolved	mg/L	0.260
UD	APW05S	C	45132	Ferrous Iron, dissolved	mg/L	0.164
UD	APW05S	C	45042	Iron, dissolved	mg/L	0.110
UD	APW05S	C	45132	Iron, dissolved	mg/L	0.0562
UD	APW05S	C	44244	Lithium, total	mg/L	0.0430
UD	APW05S	C	44265	Lithium, total	mg/L	0.0420
UD	APW05S	C	44315	Lithium, total	mg/L	0.0390
UD	APW05S	C	44341	Lithium, total	mg/L	0.0420
UD	APW05S	C	44364	Lithium, total	mg/L	0.0380
UD	APW05S	C	44377	Lithium, total	mg/L	0.0910
UD	APW05S	C	44392	Lithium, total	mg/L	0.0670
UD	APW05S	C	44999	Lithium, total	mg/L	0.0370
UD	APW05S	C	45042	Lithium, total	mg/L	0.0330
UD	APW05S	C	45132	Lithium, total	mg/L	0.0350
UD	APW05S	C	45209	Lithium, total	mg/L	0.0328

Attachment 8. Aqueous Data
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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW05S	C	44244	Magnesium, total	mg/L	290
UD	APW05S	C	44265	Magnesium, total	mg/L	300
UD	APW05S	C	44315	Magnesium, total	mg/L	320
UD	APW05S	C	44341	Magnesium, total	mg/L	300
UD	APW05S	C	44364	Magnesium, total	mg/L	300
UD	APW05S	C	44377	Magnesium, total	mg/L	290
UD	APW05S	C	44392	Magnesium, total	mg/L	290
UD	APW05S	C	44999	Magnesium, total	mg/L	350
UD	APW05S	C	45042	Magnesium, total	mg/L	300
UD	APW05S	C	45132	Magnesium, total	mg/L	282
UD	APW05S	C	45209	Magnesium, total	mg/L	295
UD	APW05S	C	45042	Manganese, dissolved	mg/L	0.480
UD	APW05S	C	45132	Manganese, dissolved	mg/L	0.418
UD	APW05S	C	45132	Phosphate, dissolved	mg/L	0.0210
UD	APW05S	C	44244	Potassium, total	mg/L	2.10
UD	APW05S	C	44265	Potassium, total	mg/L	2.00
UD	APW05S	C	44315	Potassium, total	mg/L	1.90
UD	APW05S	C	44341	Potassium, total	mg/L	1.90
UD	APW05S	C	44364	Potassium, total	mg/L	2.10
UD	APW05S	C	44377	Potassium, total	mg/L	1.90
UD	APW05S	C	44392	Potassium, total	mg/L	1.90
UD	APW05S	C	44999	Potassium, total	mg/L	2.50
UD	APW05S	C	45042	Potassium, total	mg/L	1.80
UD	APW05S	C	45132	Potassium, total	mg/L	2.17
UD	APW05S	C	45209	Potassium, total	mg/L	2.41
UD	APW05S	C	45042	Silicon, dissolved	mg/L	11.0
UD	APW05S	C	45132	Silicon, dissolved	mg/L	10.3
UD	APW05S	C	44244	Sodium, total	mg/L	250
UD	APW05S	C	44265	Sodium, total	mg/L	250
UD	APW05S	C	44315	Sodium, total	mg/L	280
UD	APW05S	C	44341	Sodium, total	mg/L	250
UD	APW05S	C	44364	Sodium, total	mg/L	240
UD	APW05S	C	44377	Sodium, total	mg/L	250
UD	APW05S	C	44392	Sodium, total	mg/L	250
UD	APW05S	C	44999	Sodium, total	mg/L	310
UD	APW05S	C	45042	Sodium, total	mg/L	260
UD	APW05S	C	45132	Sodium, total	mg/L	257
UD	APW05S	C	45209	Sodium, total	mg/L	252
UD	APW05S	C	44244	Sulfate, total	mg/L	640
UD	APW05S	C	44265	Sulfate, total	mg/L	200
UD	APW05S	C	44315	Sulfate, total	mg/L	2,000
UD	APW05S	C	44341	Sulfate, total	mg/L	2,100
UD	APW05S	C	44364	Sulfate, total	mg/L	2,100
UD	APW05S	C	44377	Sulfate, total	mg/L	1,900
UD	APW05S	C	44392	Sulfate, total	mg/L	2,000
UD	APW05S	C	44999	Sulfate, total	mg/L	1,900

Attachment 8. Aqueous Data
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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW05S	C	45042	Sulfate, total	mg/L	2,100
UD	APW05S	C	45132	Sulfate, total	mg/L	1,790
UD	APW05S	C	45209	Sulfate, total	mg/L	1,700
UD	APW05S	C	44244	Total Dissolved Solids	mg/L	3,700
UD	APW05S	C	44265	Total Dissolved Solids	mg/L	3,600
UD	APW05S	C	44315	Total Dissolved Solids	mg/L	3,800
UD	APW05S	C	44341	Total Dissolved Solids	mg/L	3,500
UD	APW05S	C	44364	Total Dissolved Solids	mg/L	3,600
UD	APW05S	C	44377	Total Dissolved Solids	mg/L	3,200
UD	APW05S	C	44392	Total Dissolved Solids	mg/L	3,800
UD	APW05S	C	44999	Total Dissolved Solids	mg/L	4,000
UD	APW05S	C	45042	Total Dissolved Solids	mg/L	3,800
UD	APW05S	C	45132	Total Dissolved Solids	mg/L	3,200
UD	APW05S	C	45209	Total Dissolved Solids	mg/L	3,240
UD	APW12	C	44244	pH (field)	SU	6.2
UD	APW12	C	44264	pH (field)	SU	6.5
UD	APW12	C	44284	pH (field)	SU	6.0
UD	APW12	C	44314	pH (field)	SU	6.4
UD	APW12	C	44341	pH (field)	SU	6.5
UD	APW12	C	44363	pH (field)	SU	6.4
UD	APW12	C	44377	pH (field)	SU	6.3
UD	APW12	C	44392	pH (field)	SU	6.5
UD	APW12	C	45000	pH (field)	SU	6.5
UD	APW12	C	45042	pH (field)	SU	6.5
UD	APW12	C	45131	pH (field)	SU	6.4
UD	APW12	C	45210	pH (field)	SU	6.1
UD	APW12	C	44244	Oxidation Reduction Potential	mV	27.2
UD	APW12	C	44264	Oxidation Reduction Potential	mV	45.5
UD	APW12	C	44284	Oxidation Reduction Potential	mV	117
UD	APW12	C	44314	Oxidation Reduction Potential	mV	11.2
UD	APW12	C	44341	Oxidation Reduction Potential	mV	49.5
UD	APW12	C	44363	Oxidation Reduction Potential	mV	9.90
UD	APW12	C	44377	Oxidation Reduction Potential	mV	115
UD	APW12	C	44392	Oxidation Reduction Potential	mV	22.8
UD	APW12	C	45042	Oxidation Reduction Potential	mV	107
UD	APW12	C	45131	Oxidation Reduction Potential	mV	47.0
UD	APW12	C	45210	Oxidation Reduction Potential	mV	6.00
UD	APW12	C	44244	Eh	V	0.23
UD	APW12	C	44264	Eh	V	0.24
UD	APW12	C	44284	Eh	V	0.31
UD	APW12	C	44314	Eh	V	0.21
UD	APW12	C	44341	Eh	V	0.24
UD	APW12	C	44363	Eh	V	0.20
UD	APW12	C	44377	Eh	V	0.31
UD	APW12	C	44392	Eh	V	0.22
UD	APW12	C	45042	Eh	V	0.30

Attachment 8. Aqueous Data
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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW12	C	45131	Eh	V	0.24
UD	APW12	C	45210	Eh	V	0.20
UD	APW12	C	44244	Alkalinity, bicarbonate	mg/L CaCO3	690
UD	APW12	C	44264	Alkalinity, bicarbonate	mg/L CaCO3	680
UD	APW12	C	44284	Alkalinity, bicarbonate	mg/L CaCO3	680
UD	APW12	C	44314	Alkalinity, bicarbonate	mg/L CaCO3	700
UD	APW12	C	44341	Alkalinity, bicarbonate	mg/L CaCO3	680
UD	APW12	C	44363	Alkalinity, bicarbonate	mg/L CaCO3	680
UD	APW12	C	44377	Alkalinity, bicarbonate	mg/L CaCO3	620
UD	APW12	C	44392	Alkalinity, bicarbonate	mg/L CaCO3	660
UD	APW12	C	45000	Alkalinity, bicarbonate	mg/L CaCO3	650
UD	APW12	C	45042	Alkalinity, bicarbonate	mg/L CaCO3	520
UD	APW12	C	45131	Alkalinity, bicarbonate	mg/L CaCO3	614
UD	APW12	C	45210	Alkalinity, bicarbonate	mg/L CaCO3	656
UD	APW12	C	44244	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW12	C	44264	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW12	C	44284	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW12	C	44314	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW12	C	44341	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW12	C	44363	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW12	C	44377	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW12	C	44392	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW12	C	45000	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW12	C	45042	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW12	C	45131	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW12	C	45210	Alkalinity, carbonate	mg/L CaCO3	0
UD	APW12	C	44244	Barium, total	mg/L	0.0580
UD	APW12	C	44264	Barium, total	mg/L	0.0500
UD	APW12	C	44284	Barium, total	mg/L	0.0460
UD	APW12	C	44314	Barium, total	mg/L	0.0380
UD	APW12	C	44341	Barium, total	mg/L	0.0380
UD	APW12	C	44363	Barium, total	mg/L	0.0390
UD	APW12	C	44377	Barium, total	mg/L	0.0400
UD	APW12	C	44392	Barium, total	mg/L	0.0330
UD	APW12	C	45000	Barium, total	mg/L	0.0380
UD	APW12	C	45042	Barium, total	mg/L	0.0280
UD	APW12	C	45131	Barium, total	mg/L	0.0317
UD	APW12	C	45210	Barium, total	mg/L	0.0345
UD	APW12	C	44244	Calcium, total	mg/L	230
UD	APW12	C	44264	Calcium, total	mg/L	230
UD	APW12	C	44284	Calcium, total	mg/L	220
UD	APW12	C	44314	Calcium, total	mg/L	210
UD	APW12	C	44341	Calcium, total	mg/L	220
UD	APW12	C	44363	Calcium, total	mg/L	210
UD	APW12	C	44377	Calcium, total	mg/L	190
UD	APW12	C	44392	Calcium, total	mg/L	210

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW12	C	45000	Calcium, total	mg/L	230
UD	APW12	C	45042	Calcium, total	mg/L	230
UD	APW12	C	45131	Calcium, total	mg/L	245
UD	APW12	C	45210	Calcium, total	mg/L	275
UD	APW12	C	44244	Chloride, total	mg/L	27.0
UD	APW12	C	44264	Chloride, total	mg/L	27.0
UD	APW12	C	44284	Chloride, total	mg/L	28.0
UD	APW12	C	44314	Chloride, total	mg/L	23.0
UD	APW12	C	44341	Chloride, total	mg/L	23.0
UD	APW12	C	44363	Chloride, total	mg/L	20.0
UD	APW12	C	44377	Chloride, total	mg/L	20.0
UD	APW12	C	44392	Chloride, total	mg/L	26.0
UD	APW12	C	45000	Chloride, total	mg/L	22.0
UD	APW12	C	45042	Chloride, total	mg/L	23.0
UD	APW12	C	45131	Chloride, total	mg/L	25.0
UD	APW12	C	45210	Chloride, total	mg/L	31.0
UD	APW12	C	45042	Ferrous Iron, dissolved	mg/L	<0.02
UD	APW12	C	45131	Ferrous Iron, dissolved	mg/L	0.362
UD	APW12	C	45042	Iron, dissolved	mg/L	0.160
UD	APW12	C	45131	Iron, dissolved	mg/L	0.211
UD	APW12	C	44244	Lithium, total	mg/L	0.0330
UD	APW12	C	44264	Lithium, total	mg/L	0.0280
UD	APW12	C	44284	Lithium, total	mg/L	0.0290
UD	APW12	C	44314	Lithium, total	mg/L	0.0260
UD	APW12	C	44341	Lithium, total	mg/L	0.0290
UD	APW12	C	44363	Lithium, total	mg/L	0.0260
UD	APW12	C	44377	Lithium, total	mg/L	0.0460
UD	APW12	C	44392	Lithium, total	mg/L	0.0450
UD	APW12	C	45000	Lithium, total	mg/L	0.0240
UD	APW12	C	45042	Lithium, total	mg/L	0.0240
UD	APW12	C	45131	Lithium, total	mg/L	0.0275
UD	APW12	C	45210	Lithium, total	mg/L	0.0365
UD	APW12	C	44244	Magnesium, total	mg/L	94.0
UD	APW12	C	44264	Magnesium, total	mg/L	97.0
UD	APW12	C	44284	Magnesium, total	mg/L	86.0
UD	APW12	C	44314	Magnesium, total	mg/L	95.0
UD	APW12	C	44341	Magnesium, total	mg/L	94.0
UD	APW12	C	44363	Magnesium, total	mg/L	89.0
UD	APW12	C	44377	Magnesium, total	mg/L	84.0
UD	APW12	C	44392	Magnesium, total	mg/L	99.0
UD	APW12	C	45000	Magnesium, total	mg/L	120
UD	APW12	C	45042	Magnesium, total	mg/L	110
UD	APW12	C	45131	Magnesium, total	mg/L	114
UD	APW12	C	45210	Magnesium, total	mg/L	127
UD	APW12	C	45042	Manganese, dissolved	mg/L	1.30
UD	APW12	C	45131	Manganese, dissolved	mg/L	1.40

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HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW12	C	45131	Phosphate, dissolved	mg/L	<0.005
UD	APW12	C	44244	Potassium, total	mg/L	6.00
UD	APW12	C	44264	Potassium, total	mg/L	3.20
UD	APW12	C	44284	Potassium, total	mg/L	2.10
UD	APW12	C	44314	Potassium, total	mg/L	1.10
UD	APW12	C	44341	Potassium, total	mg/L	1.10
UD	APW12	C	44363	Potassium, total	mg/L	0.950
UD	APW12	C	44377	Potassium, total	mg/L	1.20
UD	APW12	C	44392	Potassium, total	mg/L	1.00
UD	APW12	C	45000	Potassium, total	mg/L	1.10
UD	APW12	C	45042	Potassium, total	mg/L	0.940
UD	APW12	C	45131	Potassium, total	mg/L	1.18
UD	APW12	C	45210	Potassium, total	mg/L	1.29
UD	APW12	C	45042	Silicon, dissolved	mg/L	18.0
UD	APW12	C	45131	Silicon, dissolved	mg/L	15.8
UD	APW12	C	44244	Sodium, total	mg/L	130
UD	APW12	C	44264	Sodium, total	mg/L	110
UD	APW12	C	44284	Sodium, total	mg/L	94.0
UD	APW12	C	44314	Sodium, total	mg/L	97.0
UD	APW12	C	44341	Sodium, total	mg/L	98.0
UD	APW12	C	44363	Sodium, total	mg/L	81.0
UD	APW12	C	44377	Sodium, total	mg/L	77.0
UD	APW12	C	44392	Sodium, total	mg/L	110
UD	APW12	C	45000	Sodium, total	mg/L	130
UD	APW12	C	45042	Sodium, total	mg/L	120
UD	APW12	C	45131	Sodium, total	mg/L	129
UD	APW12	C	45210	Sodium, total	mg/L	151
UD	APW12	C	44244	Sulfate, total	mg/L	390
UD	APW12	C	44264	Sulfate, total	mg/L	480
UD	APW12	C	44284	Sulfate, total	mg/L	440
UD	APW12	C	44314	Sulfate, total	mg/L	390
UD	APW12	C	44341	Sulfate, total	mg/L	390
UD	APW12	C	44363	Sulfate, total	mg/L	290
UD	APW12	C	44377	Sulfate, total	mg/L	310
UD	APW12	C	44392	Sulfate, total	mg/L	440
UD	APW12	C	45000	Sulfate, total	mg/L	56.0
UD	APW12	C	45042	Sulfate, total	mg/L	540
UD	APW12	C	45131	Sulfate, total	mg/L	655
UD	APW12	C	45210	Sulfate, total	mg/L	712
UD	APW12	C	44244	Total Dissolved Solids	mg/L	1,300
UD	APW12	C	44264	Total Dissolved Solids	mg/L	1,300
UD	APW12	C	44284	Total Dissolved Solids	mg/L	1,400
UD	APW12	C	44314	Total Dissolved Solids	mg/L	1,300
UD	APW12	C	44341	Total Dissolved Solids	mg/L	1,300
UD	APW12	C	44363	Total Dissolved Solids	mg/L	1,100
UD	APW12	C	44377	Total Dissolved Solids	mg/L	990

Attachment 8. Aqueous Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
UD	APW12	C	44392	Total Dissolved Solids	mg/L	1,300
UD	APW12	C	45000	Total Dissolved Solids	mg/L	1,400
UD	APW12	C	45042	Total Dissolved Solids	mg/L	1,500
UD	APW12	C	45131	Total Dissolved Solids	mg/L	1,700
UD	APW12	C	45210	Total Dissolved Solids	mg/L	1,740

Notes:
< = result is less than the detection limit
B = background well
C = compliance well
HSU = hydrostratigraphic unit
CCR = coal combustion residual
UA = uppermost aquifer
UD = uppermost drift
mg/L = milligrams per liter
V = volts

ATTACHMENT 9
PRINCIPAL COMPONENTS ANALYSIS (PCA)
INPUT DATA

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW02	2/17/2021	Arsenic	0.0316	FALSE	TRUE
APW02	2/17/2021	Barium	0.0084	FALSE	FALSE
APW02	2/17/2021	Boron	0.091	FALSE	FALSE
APW02	2/17/2021	Calcium	430	FALSE	FALSE
APW02	2/17/2021	Chloride	84	FALSE	FALSE
APW02	2/17/2021	Fluoride	0.5	FALSE	TRUE
APW02	2/17/2021	Iron	0.88	FALSE	FALSE
APW02	2/17/2021	Lithium	0.079	FALSE	FALSE
APW02	2/17/2021	Magnesium	380	FALSE	FALSE
APW02	2/17/2021	Manganese	0.11	FALSE	FALSE
APW02	2/17/2021	Molybdenum	0.0316	FALSE	TRUE
APW02	2/17/2021	Potassium	3.9	FALSE	FALSE
APW02	2/17/2021	Sodium	400	FALSE	FALSE
APW02	2/17/2021	Sulfate	2900	FALSE	FALSE
APW02	2/17/2021	H+	0.000000251	FALSE	FALSE
APW02	2/17/2021	Alkalinity	14.2	FALSE	FALSE
APW02	4/29/2021	Arsenic	0.0316	FALSE	TRUE
APW02	4/29/2021	Barium	0.013	FALSE	FALSE
APW02	4/29/2021	Boron	0.12	FALSE	FALSE
APW02	4/29/2021	Calcium	490	FALSE	FALSE
APW02	4/29/2021	Chloride	130	FALSE	FALSE
APW02	4/29/2021	Fluoride	0.5	FALSE	TRUE
APW02	4/29/2021	Iron	0.67	FALSE	FALSE
APW02	4/29/2021	Lithium	0.11	FALSE	FALSE
APW02	4/29/2021	Magnesium	470	FALSE	FALSE
APW02	4/29/2021	Manganese	0.28	FALSE	FALSE
APW02	4/29/2021	Molybdenum	0.0316	FALSE	TRUE
APW02	4/29/2021	Potassium	5.7	FALSE	FALSE
APW02	4/29/2021	Sodium	380	FALSE	FALSE
APW02	4/29/2021	Sulfate	1500	FALSE	FALSE
APW02	4/29/2021	H+	0.000000209	FALSE	FALSE
APW02	4/29/2021	Alkalinity	16.2	FALSE	FALSE
APW02	6/30/2021	Arsenic	0.0316	FALSE	TRUE
APW02	6/30/2021	Barium	0.036	FALSE	FALSE
APW02	6/30/2021	Boron	0.49	FALSE	FALSE
APW02	6/30/2021	Calcium	510	FALSE	FALSE
APW02	6/30/2021	Chloride	110	FALSE	FALSE
APW02	6/30/2021	Fluoride	0.5	FALSE	TRUE
APW02	6/30/2021	Iron	1.4	FALSE	FALSE
APW02	6/30/2021	Lithium	0.3	FALSE	FALSE
APW02	6/30/2021	Magnesium	460	FALSE	FALSE
APW02	6/30/2021	Manganese	0.58	FALSE	FALSE
APW02	6/30/2021	Molybdenum	0.0316	FALSE	TRUE
APW02	6/30/2021	Potassium	6.1	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW02	6/30/2021	Sodium	380	FALSE	FALSE
APW02	6/30/2021	Sulfate	3200	FALSE	FALSE
APW02	6/30/2021	H+	0.000000263	FALSE	FALSE
APW02	6/30/2021	Alkalinity	16.6	FALSE	FALSE
APW02	7/15/2021	Arsenic	0.0316	FALSE	TRUE
APW02	7/15/2021	Barium	0.025	FALSE	FALSE
APW02	7/15/2021	Boron	0.14	FALSE	FALSE
APW02	7/15/2021	Calcium	480	FALSE	FALSE
APW02	7/15/2021	Chloride	120	FALSE	FALSE
APW02	7/15/2021	Fluoride	0.5	FALSE	TRUE
APW02	7/15/2021	Iron	0.91	FALSE	FALSE
APW02	7/15/2021	Lithium	0.21	FALSE	FALSE
APW02	7/15/2021	Magnesium	440	FALSE	FALSE
APW02	7/15/2021	Manganese	0.9	FALSE	FALSE
APW02	7/15/2021	Molybdenum	0.0316	FALSE	TRUE
APW02	7/15/2021	Potassium	6.7	FALSE	FALSE
APW02	7/15/2021	Sodium	360	FALSE	FALSE
APW02	7/15/2021	Sulfate	3100	FALSE	FALSE
APW02	7/15/2021	H+	0.000000282	FALSE	FALSE
APW02	7/15/2021	Alkalinity	16.6	FALSE	FALSE
APW02	4/27/2023	Arsenic	0.0014	FALSE	FALSE
APW02	4/27/2023	Barium	0.024	FALSE	FALSE
APW02	4/27/2023	Boron	0.12	FALSE	FALSE
APW02	4/27/2023	Calcium	460	FALSE	FALSE
APW02	4/27/2023	Chloride	110	FALSE	FALSE
APW02	4/27/2023	Fluoride	0.172	FALSE	FALSE
APW02	4/27/2023	Iron	0.82	FALSE	FALSE
APW02	4/27/2023	Lithium	0.098	FALSE	FALSE
APW02	4/27/2023	Magnesium	430	FALSE	FALSE
APW02	4/27/2023	Manganese	0.71	FALSE	FALSE
APW02	4/27/2023	Molybdenum	0.0016	FALSE	FALSE
APW02	4/27/2023	Potassium	5.8	FALSE	FALSE
APW02	4/27/2023	Sodium	360	FALSE	FALSE
APW02	4/27/2023	Sulfate	3100	FALSE	FALSE
APW02	4/27/2023	H+	0.000000195	FALSE	FALSE
APW02	4/27/2023	Alkalinity	16.6	FALSE	FALSE
APW02	8/17/2023	Arsenic	0.0009	FALSE	FALSE
APW02	8/17/2023	Barium	0.0076	FALSE	FALSE
APW02	8/17/2023	Boron	0.189	FALSE	FALSE
APW02	8/17/2023	Calcium	475	FALSE	FALSE
APW02	8/17/2023	Chloride	102	FALSE	FALSE
APW02	8/17/2023	Fluoride	0.21	FALSE	FALSE
APW02	8/17/2023	Iron	0.76	FALSE	FALSE
APW02	8/17/2023	Lithium	0.19	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW02	8/17/2023	Magnesium	429	FALSE	FALSE
APW02	8/17/2023	Manganese	0.287	FALSE	FALSE
APW02	8/17/2023	Molybdenum	0.0015	FALSE	FALSE
APW02	8/17/2023	Potassium	6.43	FALSE	FALSE
APW02	8/17/2023	Sodium	394	FALSE	FALSE
APW02	8/17/2023	Sulfate	2860	FALSE	FALSE
APW02	8/17/2023	H+	0.000000191	FALSE	FALSE
APW02	8/17/2023	Alkalinity	16.3	FALSE	FALSE
APW02	10/10/2023	Arsenic	0.0006	FALSE	FALSE
APW02	10/10/2023	Barium	0.0136	FALSE	FALSE
APW02	10/10/2023	Boron	0.111	FALSE	FALSE
APW02	10/10/2023	Calcium	506	FALSE	FALSE
APW02	10/10/2023	Chloride	100	FALSE	FALSE
APW02	10/10/2023	Fluoride	0.23	FALSE	FALSE
APW02	10/10/2023	Iron	0.82	TRUE	NA
APW02	10/10/2023	Lithium	0.105	FALSE	FALSE
APW02	10/10/2023	Magnesium	471	FALSE	FALSE
APW02	10/10/2023	Manganese	0.287	TRUE	NA
APW02	10/10/2023	Molybdenum	0.0016	FALSE	FALSE
APW02	10/10/2023	Potassium	7.07	FALSE	FALSE
APW02	10/10/2023	Sodium	441	FALSE	FALSE
APW02	10/10/2023	Sulfate	2900	FALSE	FALSE
APW02	10/10/2023	H+	0.000000209	FALSE	FALSE
APW02	10/10/2023	Alkalinity	16.6	FALSE	FALSE
APW03	4/29/2021	Arsenic	0.0316	FALSE	TRUE
APW03	4/29/2021	Barium	0.068	FALSE	FALSE
APW03	4/29/2021	Boron	0.4	FALSE	FALSE
APW03	4/29/2021	Calcium	110	FALSE	FALSE
APW03	4/29/2021	Chloride	8.2	FALSE	FALSE
APW03	4/29/2021	Fluoride	0.5	FALSE	TRUE
APW03	4/29/2021	Iron	0.55	FALSE	FALSE
APW03	4/29/2021	Lithium	0.141	FALSE	TRUE
APW03	4/29/2021	Magnesium	65	FALSE	FALSE
APW03	4/29/2021	Manganese	0.014	FALSE	FALSE
APW03	4/29/2021	Molybdenum	0.0019	FALSE	FALSE
APW03	4/29/2021	Potassium	0.67	FALSE	FALSE
APW03	4/29/2021	Sodium	55	FALSE	FALSE
APW03	4/29/2021	Sulfate	170	FALSE	FALSE
APW03	4/29/2021	H+	0.0000001	FALSE	FALSE
APW03	4/29/2021	Alkalinity	14.4	FALSE	FALSE
APW03	5/25/2021	Arsenic	0.0316	FALSE	TRUE
APW03	5/25/2021	Barium	0.063	FALSE	FALSE
APW03	5/25/2021	Boron	0.38	FALSE	FALSE
APW03	5/25/2021	Calcium	110	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW03	5/25/2021	Chloride	8	FALSE	FALSE
APW03	5/25/2021	Fluoride	0.5	FALSE	TRUE
APW03	5/25/2021	Iron	0.56	FALSE	FALSE
APW03	5/25/2021	Lithium	0.023	FALSE	FALSE
APW03	5/25/2021	Magnesium	62	FALSE	FALSE
APW03	5/25/2021	Manganese	0.021	FALSE	FALSE
APW03	5/25/2021	Molybdenum	0.0015	FALSE	FALSE
APW03	5/25/2021	Potassium	0.73	FALSE	FALSE
APW03	5/25/2021	Sodium	50	FALSE	FALSE
APW03	5/25/2021	Sulfate	170	FALSE	FALSE
APW03	5/25/2021	H+	8.91E-08	FALSE	FALSE
APW03	5/25/2021	Alkalinity	18.4	FALSE	FALSE
APW03	6/17/2021	Arsenic	0.0316	FALSE	TRUE
APW03	6/17/2021	Barium	0.081	FALSE	FALSE
APW03	6/17/2021	Boron	0.45	FALSE	FALSE
APW03	6/17/2021	Calcium	120	FALSE	FALSE
APW03	6/17/2021	Chloride	8.3	FALSE	FALSE
APW03	6/17/2021	Fluoride	0.5	FALSE	TRUE
APW03	6/17/2021	Iron	1.3	FALSE	FALSE
APW03	6/17/2021	Lithium	0.02	FALSE	FALSE
APW03	6/17/2021	Magnesium	65	FALSE	FALSE
APW03	6/17/2021	Manganese	0.038	FALSE	FALSE
APW03	6/17/2021	Molybdenum	0.0014	FALSE	FALSE
APW03	6/17/2021	Potassium	0.84	FALSE	FALSE
APW03	6/17/2021	Sodium	52	FALSE	FALSE
APW03	6/17/2021	Sulfate	170	FALSE	FALSE
APW03	6/17/2021	H+	0.000000105	FALSE	FALSE
APW03	6/17/2021	Alkalinity	13.8	FALSE	FALSE
APW03	6/30/2021	Arsenic	0.0316	FALSE	TRUE
APW03	6/30/2021	Barium	0.059	FALSE	FALSE
APW03	6/30/2021	Boron	0.66	FALSE	FALSE
APW03	6/30/2021	Calcium	110	FALSE	FALSE
APW03	6/30/2021	Chloride	11	FALSE	FALSE
APW03	6/30/2021	Fluoride	0.5	FALSE	TRUE
APW03	6/30/2021	Iron	0.92	FALSE	FALSE
APW03	6/30/2021	Lithium	0.035	FALSE	FALSE
APW03	6/30/2021	Magnesium	62	FALSE	FALSE
APW03	6/30/2021	Manganese	0.044	FALSE	FALSE
APW03	6/30/2021	Molybdenum	0.0014	FALSE	FALSE
APW03	6/30/2021	Potassium	0.81	FALSE	FALSE
APW03	6/30/2021	Sodium	52	FALSE	FALSE
APW03	6/30/2021	Sulfate	160	FALSE	FALSE
APW03	6/30/2021	H+	9.33E-08	FALSE	FALSE
APW03	6/30/2021	Alkalinity	13.3	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW03	7/31/2023	Arsenic	0.0007	FALSE	FALSE
APW03	7/31/2023	Barium	0.0942	FALSE	FALSE
APW03	7/31/2023	Boron	0.538	FALSE	FALSE
APW03	7/31/2023	Calcium	96.5	FALSE	FALSE
APW03	7/31/2023	Chloride	10	FALSE	FALSE
APW03	7/31/2023	Fluoride	0.23	FALSE	FALSE
APW03	7/31/2023	Iron	0.18	FALSE	FALSE
APW03	7/31/2023	Lithium	0.0139	FALSE	FALSE
APW03	7/31/2023	Magnesium	54.3	FALSE	FALSE
APW03	7/31/2023	Manganese	0.044	FALSE	FALSE
APW03	7/31/2023	Molybdenum	0.0013	FALSE	FALSE
APW03	7/31/2023	Potassium	0.602	FALSE	FALSE
APW03	7/31/2023	Sodium	56.2	FALSE	FALSE
APW03	7/31/2023	Sulfate	118	FALSE	FALSE
APW03	7/31/2023	H+	0.000000162	FALSE	FALSE
APW03	7/31/2023	Alkalinity	14.1	FALSE	FALSE
APW03	10/10/2023	Arsenic	0.0007	FALSE	FALSE
APW03	10/10/2023	Barium	0.11	FALSE	FALSE
APW03	10/10/2023	Boron	0.44	FALSE	FALSE
APW03	10/10/2023	Calcium	92.5	FALSE	FALSE
APW03	10/10/2023	Chloride	7	FALSE	FALSE
APW03	10/10/2023	Fluoride	0.26	FALSE	FALSE
APW03	10/10/2023	Iron	0.56	TRUE	NA
APW03	10/10/2023	Lithium	0.0111	FALSE	FALSE
APW03	10/10/2023	Magnesium	52.7	FALSE	FALSE
APW03	10/10/2023	Manganese	0.038	TRUE	NA
APW03	10/10/2023	Molybdenum	0.0009	FALSE	FALSE
APW03	10/10/2023	Potassium	0.463	FALSE	FALSE
APW03	10/10/2023	Sodium	61.8	FALSE	FALSE
APW03	10/10/2023	Sulfate	113	FALSE	FALSE
APW03	10/10/2023	H+	0.000000123	FALSE	FALSE
APW03	10/10/2023	Alkalinity	14.6	FALSE	FALSE
APW04	4/29/2021	Arsenic	0.0316	FALSE	TRUE
APW04	4/29/2021	Barium	0.013	FALSE	FALSE
APW04	4/29/2021	Boron	0.023	FALSE	FALSE
APW04	4/29/2021	Calcium	220	FALSE	FALSE
APW04	4/29/2021	Chloride	29	FALSE	FALSE
APW04	4/29/2021	Fluoride	0.5	FALSE	TRUE
APW04	4/29/2021	Iron	0.57	FALSE	FALSE
APW04	4/29/2021	Lithium	0.141	FALSE	TRUE
APW04	4/29/2021	Magnesium	180	FALSE	FALSE
APW04	4/29/2021	Manganese	0.93	FALSE	FALSE
APW04	4/29/2021	Molybdenum	0.0316	FALSE	TRUE
APW04	4/29/2021	Potassium	1.2	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW04	4/29/2021	Sodium	96	FALSE	FALSE
APW04	4/29/2021	Sulfate	990	FALSE	FALSE
APW04	4/29/2021	H+	0.000000138	FALSE	FALSE
APW04	4/29/2021	Alkalinity	14.2	FALSE	FALSE
APW04	6/17/2021	Arsenic	0.0012	FALSE	FALSE
APW04	6/17/2021	Barium	0.026	FALSE	FALSE
APW04	6/17/2021	Boron	0.025	FALSE	FALSE
APW04	6/17/2021	Calcium	240	FALSE	FALSE
APW04	6/17/2021	Chloride	29	FALSE	FALSE
APW04	6/17/2021	Fluoride	0.5	FALSE	TRUE
APW04	6/17/2021	Iron	1.8	FALSE	FALSE
APW04	6/17/2021	Lithium	0.021	FALSE	FALSE
APW04	6/17/2021	Magnesium	190	FALSE	FALSE
APW04	6/17/2021	Manganese	1.8	FALSE	FALSE
APW04	6/17/2021	Molybdenum	0.0316	FALSE	TRUE
APW04	6/17/2021	Potassium	1.5	FALSE	FALSE
APW04	6/17/2021	Sodium	97	FALSE	FALSE
APW04	6/17/2021	Sulfate	950	FALSE	FALSE
APW04	6/17/2021	H+	0.000000155	FALSE	FALSE
APW04	6/17/2021	Alkalinity	14.6	FALSE	FALSE
APW04	6/30/2021	Arsenic	0.0316	FALSE	TRUE
APW04	6/30/2021	Barium	0.032	FALSE	FALSE
APW04	6/30/2021	Boron	0.21	FALSE	FALSE
APW04	6/30/2021	Calcium	220	FALSE	FALSE
APW04	6/30/2021	Chloride	27	FALSE	FALSE
APW04	6/30/2021	Fluoride	0.5	FALSE	TRUE
APW04	6/30/2021	Iron	1.4	FALSE	FALSE
APW04	6/30/2021	Lithium	0.045	FALSE	FALSE
APW04	6/30/2021	Magnesium	170	FALSE	FALSE
APW04	6/30/2021	Manganese	2	FALSE	FALSE
APW04	6/30/2021	Molybdenum	0.0316	FALSE	TRUE
APW04	6/30/2021	Potassium	1.3	FALSE	FALSE
APW04	6/30/2021	Sodium	95	FALSE	FALSE
APW04	6/30/2021	Sulfate	910	FALSE	FALSE
APW04	6/30/2021	H+	0.000000158	FALSE	FALSE
APW04	6/30/2021	Alkalinity	14.3	FALSE	FALSE
APW04	7/31/2023	Arsenic	0.0009	FALSE	FALSE
APW04	7/31/2023	Barium	0.0247	FALSE	FALSE
APW04	7/31/2023	Boron	0.0402	FALSE	FALSE
APW04	7/31/2023	Calcium	211	FALSE	FALSE
APW04	7/31/2023	Chloride	36	FALSE	FALSE
APW04	7/31/2023	Fluoride	0.18	FALSE	FALSE
APW04	7/31/2023	Iron	0.935	FALSE	FALSE
APW04	7/31/2023	Lithium	0.0225	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW04	7/31/2023	Magnesium	174	FALSE	FALSE
APW04	7/31/2023	Manganese	0.818	FALSE	FALSE
APW04	7/31/2023	Molybdenum	0.0014	FALSE	FALSE
APW04	7/31/2023	Potassium	1.72	FALSE	FALSE
APW04	7/31/2023	Sodium	90.6	FALSE	FALSE
APW04	7/31/2023	Sulfate	808	FALSE	FALSE
APW04	7/31/2023	H+	0.000000257	FALSE	FALSE
APW04	7/31/2023	Alkalinity	15	FALSE	FALSE
APW04	10/10/2023	Arsenic	0.0006	FALSE	FALSE
APW04	10/10/2023	Barium	0.02	FALSE	FALSE
APW04	10/10/2023	Boron	0.0322	FALSE	FALSE
APW04	10/10/2023	Calcium	206	FALSE	FALSE
APW04	10/10/2023	Chloride	34	FALSE	FALSE
APW04	10/10/2023	Fluoride	0.2	FALSE	FALSE
APW04	10/10/2023	Iron	1.1	TRUE	NA
APW04	10/10/2023	Lithium	0.0218	FALSE	FALSE
APW04	10/10/2023	Magnesium	167	FALSE	FALSE
APW04	10/10/2023	Manganese	1.8	TRUE	NA
APW04	10/10/2023	Molybdenum	0.001	FALSE	FALSE
APW04	10/10/2023	Potassium	1.76	FALSE	FALSE
APW04	10/10/2023	Sodium	92.1	FALSE	FALSE
APW04	10/10/2023	Sulfate	808	FALSE	FALSE
APW04	10/10/2023	H+	0.000000162	FALSE	FALSE
APW04	10/10/2023	Alkalinity	15.2	FALSE	FALSE
APW05	2/9/2021	Arsenic	0.021	TRUE	NA
APW05	2/9/2021	Barium	0.26	TRUE	NA
APW05	2/9/2021	Boron	0.13	FALSE	FALSE
APW05	2/9/2021	Calcium	54	FALSE	FALSE
APW05	2/9/2021	Chloride	50	FALSE	FALSE
APW05	2/9/2021	Fluoride	0.543	FALSE	FALSE
APW05	2/9/2021	Iron	1.4	TRUE	NA
APW05	2/9/2021	Lithium	0.01	TRUE	NA
APW05	2/9/2021	Magnesium	29	FALSE	FALSE
APW05	2/9/2021	Manganese	0.037	TRUE	NA
APW05	2/9/2021	Molybdenum	0.011	TRUE	NA
APW05	2/9/2021	Potassium	1.9	FALSE	FALSE
APW05	2/9/2021	Sodium	130	FALSE	FALSE
APW05	2/9/2021	Sulfate	1.3	FALSE	FALSE
APW05	2/9/2021	H+	2.51E-08	FALSE	FALSE
APW05	2/9/2021	Alkalinity	14.4	FALSE	FALSE
APW05	3/10/2021	Arsenic	0.022	FALSE	FALSE
APW05	3/10/2021	Barium	0.24	FALSE	FALSE
APW05	3/10/2021	Boron	0.12	FALSE	FALSE
APW05	3/10/2021	Calcium	55	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW05	3/10/2021	Chloride	48	FALSE	FALSE
APW05	3/10/2021	Fluoride	0.365	FALSE	FALSE
APW05	3/10/2021	Iron	3	FALSE	FALSE
APW05	3/10/2021	Lithium	0.141	FALSE	TRUE
APW05	3/10/2021	Magnesium	29	FALSE	FALSE
APW05	3/10/2021	Manganese	0.053	FALSE	FALSE
APW05	3/10/2021	Molybdenum	0.011	FALSE	FALSE
APW05	3/10/2021	Potassium	1.7	FALSE	FALSE
APW05	3/10/2021	Sodium	130	FALSE	FALSE
APW05	3/10/2021	Sulfate	1.3	FALSE	FALSE
APW05	3/10/2021	H+	0.00000002	FALSE	FALSE
APW05	3/10/2021	Alkalinity	14.4	FALSE	FALSE
APW05	3/30/2021	Arsenic	0.022	FALSE	FALSE
APW05	3/30/2021	Barium	0.27	FALSE	FALSE
APW05	3/30/2021	Boron	0.092	FALSE	FALSE
APW05	3/30/2021	Calcium	54	FALSE	FALSE
APW05	3/30/2021	Chloride	49	FALSE	FALSE
APW05	3/30/2021	Fluoride	0.342	FALSE	FALSE
APW05	3/30/2021	Iron	2.6	FALSE	FALSE
APW05	3/30/2021	Lithium	0.141	FALSE	TRUE
APW05	3/30/2021	Magnesium	26	FALSE	FALSE
APW05	3/30/2021	Manganese	0.042	FALSE	FALSE
APW05	3/30/2021	Molybdenum	0.011	FALSE	FALSE
APW05	3/30/2021	Potassium	1.5	FALSE	FALSE
APW05	3/30/2021	Sodium	120	FALSE	FALSE
APW05	3/30/2021	Sulfate	1.3	FALSE	FALSE
APW05	3/30/2021	H+	6.31E-08	FALSE	FALSE
APW05	3/30/2021	Alkalinity	14.4	FALSE	FALSE
APW05	4/28/2021	Arsenic	0.018	FALSE	FALSE
APW05	4/28/2021	Barium	0.24	FALSE	FALSE
APW05	4/28/2021	Boron	0.099	FALSE	FALSE
APW05	4/28/2021	Calcium	52	FALSE	FALSE
APW05	4/28/2021	Chloride	51	FALSE	FALSE
APW05	4/28/2021	Fluoride	0.514	FALSE	FALSE
APW05	4/28/2021	Iron	1.4	FALSE	FALSE
APW05	4/28/2021	Lithium	0.141	FALSE	TRUE
APW05	4/28/2021	Magnesium	29	FALSE	FALSE
APW05	4/28/2021	Manganese	0.037	FALSE	FALSE
APW05	4/28/2021	Molybdenum	0.012	FALSE	FALSE
APW05	4/28/2021	Potassium	1.5	FALSE	FALSE
APW05	4/28/2021	Sodium	140	FALSE	FALSE
APW05	4/28/2021	Sulfate	1.1	FALSE	FALSE
APW05	4/28/2021	H+	3.24E-08	FALSE	FALSE
APW05	4/28/2021	Alkalinity	14.4	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW05	5/25/2021	Arsenic	0.019	FALSE	FALSE
APW05	5/25/2021	Barium	0.24	FALSE	FALSE
APW05	5/25/2021	Boron	0.12	FALSE	FALSE
APW05	5/25/2021	Calcium	54	FALSE	FALSE
APW05	5/25/2021	Chloride	48	FALSE	FALSE
APW05	5/25/2021	Fluoride	0.532	FALSE	FALSE
APW05	5/25/2021	Iron	1.5	FALSE	FALSE
APW05	5/25/2021	Lithium	0.141	FALSE	TRUE
APW05	5/25/2021	Magnesium	28	FALSE	FALSE
APW05	5/25/2021	Manganese	0.034	FALSE	FALSE
APW05	5/25/2021	Molybdenum	0.012	FALSE	FALSE
APW05	5/25/2021	Potassium	1.6	FALSE	FALSE
APW05	5/25/2021	Sodium	130	FALSE	FALSE
APW05	5/25/2021	Sulfate	1	FALSE	FALSE
APW05	5/25/2021	H+	2.88E-08	FALSE	FALSE
APW05	5/25/2021	Alkalinity	13.4	FALSE	FALSE
APW05	6/17/2021	Arsenic	0.022	FALSE	FALSE
APW05	6/17/2021	Barium	0.25	FALSE	FALSE
APW05	6/17/2021	Boron	0.091	FALSE	FALSE
APW05	6/17/2021	Calcium	58	FALSE	FALSE
APW05	6/17/2021	Chloride	50	FALSE	FALSE
APW05	6/17/2021	Fluoride	0.516	FALSE	FALSE
APW05	6/17/2021	Iron	1.4	FALSE	FALSE
APW05	6/17/2021	Lithium	0.141	FALSE	TRUE
APW05	6/17/2021	Magnesium	31	FALSE	FALSE
APW05	6/17/2021	Manganese	0.035	FALSE	FALSE
APW05	6/17/2021	Molybdenum	0.011	FALSE	FALSE
APW05	6/17/2021	Potassium	1.6	FALSE	FALSE
APW05	6/17/2021	Sodium	140	FALSE	FALSE
APW05	6/17/2021	Sulfate	1	FALSE	TRUE
APW05	6/17/2021	H+	1.86E-08	FALSE	FALSE
APW05	6/17/2021	Alkalinity	14.6	FALSE	FALSE
APW05	6/30/2021	Arsenic	0.021	FALSE	FALSE
APW05	6/30/2021	Barium	0.25	FALSE	FALSE
APW05	6/30/2021	Boron	0.26	FALSE	FALSE
APW05	6/30/2021	Calcium	52	FALSE	FALSE
APW05	6/30/2021	Chloride	51	FALSE	FALSE
APW05	6/30/2021	Fluoride	0.441	FALSE	FALSE
APW05	6/30/2021	Iron	1.3	FALSE	FALSE
APW05	6/30/2021	Lithium	0.141	FALSE	TRUE
APW05	6/30/2021	Magnesium	30	FALSE	FALSE
APW05	6/30/2021	Manganese	0.062	FALSE	FALSE
APW05	6/30/2021	Molybdenum	0.011	FALSE	FALSE
APW05	6/30/2021	Potassium	1.6	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW05	6/30/2021	Sodium	140	FALSE	FALSE
APW05	6/30/2021	Sulfate	1	FALSE	FALSE
APW05	6/30/2021	H+	2.82E-08	FALSE	FALSE
APW05	6/30/2021	Alkalinity	14.3	FALSE	FALSE
APW05	7/15/2021	Arsenic	0.022	FALSE	FALSE
APW05	7/15/2021	Barium	0.25	FALSE	FALSE
APW05	7/15/2021	Boron	0.1	FALSE	FALSE
APW05	7/15/2021	Calcium	51	FALSE	FALSE
APW05	7/15/2021	Chloride	52	FALSE	FALSE
APW05	7/15/2021	Fluoride	0.386	FALSE	FALSE
APW05	7/15/2021	Iron	1.4	FALSE	FALSE
APW05	7/15/2021	Lithium	0.141	FALSE	TRUE
APW05	7/15/2021	Magnesium	28	FALSE	FALSE
APW05	7/15/2021	Manganese	0.032	FALSE	FALSE
APW05	7/15/2021	Molybdenum	0.011	FALSE	FALSE
APW05	7/15/2021	Potassium	1.5	FALSE	FALSE
APW05	7/15/2021	Sodium	130	FALSE	FALSE
APW05	7/15/2021	Sulfate	1.1	FALSE	FALSE
APW05	7/15/2021	H+	1.66E-08	FALSE	FALSE
APW05	7/15/2021	Alkalinity	14.6	FALSE	FALSE
APW05	6/15/2022	Arsenic	0.02	FALSE	FALSE
APW05	6/15/2022	Barium	0.25	FALSE	FALSE
APW05	6/15/2022	Boron	0.14	FALSE	FALSE
APW05	6/15/2022	Calcium	51	FALSE	FALSE
APW05	6/15/2022	Chloride	45	FALSE	FALSE
APW05	6/15/2022	Fluoride	0.5	FALSE	TRUE
APW05	6/15/2022	Iron	1.4	TRUE	NA
APW05	6/15/2022	Lithium	0.141	FALSE	TRUE
APW05	6/15/2022	Magnesium	28	FALSE	FALSE
APW05	6/15/2022	Manganese	0.035	TRUE	NA
APW05	6/15/2022	Molybdenum	0.011	FALSE	FALSE
APW05	6/15/2022	Potassium	1.5	FALSE	FALSE
APW05	6/15/2022	Sodium	120	FALSE	FALSE
APW05	6/15/2022	Sulfate	1	FALSE	TRUE
APW05	6/15/2022	H+	2.88E-08	FALSE	FALSE
APW05	6/15/2022	Alkalinity	14.2	FALSE	FALSE
APW05	8/16/2022	Arsenic	0.021	FALSE	FALSE
APW05	8/16/2022	Barium	0.26	FALSE	FALSE
APW05	8/16/2022	Boron	0.28	FALSE	FALSE
APW05	8/16/2022	Calcium	54	FALSE	FALSE
APW05	8/16/2022	Chloride	46	FALSE	FALSE
APW05	8/16/2022	Fluoride	0.389	FALSE	FALSE
APW05	8/16/2022	Iron	2.5	TRUE	NA
APW05	8/16/2022	Lithium	0.0084	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW05	8/16/2022	Magnesium	29	FALSE	FALSE
APW05	8/16/2022	Manganese	0.053	TRUE	NA
APW05	8/16/2022	Molybdenum	0.01	FALSE	FALSE
APW05	8/16/2022	Potassium	1.7	FALSE	FALSE
APW05	8/16/2022	Sodium	140	FALSE	FALSE
APW05	8/16/2022	Sulfate	0.69	FALSE	FALSE
APW05	8/16/2022	H+	4.79E-08	FALSE	FALSE
APW05	8/16/2022	Alkalinity	13.8	FALSE	FALSE
APW05	4/27/2023	Arsenic	0.03	FALSE	FALSE
APW05	4/27/2023	Barium	0.25	FALSE	FALSE
APW05	4/27/2023	Boron	0.092	FALSE	FALSE
APW05	4/27/2023	Calcium	49	FALSE	FALSE
APW05	4/27/2023	Chloride	46	FALSE	FALSE
APW05	4/27/2023	Fluoride	0.498	FALSE	FALSE
APW05	4/27/2023	Iron	2.5	FALSE	FALSE
APW05	4/27/2023	Lithium	0.0087	FALSE	FALSE
APW05	4/27/2023	Magnesium	26	FALSE	FALSE
APW05	4/27/2023	Manganese	0.059	FALSE	FALSE
APW05	4/27/2023	Molybdenum	0.0091	FALSE	FALSE
APW05	4/27/2023	Potassium	1.4	FALSE	FALSE
APW05	4/27/2023	Sodium	130	FALSE	FALSE
APW05	4/27/2023	Sulfate	0.97	FALSE	FALSE
APW05	4/27/2023	H+	7.94E-08	FALSE	FALSE
APW05	4/27/2023	Alkalinity	14.6	FALSE	FALSE
APW05	7/24/2023	Arsenic	0.0293	FALSE	FALSE
APW05	7/24/2023	Barium	0.312	FALSE	FALSE
APW05	7/24/2023	Boron	0.108	FALSE	FALSE
APW05	7/24/2023	Calcium	50.4	FALSE	FALSE
APW05	7/24/2023	Chloride	46	FALSE	FALSE
APW05	7/24/2023	Fluoride	0.48	FALSE	FALSE
APW05	7/24/2023	Iron	2.18	FALSE	FALSE
APW05	7/24/2023	Lithium	0.0088	FALSE	FALSE
APW05	7/24/2023	Magnesium	25.4	FALSE	FALSE
APW05	7/24/2023	Manganese	0.0375	FALSE	FALSE
APW05	7/24/2023	Molybdenum	0.0114	FALSE	FALSE
APW05	7/24/2023	Potassium	1.55	FALSE	FALSE
APW05	7/24/2023	Sodium	128	FALSE	FALSE
APW05	7/24/2023	Sulfate	10	FALSE	FALSE
APW05	7/24/2023	H+	9.55E-09	FALSE	FALSE
APW05	7/24/2023	Alkalinity	14.5	FALSE	FALSE
APW05	10/10/2023	Arsenic	0.0323	FALSE	FALSE
APW05	10/10/2023	Barium	0.333	FALSE	FALSE
APW05	10/10/2023	Boron	0.0897	FALSE	FALSE
APW05	10/10/2023	Calcium	52.8	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW05	10/10/2023	Chloride	46	FALSE	FALSE
APW05	10/10/2023	Fluoride	0.53	FALSE	FALSE
APW05	10/10/2023	Iron	2.18	TRUE	NA
APW05	10/10/2023	Lithium	0.009	FALSE	FALSE
APW05	10/10/2023	Magnesium	27.2	FALSE	FALSE
APW05	10/10/2023	Manganese	0.0375	TRUE	NA
APW05	10/10/2023	Molybdenum	0.0127	FALSE	FALSE
APW05	10/10/2023	Potassium	1.52	FALSE	FALSE
APW05	10/10/2023	Sodium	130	FALSE	FALSE
APW05	10/10/2023	Sulfate	8	FALSE	FALSE
APW05	10/10/2023	H+	3.72E-08	FALSE	FALSE
APW05	10/10/2023	Alkalinity	14.7	FALSE	FALSE
APW05S	4/29/2021	Arsenic	0.0018	FALSE	FALSE
APW05S	4/29/2021	Barium	0.048	FALSE	FALSE
APW05S	4/29/2021	Boron	0.04	FALSE	FALSE
APW05S	4/29/2021	Calcium	420	FALSE	FALSE
APW05S	4/29/2021	Chloride	200	FALSE	FALSE
APW05S	4/29/2021	Fluoride	0.373	FALSE	FALSE
APW05S	4/29/2021	Iron	1.3	FALSE	FALSE
APW05S	4/29/2021	Lithium	0.039	FALSE	FALSE
APW05S	4/29/2021	Magnesium	320	FALSE	FALSE
APW05S	4/29/2021	Manganese	0.7	FALSE	FALSE
APW05S	4/29/2021	Molybdenum	0.0014	FALSE	FALSE
APW05S	4/29/2021	Potassium	1.9	FALSE	FALSE
APW05S	4/29/2021	Sodium	280	FALSE	FALSE
APW05S	4/29/2021	Sulfate	2000	FALSE	FALSE
APW05S	4/29/2021	H+	0.000000145	FALSE	FALSE
APW05S	4/29/2021	Alkalinity	14.7	FALSE	FALSE
APW05S	5/25/2021	Arsenic	0.0016	FALSE	FALSE
APW05S	5/25/2021	Barium	0.053	FALSE	FALSE
APW05S	5/25/2021	Boron	0.056	FALSE	FALSE
APW05S	5/25/2021	Calcium	420	FALSE	FALSE
APW05S	5/25/2021	Chloride	210	FALSE	FALSE
APW05S	5/25/2021	Fluoride	0.391	FALSE	FALSE
APW05S	5/25/2021	Iron	1.1	FALSE	FALSE
APW05S	5/25/2021	Lithium	0.042	FALSE	FALSE
APW05S	5/25/2021	Magnesium	300	FALSE	FALSE
APW05S	5/25/2021	Manganese	0.57	FALSE	FALSE
APW05S	5/25/2021	Molybdenum	0.0014	FALSE	FALSE
APW05S	5/25/2021	Potassium	1.9	FALSE	FALSE
APW05S	5/25/2021	Sodium	250	FALSE	FALSE
APW05S	5/25/2021	Sulfate	2100	FALSE	FALSE
APW05S	5/25/2021	H+	0.000000138	FALSE	FALSE
APW05S	5/25/2021	Alkalinity	20.9	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW05S	6/17/2021	Arsenic	0.0022	FALSE	FALSE
APW05S	6/17/2021	Barium	0.051	FALSE	FALSE
APW05S	6/17/2021	Boron	0.043	FALSE	FALSE
APW05S	6/17/2021	Calcium	410	FALSE	FALSE
APW05S	6/17/2021	Chloride	190	FALSE	FALSE
APW05S	6/17/2021	Fluoride	0.364	FALSE	FALSE
APW05S	6/17/2021	Iron	1.8	FALSE	FALSE
APW05S	6/17/2021	Lithium	0.038	FALSE	FALSE
APW05S	6/17/2021	Magnesium	300	FALSE	FALSE
APW05S	6/17/2021	Manganese	0.58	FALSE	FALSE
APW05S	6/17/2021	Molybdenum	0.0013	FALSE	FALSE
APW05S	6/17/2021	Potassium	2.1	FALSE	FALSE
APW05S	6/17/2021	Sodium	240	FALSE	FALSE
APW05S	6/17/2021	Sulfate	2100	FALSE	FALSE
APW05S	6/17/2021	H+	0.000000151	FALSE	FALSE
APW05S	6/17/2021	Alkalinity	15.4	FALSE	FALSE
APW05S	6/30/2021	Arsenic	0.002	FALSE	FALSE
APW05S	6/30/2021	Barium	0.051	FALSE	FALSE
APW05S	6/30/2021	Boron	0.046	FALSE	FALSE
APW05S	6/30/2021	Calcium	380	FALSE	FALSE
APW05S	6/30/2021	Chloride	180	FALSE	FALSE
APW05S	6/30/2021	Fluoride	0.401	FALSE	FALSE
APW05S	6/30/2021	Iron	1.6	FALSE	FALSE
APW05S	6/30/2021	Lithium	0.091	FALSE	FALSE
APW05S	6/30/2021	Magnesium	290	FALSE	FALSE
APW05S	6/30/2021	Manganese	0.57	FALSE	FALSE
APW05S	6/30/2021	Molybdenum	0.0011	FALSE	FALSE
APW05S	6/30/2021	Potassium	1.9	FALSE	FALSE
APW05S	6/30/2021	Sodium	250	FALSE	FALSE
APW05S	6/30/2021	Sulfate	1900	FALSE	FALSE
APW05S	6/30/2021	H+	0.000000186	FALSE	FALSE
APW05S	6/30/2021	Alkalinity	14.7	FALSE	FALSE
APW05S	7/15/2021	Arsenic	0.0026	FALSE	FALSE
APW05S	7/15/2021	Barium	0.05	FALSE	FALSE
APW05S	7/15/2021	Boron	0.039	FALSE	FALSE
APW05S	7/15/2021	Calcium	370	FALSE	FALSE
APW05S	7/15/2021	Chloride	260	FALSE	FALSE
APW05S	7/15/2021	Fluoride	0.379	FALSE	FALSE
APW05S	7/15/2021	Iron	1.1	FALSE	FALSE
APW05S	7/15/2021	Lithium	0.067	FALSE	FALSE
APW05S	7/15/2021	Magnesium	290	FALSE	FALSE
APW05S	7/15/2021	Manganese	0.65	FALSE	FALSE
APW05S	7/15/2021	Molybdenum	0.0011	FALSE	FALSE
APW05S	7/15/2021	Potassium	1.9	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW05S	7/15/2021	Sodium	250	FALSE	FALSE
APW05S	7/15/2021	Sulfate	2000	FALSE	FALSE
APW05S	7/15/2021	H+	0.00000017	FALSE	FALSE
APW05S	7/15/2021	Alkalinity	15.1	FALSE	FALSE
APW06	2/9/2021	Arsenic	0.022	TRUE	NA
APW06	2/9/2021	Barium	0.26	TRUE	NA
APW06	2/9/2021	Boron	0.087	FALSE	FALSE
APW06	2/9/2021	Calcium	55	FALSE	FALSE
APW06	2/9/2021	Chloride	24	FALSE	FALSE
APW06	2/9/2021	Fluoride	0.585	FALSE	FALSE
APW06	2/9/2021	Iron	1.5	TRUE	NA
APW06	2/9/2021	Lithium	0.01	TRUE	NA
APW06	2/9/2021	Magnesium	27	FALSE	FALSE
APW06	2/9/2021	Manganese	0.037	TRUE	NA
APW06	2/9/2021	Molybdenum	0.011	TRUE	NA
APW06	2/9/2021	Potassium	1.4	FALSE	FALSE
APW06	2/9/2021	Sodium	130	FALSE	FALSE
APW06	2/9/2021	Sulfate	1.8	FALSE	FALSE
APW06	2/9/2021	H+	2.51E-08	FALSE	FALSE
APW06	2/9/2021	Alkalinity	14.4	FALSE	FALSE
APW06	3/10/2021	Arsenic	0.0052	FALSE	FALSE
APW06	3/10/2021	Barium	0.25	FALSE	FALSE
APW06	3/10/2021	Boron	0.086	FALSE	FALSE
APW06	3/10/2021	Calcium	58	FALSE	FALSE
APW06	3/10/2021	Chloride	22	FALSE	FALSE
APW06	3/10/2021	Fluoride	0.427	FALSE	FALSE
APW06	3/10/2021	Iron	1.8	FALSE	FALSE
APW06	3/10/2021	Lithium	0.141	FALSE	TRUE
APW06	3/10/2021	Magnesium	27	FALSE	FALSE
APW06	3/10/2021	Manganese	0.057	FALSE	FALSE
APW06	3/10/2021	Molybdenum	0.0058	FALSE	FALSE
APW06	3/10/2021	Potassium	1.5	FALSE	FALSE
APW06	3/10/2021	Sodium	120	FALSE	FALSE
APW06	3/10/2021	Sulfate	9.2	FALSE	FALSE
APW06	3/10/2021	H+	0.00000002	FALSE	FALSE
APW06	3/10/2021	Alkalinity	14.4	FALSE	FALSE
APW06	7/15/2021	Arsenic	0.0067	FALSE	FALSE
APW06	7/15/2021	Barium	0.23	FALSE	FALSE
APW06	7/15/2021	Boron	0.083	FALSE	FALSE
APW06	7/15/2021	Calcium	55	FALSE	FALSE
APW06	7/15/2021	Chloride	27	FALSE	FALSE
APW06	7/15/2021	Fluoride	0.442	FALSE	FALSE
APW06	7/15/2021	Iron	3.7	FALSE	FALSE
APW06	7/15/2021	Lithium	0.141	FALSE	TRUE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW06	7/15/2021	Magnesium	27	FALSE	FALSE
APW06	7/15/2021	Manganese	0.11	FALSE	FALSE
APW06	7/15/2021	Molybdenum	0.0076	FALSE	FALSE
APW06	7/15/2021	Potassium	1.7	FALSE	FALSE
APW06	7/15/2021	Sodium	120	FALSE	FALSE
APW06	7/15/2021	Sulfate	7.8	FALSE	FALSE
APW06	7/15/2021	H+	3.24E-08	FALSE	FALSE
APW06	7/15/2021	Alkalinity	14.2	FALSE	FALSE
APW06	2/22/2022	Arsenic	0.021	TRUE	NA
APW06	2/22/2022	Barium	0.26	TRUE	NA
APW06	2/22/2022	Boron	0.1	FALSE	FALSE
APW06	2/22/2022	Calcium	56	FALSE	FALSE
APW06	2/22/2022	Chloride	26	FALSE	FALSE
APW06	2/22/2022	Fluoride	0.389	FALSE	FALSE
APW06	2/22/2022	Iron	2.6	TRUE	NA
APW06	2/22/2022	Lithium	0.01	TRUE	NA
APW06	2/22/2022	Magnesium	28	FALSE	FALSE
APW06	2/22/2022	Manganese	0.053	TRUE	NA
APW06	2/22/2022	Molybdenum	0.011	TRUE	NA
APW06	2/22/2022	Potassium	1.8	FALSE	FALSE
APW06	2/22/2022	Sodium	130	FALSE	FALSE
APW06	2/22/2022	Sulfate	7.6	FALSE	FALSE
APW06	2/22/2022	H+	2.57E-08	FALSE	FALSE
APW06	2/22/2022	Alkalinity	13.8	FALSE	FALSE
APW06	3/15/2023	Arsenic	0.0049	FALSE	FALSE
APW06	3/15/2023	Barium	0.21	FALSE	FALSE
APW06	3/15/2023	Boron	0.094	FALSE	FALSE
APW06	3/15/2023	Calcium	54	FALSE	FALSE
APW06	3/15/2023	Chloride	22	FALSE	FALSE
APW06	3/15/2023	Fluoride	0.493	FALSE	FALSE
APW06	3/15/2023	Iron	2.18	TRUE	NA
APW06	3/15/2023	Lithium	0.01	FALSE	FALSE
APW06	3/15/2023	Magnesium	29	FALSE	FALSE
APW06	3/15/2023	Manganese	0.057	TRUE	NA
APW06	3/15/2023	Molybdenum	0.0091	TRUE	NA
APW06	3/15/2023	Potassium	1.4	FALSE	FALSE
APW06	3/15/2023	Sodium	130	FALSE	FALSE
APW06	3/15/2023	Sulfate	6.8	FALSE	FALSE
APW06	3/15/2023	H+	2.95E-08	FALSE	FALSE
APW06	3/15/2023	Alkalinity	14.6	FALSE	FALSE
APW06	7/25/2023	Arsenic	0.0047	FALSE	FALSE
APW06	7/25/2023	Barium	0.254	FALSE	FALSE
APW06	7/25/2023	Boron	0.605	FALSE	FALSE
APW06	7/25/2023	Calcium	53.7	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW06	7/25/2023	Chloride	24	FALSE	FALSE
APW06	7/25/2023	Fluoride	0.58	FALSE	FALSE
APW06	7/25/2023	Iron	0.846	FALSE	FALSE
APW06	7/25/2023	Lithium	0.0096	FALSE	FALSE
APW06	7/25/2023	Magnesium	24.7	FALSE	FALSE
APW06	7/25/2023	Manganese	0.0486	FALSE	FALSE
APW06	7/25/2023	Molybdenum	0.0071	FALSE	FALSE
APW06	7/25/2023	Potassium	1.42	FALSE	FALSE
APW06	7/25/2023	Sodium	115	FALSE	FALSE
APW06	7/25/2023	Sulfate	17	FALSE	FALSE
APW06	7/25/2023	H+	0.00000002	FALSE	FALSE
APW06	7/25/2023	Alkalinity	14.3	FALSE	FALSE
APW07	6/14/2022	Arsenic	0.012	FALSE	FALSE
APW07	6/14/2022	Barium	0.5	FALSE	FALSE
APW07	6/14/2022	Boron	0.11	FALSE	FALSE
APW07	6/14/2022	Calcium	93	FALSE	FALSE
APW07	6/14/2022	Chloride	64	FALSE	FALSE
APW07	6/14/2022	Fluoride	0.5	FALSE	TRUE
APW07	6/14/2022	Iron	3.2	TRUE	NA
APW07	6/14/2022	Lithium	0.141	FALSE	TRUE
APW07	6/14/2022	Magnesium	37	FALSE	FALSE
APW07	6/14/2022	Manganese	0.038	TRUE	NA
APW07	6/14/2022	Molybdenum	0.0015	FALSE	FALSE
APW07	6/14/2022	Potassium	1.6	FALSE	FALSE
APW07	6/14/2022	Sodium	84	FALSE	FALSE
APW07	6/14/2022	Sulfate	12	FALSE	FALSE
APW07	6/14/2022	H+	4.37E-08	FALSE	FALSE
APW07	6/14/2022	Alkalinity	11.9	FALSE	FALSE
APW07	8/16/2022	Arsenic	0.012	FALSE	FALSE
APW07	8/16/2022	Barium	0.51	FALSE	FALSE
APW07	8/16/2022	Boron	0.2	FALSE	FALSE
APW07	8/16/2022	Calcium	96	FALSE	FALSE
APW07	8/16/2022	Chloride	63	FALSE	FALSE
APW07	8/16/2022	Fluoride	0.289	FALSE	FALSE
APW07	8/16/2022	Iron	3.2	TRUE	NA
APW07	8/16/2022	Lithium	0.141	FALSE	TRUE
APW07	8/16/2022	Magnesium	42	FALSE	FALSE
APW07	8/16/2022	Manganese	0.038	TRUE	NA
APW07	8/16/2022	Molybdenum	0.0014	FALSE	FALSE
APW07	8/16/2022	Potassium	1.8	FALSE	FALSE
APW07	8/16/2022	Sodium	110	FALSE	FALSE
APW07	8/16/2022	Sulfate	12	FALSE	FALSE
APW07	8/16/2022	H+	7.24E-08	FALSE	FALSE
APW07	8/16/2022	Alkalinity	12.6	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW07	10/10/2023	Arsenic	0.0225	FALSE	FALSE
APW07	10/10/2023	Barium	0.808	FALSE	FALSE
APW07	10/10/2023	Boron	0.068	FALSE	FALSE
APW07	10/10/2023	Calcium	96.2	FALSE	FALSE
APW07	10/10/2023	Chloride	67	FALSE	FALSE
APW07	10/10/2023	Fluoride	0.42	FALSE	FALSE
APW07	10/10/2023	Iron	3.74	TRUE	NA
APW07	10/10/2023	Lithium	0.0025	FALSE	FALSE
APW07	10/10/2023	Magnesium	35.4	FALSE	FALSE
APW07	10/10/2023	Manganese	0.0342	TRUE	NA
APW07	10/10/2023	Molybdenum	0.0031	FALSE	FALSE
APW07	10/10/2023	Potassium	1.8	FALSE	FALSE
APW07	10/10/2023	Sodium	95.4	FALSE	FALSE
APW07	10/10/2023	Sulfate	16	FALSE	FALSE
APW07	10/10/2023	H+	0.000000024	FALSE	FALSE
APW07	10/10/2023	Alkalinity	15	FALSE	FALSE
APW08	11/9/2021	Arsenic	0.022	TRUE	NA
APW08	11/9/2021	Barium	0.49	TRUE	NA
APW08	11/9/2021	Boron	0.085	FALSE	FALSE
APW08	11/9/2021	Calcium	100	FALSE	FALSE
APW08	11/9/2021	Chloride	52	FALSE	FALSE
APW08	11/9/2021	Fluoride	0.505	FALSE	FALSE
APW08	11/9/2021	Iron	3.5	TRUE	NA
APW08	11/9/2021	Lithium	0.141	TRUE	NA
APW08	11/9/2021	Magnesium	42	FALSE	FALSE
APW08	11/9/2021	Manganese	0.038	TRUE	NA
APW08	11/9/2021	Molybdenum	0.0048	TRUE	NA
APW08	11/9/2021	Potassium	1.6	FALSE	FALSE
APW08	11/9/2021	Sodium	86	FALSE	FALSE
APW08	11/9/2021	Sulfate	42	FALSE	FALSE
APW08	11/9/2021	H+	3.55E-08	FALSE	FALSE
APW08	11/9/2021	Alkalinity	14.9	FALSE	FALSE
APW08	2/22/2022	Arsenic	0.022	TRUE	NA
APW08	2/22/2022	Barium	0.49	TRUE	NA
APW08	2/22/2022	Boron	0.09	FALSE	FALSE
APW08	2/22/2022	Calcium	110	FALSE	FALSE
APW08	2/22/2022	Chloride	54	FALSE	FALSE
APW08	2/22/2022	Fluoride	0.499	FALSE	FALSE
APW08	2/22/2022	Iron	3.5	TRUE	NA
APW08	2/22/2022	Lithium	0.141	TRUE	NA
APW08	2/22/2022	Magnesium	45	FALSE	FALSE
APW08	2/22/2022	Manganese	0.038	TRUE	NA
APW08	2/22/2022	Molybdenum	0.0048	TRUE	NA
APW08	2/22/2022	Potassium	1.9	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW08	2/22/2022	Sodium	93	FALSE	FALSE
APW08	2/22/2022	Sulfate	49	FALSE	FALSE
APW08	2/22/2022	H+	4.07E-08	FALSE	FALSE
APW08	2/22/2022	Alkalinity	14.6	FALSE	FALSE
APW08	6/14/2022	Arsenic	0.019	FALSE	FALSE
APW08	6/14/2022	Barium	0.46	FALSE	FALSE
APW08	6/14/2022	Boron	0.1	FALSE	FALSE
APW08	6/14/2022	Calcium	110	FALSE	FALSE
APW08	6/14/2022	Chloride	54	FALSE	FALSE
APW08	6/14/2022	Fluoride	0.5	FALSE	TRUE
APW08	6/14/2022	Iron	3.5	TRUE	NA
APW08	6/14/2022	Lithium	0.141	FALSE	TRUE
APW08	6/14/2022	Magnesium	44	FALSE	FALSE
APW08	6/14/2022	Manganese	0.038	TRUE	NA
APW08	6/14/2022	Molybdenum	0.0038	FALSE	FALSE
APW08	6/14/2022	Potassium	2	FALSE	FALSE
APW08	6/14/2022	Sodium	79	FALSE	FALSE
APW08	6/14/2022	Sulfate	42	FALSE	FALSE
APW08	6/14/2022	H+	3.98E-08	FALSE	FALSE
APW08	6/14/2022	Alkalinity	14.2	FALSE	FALSE
APW08	8/16/2022	Arsenic	0.022	FALSE	FALSE
APW08	8/16/2022	Barium	0.49	FALSE	FALSE
APW08	8/16/2022	Boron	0.17	FALSE	FALSE
APW08	8/16/2022	Calcium	100	FALSE	FALSE
APW08	8/16/2022	Chloride	56	FALSE	FALSE
APW08	8/16/2022	Fluoride	0.325	FALSE	FALSE
APW08	8/16/2022	Iron	3.5	TRUE	NA
APW08	8/16/2022	Lithium	0.141	FALSE	TRUE
APW08	8/16/2022	Magnesium	44	FALSE	FALSE
APW08	8/16/2022	Manganese	0.038	TRUE	NA
APW08	8/16/2022	Molybdenum	0.0037	FALSE	FALSE
APW08	8/16/2022	Potassium	1.9	FALSE	FALSE
APW08	8/16/2022	Sodium	93	FALSE	FALSE
APW08	8/16/2022	Sulfate	44	FALSE	FALSE
APW08	8/16/2022	H+	7.24E-08	FALSE	FALSE
APW08	8/16/2022	Alkalinity	14.4	FALSE	FALSE
APW08	4/26/2023	Arsenic	0.026	FALSE	FALSE
APW08	4/26/2023	Barium	0.47	FALSE	FALSE
APW08	4/26/2023	Boron	0.087	FALSE	FALSE
APW08	4/26/2023	Calcium	110	FALSE	FALSE
APW08	4/26/2023	Chloride	58	FALSE	FALSE
APW08	4/26/2023	Fluoride	0.404	FALSE	FALSE
APW08	4/26/2023	Iron	7.7	FALSE	FALSE
APW08	4/26/2023	Lithium	0.0057	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW08	4/26/2023	Magnesium	45	FALSE	FALSE
APW08	4/26/2023	Manganese	0.16	FALSE	FALSE
APW08	4/26/2023	Molybdenum	0.0044	FALSE	FALSE
APW08	4/26/2023	Potassium	2	FALSE	FALSE
APW08	4/26/2023	Sodium	91	FALSE	FALSE
APW08	4/26/2023	Sulfate	48	FALSE	FALSE
APW08	4/26/2023	H+	3.02E-08	FALSE	FALSE
APW08	4/26/2023	Alkalinity	13.7	FALSE	FALSE
APW08	7/31/2023	Arsenic	0.0308	FALSE	FALSE
APW08	7/31/2023	Barium	0.651	FALSE	FALSE
APW08	7/31/2023	Boron	0.114	FALSE	FALSE
APW08	7/31/2023	Calcium	102	FALSE	FALSE
APW08	7/31/2023	Chloride	56	FALSE	FALSE
APW08	7/31/2023	Fluoride	0.44	FALSE	FALSE
APW08	7/31/2023	Iron	5.14	FALSE	FALSE
APW08	7/31/2023	Lithium	0.0027	FALSE	FALSE
APW08	7/31/2023	Magnesium	42.9	FALSE	FALSE
APW08	7/31/2023	Manganese	0.0962	FALSE	FALSE
APW08	7/31/2023	Molybdenum	0.0052	FALSE	FALSE
APW08	7/31/2023	Potassium	1.99	FALSE	FALSE
APW08	7/31/2023	Sodium	85.2	FALSE	FALSE
APW08	7/31/2023	Sulfate	53	FALSE	FALSE
APW08	7/31/2023	H+	8.32E-08	FALSE	FALSE
APW08	7/31/2023	Alkalinity	14.9	FALSE	FALSE
APW08	10/10/2023	Arsenic	0.0366	FALSE	FALSE
APW08	10/10/2023	Barium	0.777	FALSE	FALSE
APW08	10/10/2023	Boron	0.071	FALSE	FALSE
APW08	10/10/2023	Calcium	103	FALSE	FALSE
APW08	10/10/2023	Chloride	60	FALSE	FALSE
APW08	10/10/2023	Fluoride	0.48	FALSE	FALSE
APW08	10/10/2023	Iron	3.74	TRUE	NA
APW08	10/10/2023	Lithium	0.0022	FALSE	FALSE
APW08	10/10/2023	Magnesium	41.1	FALSE	FALSE
APW08	10/10/2023	Manganese	0.0342	TRUE	NA
APW08	10/10/2023	Molybdenum	0.0058	FALSE	FALSE
APW08	10/10/2023	Potassium	1.89	FALSE	FALSE
APW08	10/10/2023	Sodium	87.4	FALSE	FALSE
APW08	10/10/2023	Sulfate	57	FALSE	FALSE
APW08	10/10/2023	H+	0.000000038	FALSE	FALSE
APW08	10/10/2023	Alkalinity	15.3	FALSE	FALSE
APW09	2/11/2021	Arsenic	0.022	TRUE	NA
APW09	2/11/2021	Barium	0.52	TRUE	NA
APW09	2/11/2021	Boron	0.11	FALSE	FALSE
APW09	2/11/2021	Calcium	85	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW09	2/11/2021	Chloride	140	FALSE	FALSE
APW09	2/11/2021	Fluoride	0.536	FALSE	FALSE
APW09	2/11/2021	Iron	3.74	TRUE	NA
APW09	2/11/2021	Lithium	0.025	TRUE	NA
APW09	2/11/2021	Magnesium	42	FALSE	FALSE
APW09	2/11/2021	Manganese	0.0342	TRUE	NA
APW09	2/11/2021	Molybdenum	0.0316	TRUE	NA
APW09	2/11/2021	Potassium	1.9	FALSE	FALSE
APW09	2/11/2021	Sodium	200	FALSE	FALSE
APW09	2/11/2021	Sulfate	3.16	FALSE	TRUE
APW09	2/11/2021	H+	3.98E-08	FALSE	FALSE
APW09	2/11/2021	Alkalinity	16.1	FALSE	FALSE
APW09	2/22/2022	Arsenic	0.022	TRUE	NA
APW09	2/22/2022	Barium	0.51	TRUE	NA
APW09	2/22/2022	Boron	0.12	FALSE	FALSE
APW09	2/22/2022	Calcium	82	FALSE	FALSE
APW09	2/22/2022	Chloride	140	FALSE	FALSE
APW09	2/22/2022	Fluoride	0.27	FALSE	FALSE
APW09	2/22/2022	Iron	4	TRUE	NA
APW09	2/22/2022	Lithium	0.025	TRUE	NA
APW09	2/22/2022	Magnesium	42	FALSE	FALSE
APW09	2/22/2022	Manganese	0.0342	TRUE	NA
APW09	2/22/2022	Molybdenum	0.0037	TRUE	NA
APW09	2/22/2022	Potassium	1.8	FALSE	FALSE
APW09	2/22/2022	Sodium	200	FALSE	FALSE
APW09	2/22/2022	Sulfate	8.4	FALSE	FALSE
APW09	2/22/2022	H+	0.00000002	FALSE	FALSE
APW09	2/22/2022	Alkalinity	15.1	FALSE	FALSE
APW09	7/31/2023	Arsenic	0.0355	FALSE	FALSE
APW09	7/31/2023	Barium	0.564	FALSE	FALSE
APW09	7/31/2023	Boron	0.121	FALSE	FALSE
APW09	7/31/2023	Calcium	78.4	FALSE	FALSE
APW09	7/31/2023	Chloride	134	FALSE	FALSE
APW09	7/31/2023	Fluoride	0.5	FALSE	FALSE
APW09	7/31/2023	Iron	3.74	FALSE	FALSE
APW09	7/31/2023	Lithium	0.0075	FALSE	FALSE
APW09	7/31/2023	Magnesium	39.3	FALSE	FALSE
APW09	7/31/2023	Manganese	0.0342	FALSE	FALSE
APW09	7/31/2023	Molybdenum	0.0042	FALSE	FALSE
APW09	7/31/2023	Potassium	1.83	FALSE	FALSE
APW09	7/31/2023	Sodium	191	FALSE	FALSE
APW09	7/31/2023	Sulfate	19	FALSE	FALSE
APW09	7/31/2023	H+	6.31E-08	FALSE	FALSE
APW09	7/31/2023	Alkalinity	16.3	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
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Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW09	10/10/2023	Arsenic	0.0114	FALSE	FALSE
APW09	10/10/2023	Barium	0.406	FALSE	FALSE
APW09	10/10/2023	Boron	0.078	FALSE	FALSE
APW09	10/10/2023	Calcium	69.2	FALSE	FALSE
APW09	10/10/2023	Chloride	94	FALSE	FALSE
APW09	10/10/2023	Fluoride	0.63	FALSE	FALSE
APW09	10/10/2023	Iron	3.74	TRUE	NA
APW09	10/10/2023	Lithium	0.0066	FALSE	FALSE
APW09	10/10/2023	Magnesium	32.7	FALSE	FALSE
APW09	10/10/2023	Manganese	0.055	TRUE	NA
APW09	10/10/2023	Molybdenum	0.0165	FALSE	FALSE
APW09	10/10/2023	Potassium	3.43	FALSE	FALSE
APW09	10/10/2023	Sodium	151	FALSE	FALSE
APW09	10/10/2023	Sulfate	32	FALSE	FALSE
APW09	10/10/2023	H+	2.45E-08	FALSE	FALSE
APW09	10/10/2023	Alkalinity	14.6	FALSE	FALSE
APW10	6/17/2021	Arsenic	0.008	FALSE	FALSE
APW10	6/17/2021	Barium	0.026	FALSE	FALSE
APW10	6/17/2021	Boron	0.07	FALSE	FALSE
APW10	6/17/2021	Calcium	150	FALSE	FALSE
APW10	6/17/2021	Chloride	47	FALSE	FALSE
APW10	6/17/2021	Fluoride	0.436	FALSE	FALSE
APW10	6/17/2021	Iron	0.1	FALSE	FALSE
APW10	6/17/2021	Lithium	0.022	FALSE	FALSE
APW10	6/17/2021	Magnesium	73	FALSE	FALSE
APW10	6/17/2021	Manganese	0.36	FALSE	FALSE
APW10	6/17/2021	Molybdenum	0.0074	FALSE	FALSE
APW10	6/17/2021	Potassium	1.5	FALSE	FALSE
APW10	6/17/2021	Sodium	120	FALSE	FALSE
APW10	6/17/2021	Sulfate	540	FALSE	FALSE
APW10	6/17/2021	H+	4.57E-08	FALSE	FALSE
APW10	6/17/2021	Alkalinity	13.5	FALSE	FALSE
APW10	2/22/2022	Arsenic	0.022	TRUE	NA
APW10	2/22/2022	Barium	0.46	TRUE	NA
APW10	2/22/2022	Boron	0.091	FALSE	FALSE
APW10	2/22/2022	Calcium	140	FALSE	FALSE
APW10	2/22/2022	Chloride	48	FALSE	FALSE
APW10	2/22/2022	Fluoride	0.5	FALSE	TRUE
APW10	2/22/2022	Iron	2.1	TRUE	NA
APW10	2/22/2022	Lithium	0.141	TRUE	NA
APW10	2/22/2022	Magnesium	71	FALSE	FALSE
APW10	2/22/2022	Manganese	0.038	TRUE	NA
APW10	2/22/2022	Molybdenum	0.0038	TRUE	NA
APW10	2/22/2022	Potassium	1.6	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW10	2/22/2022	Sodium	130	FALSE	FALSE
APW10	2/22/2022	Sulfate	410	FALSE	FALSE
APW10	2/22/2022	H+	0.000000049	FALSE	FALSE
APW10	2/22/2022	Alkalinity	12.9	FALSE	FALSE
APW10	6/15/2022	Arsenic	0.0088	FALSE	FALSE
APW10	6/15/2022	Barium	0.026	FALSE	FALSE
APW10	6/15/2022	Boron	0.09	FALSE	FALSE
APW10	6/15/2022	Calcium	140	FALSE	FALSE
APW10	6/15/2022	Chloride	44	FALSE	FALSE
APW10	6/15/2022	Fluoride	0.319	FALSE	FALSE
APW10	6/15/2022	Iron	2.4	TRUE	NA
APW10	6/15/2022	Lithium	0.02	FALSE	FALSE
APW10	6/15/2022	Magnesium	70	FALSE	FALSE
APW10	6/15/2022	Manganese	0.36	TRUE	NA
APW10	6/15/2022	Molybdenum	0.0071	FALSE	FALSE
APW10	6/15/2022	Potassium	1.5	FALSE	FALSE
APW10	6/15/2022	Sodium	110	FALSE	FALSE
APW10	6/15/2022	Sulfate	400	FALSE	FALSE
APW10	6/15/2022	H+	7.24E-08	FALSE	FALSE
APW10	6/15/2022	Alkalinity	13.4	FALSE	FALSE
APW10	7/31/2023	Arsenic	0.0094	FALSE	FALSE
APW10	7/31/2023	Barium	0.0326	FALSE	FALSE
APW10	7/31/2023	Boron	0.0923	FALSE	FALSE
APW10	7/31/2023	Calcium	140	FALSE	FALSE
APW10	7/31/2023	Chloride	45	FALSE	FALSE
APW10	7/31/2023	Fluoride	0.32	FALSE	FALSE
APW10	7/31/2023	Iron	0.139	FALSE	FALSE
APW10	7/31/2023	Lithium	0.0215	FALSE	FALSE
APW10	7/31/2023	Magnesium	67.3	FALSE	FALSE
APW10	7/31/2023	Manganese	0.383	FALSE	FALSE
APW10	7/31/2023	Molybdenum	0.0083	FALSE	FALSE
APW10	7/31/2023	Potassium	1.5	FALSE	FALSE
APW10	7/31/2023	Sodium	112	FALSE	FALSE
APW10	7/31/2023	Sulfate	421	FALSE	FALSE
APW10	7/31/2023	H+	8.51E-08	FALSE	FALSE
APW10	7/31/2023	Alkalinity	13.7	FALSE	FALSE
APW10	10/10/2023	Arsenic	0.012	FALSE	FALSE
APW10	10/10/2023	Barium	0.0397	FALSE	FALSE
APW10	10/10/2023	Boron	0.0626	FALSE	FALSE
APW10	10/10/2023	Calcium	146	FALSE	FALSE
APW10	10/10/2023	Chloride	43	FALSE	FALSE
APW10	10/10/2023	Fluoride	0.34	FALSE	FALSE
APW10	10/10/2023	Iron	2.4	TRUE	NA
APW10	10/10/2023	Lithium	0.0182	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW10	10/10/2023	Magnesium	65.7	FALSE	FALSE
APW10	10/10/2023	Manganese	0.36	TRUE	NA
APW10	10/10/2023	Molybdenum	0.0112	FALSE	FALSE
APW10	10/10/2023	Potassium	1.66	FALSE	FALSE
APW10	10/10/2023	Sodium	124	FALSE	FALSE
APW10	10/10/2023	Sulfate	399	FALSE	FALSE
APW10	10/10/2023	H+	0.000000055	FALSE	FALSE
APW10	10/10/2023	Alkalinity	14.2	FALSE	FALSE
APW11	5/24/2021	Arsenic	0.0015	FALSE	FALSE
APW11	5/24/2021	Barium	0.05	FALSE	FALSE
APW11	5/24/2021	Boron	0.083	FALSE	FALSE
APW11	5/24/2021	Calcium	130	FALSE	FALSE
APW11	5/24/2021	Chloride	27	FALSE	FALSE
APW11	5/24/2021	Fluoride	0.5	FALSE	TRUE
APW11	5/24/2021	Iron	2.2	FALSE	FALSE
APW11	5/24/2021	Lithium	0.024	FALSE	FALSE
APW11	5/24/2021	Magnesium	58	FALSE	FALSE
APW11	5/24/2021	Manganese	0.83	FALSE	FALSE
APW11	5/24/2021	Molybdenum	0.005	FALSE	FALSE
APW11	5/24/2021	Potassium	1.7	FALSE	FALSE
APW11	5/24/2021	Sodium	110	FALSE	FALSE
APW11	5/24/2021	Sulfate	300	FALSE	FALSE
APW11	5/24/2021	H+	4.27E-08	FALSE	FALSE
APW11	5/24/2021	Alkalinity	18.4	FALSE	FALSE
APW11	6/16/2021	Arsenic	0.002	FALSE	FALSE
APW11	6/16/2021	Barium	0.047	FALSE	FALSE
APW11	6/16/2021	Boron	0.078	FALSE	FALSE
APW11	6/16/2021	Calcium	130	FALSE	FALSE
APW11	6/16/2021	Chloride	26	FALSE	FALSE
APW11	6/16/2021	Fluoride	0.375	FALSE	FALSE
APW11	6/16/2021	Iron	2	FALSE	FALSE
APW11	6/16/2021	Lithium	0.024	FALSE	FALSE
APW11	6/16/2021	Magnesium	58	FALSE	FALSE
APW11	6/16/2021	Manganese	0.92	FALSE	FALSE
APW11	6/16/2021	Molybdenum	0.0048	FALSE	FALSE
APW11	6/16/2021	Potassium	1.8	FALSE	FALSE
APW11	6/16/2021	Sodium	100	FALSE	FALSE
APW11	6/16/2021	Sulfate	290	FALSE	FALSE
APW11	6/16/2021	H+	5.89E-08	FALSE	FALSE
APW11	6/16/2021	Alkalinity	13.8	FALSE	FALSE
APW11	6/30/2021	Arsenic	0.0018	FALSE	FALSE
APW11	6/30/2021	Barium	0.042	FALSE	FALSE
APW11	6/30/2021	Boron	0.065	FALSE	FALSE
APW11	6/30/2021	Calcium	120	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW11	6/30/2021	Chloride	33	FALSE	FALSE
APW11	6/30/2021	Fluoride	0.409	FALSE	FALSE
APW11	6/30/2021	Iron	1.8	FALSE	FALSE
APW11	6/30/2021	Lithium	0.038	FALSE	FALSE
APW11	6/30/2021	Magnesium	57	FALSE	FALSE
APW11	6/30/2021	Manganese	0.82	FALSE	FALSE
APW11	6/30/2021	Molybdenum	0.0044	FALSE	FALSE
APW11	6/30/2021	Potassium	1.5	FALSE	FALSE
APW11	6/30/2021	Sodium	100	FALSE	FALSE
APW11	6/30/2021	Sulfate	280	FALSE	FALSE
APW11	6/30/2021	H+	7.24E-08	FALSE	FALSE
APW11	6/30/2021	Alkalinity	13.5	FALSE	FALSE
APW11	7/15/2021	Arsenic	0.0023	FALSE	FALSE
APW11	7/15/2021	Barium	0.042	FALSE	FALSE
APW11	7/15/2021	Boron	0.062	FALSE	FALSE
APW11	7/15/2021	Calcium	120	FALSE	FALSE
APW11	7/15/2021	Chloride	31	FALSE	FALSE
APW11	7/15/2021	Fluoride	0.5	FALSE	TRUE
APW11	7/15/2021	Iron	2	FALSE	FALSE
APW11	7/15/2021	Lithium	0.03	FALSE	FALSE
APW11	7/15/2021	Magnesium	55	FALSE	FALSE
APW11	7/15/2021	Manganese	0.9	FALSE	FALSE
APW11	7/15/2021	Molybdenum	0.0043	FALSE	FALSE
APW11	7/15/2021	Potassium	1.4	FALSE	FALSE
APW11	7/15/2021	Sodium	97	FALSE	FALSE
APW11	7/15/2021	Sulfate	140	FALSE	FALSE
APW11	7/15/2021	H+	5.89E-08	FALSE	FALSE
APW11	7/15/2021	Alkalinity	13.8	FALSE	FALSE
APW12	3/9/2021	Arsenic	0.0017	FALSE	FALSE
APW12	3/9/2021	Barium	0.05	FALSE	FALSE
APW12	3/9/2021	Boron	0.26	FALSE	FALSE
APW12	3/9/2021	Calcium	230	FALSE	FALSE
APW12	3/9/2021	Chloride	27	FALSE	FALSE
APW12	3/9/2021	Fluoride	0.5	FALSE	TRUE
APW12	3/9/2021	Iron	2.1	FALSE	FALSE
APW12	3/9/2021	Lithium	0.028	FALSE	FALSE
APW12	3/9/2021	Magnesium	97	FALSE	FALSE
APW12	3/9/2021	Manganese	2.5	FALSE	FALSE
APW12	3/9/2021	Molybdenum	0.0025	FALSE	FALSE
APW12	3/9/2021	Potassium	3.2	FALSE	FALSE
APW12	3/9/2021	Sodium	110	FALSE	FALSE
APW12	3/9/2021	Sulfate	480	FALSE	FALSE
APW12	3/9/2021	H+	0.000000316	FALSE	FALSE
APW12	3/9/2021	Alkalinity	17	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW12	3/29/2021	Arsenic	0.002	FALSE	FALSE
APW12	3/29/2021	Barium	0.046	FALSE	FALSE
APW12	3/29/2021	Boron	0.29	FALSE	FALSE
APW12	3/29/2021	Calcium	220	FALSE	FALSE
APW12	3/29/2021	Chloride	28	FALSE	FALSE
APW12	3/29/2021	Fluoride	0.5	FALSE	TRUE
APW12	3/29/2021	Iron	1.8	FALSE	FALSE
APW12	3/29/2021	Lithium	0.029	FALSE	FALSE
APW12	3/29/2021	Magnesium	86	FALSE	FALSE
APW12	3/29/2021	Manganese	2.3	FALSE	FALSE
APW12	3/29/2021	Molybdenum	0.0019	FALSE	FALSE
APW12	3/29/2021	Potassium	2.1	FALSE	FALSE
APW12	3/29/2021	Sodium	94	FALSE	FALSE
APW12	3/29/2021	Sulfate	440	FALSE	FALSE
APW12	3/29/2021	H+	0.000001	FALSE	FALSE
APW12	3/29/2021	Alkalinity	17	FALSE	FALSE
APW12	4/28/2021	Arsenic	0.0016	FALSE	FALSE
APW12	4/28/2021	Barium	0.038	FALSE	FALSE
APW12	4/28/2021	Boron	0.21	FALSE	FALSE
APW12	4/28/2021	Calcium	210	FALSE	FALSE
APW12	4/28/2021	Chloride	23	FALSE	FALSE
APW12	4/28/2021	Fluoride	0.5	FALSE	TRUE
APW12	4/28/2021	Iron	1.1	FALSE	FALSE
APW12	4/28/2021	Lithium	0.026	FALSE	FALSE
APW12	4/28/2021	Magnesium	95	FALSE	FALSE
APW12	4/28/2021	Manganese	1.9	FALSE	FALSE
APW12	4/28/2021	Molybdenum	0.0012	FALSE	FALSE
APW12	4/28/2021	Potassium	1.1	FALSE	FALSE
APW12	4/28/2021	Sodium	97	FALSE	FALSE
APW12	4/28/2021	Sulfate	390	FALSE	FALSE
APW12	4/28/2021	H+	0.000000398	FALSE	FALSE
APW12	4/28/2021	Alkalinity	17.2	FALSE	FALSE
APW12	5/25/2021	Arsenic	0.0023	FALSE	FALSE
APW12	5/25/2021	Barium	0.038	FALSE	FALSE
APW12	5/25/2021	Boron	0.29	FALSE	FALSE
APW12	5/25/2021	Calcium	220	FALSE	FALSE
APW12	5/25/2021	Chloride	23	FALSE	FALSE
APW12	5/25/2021	Fluoride	0.5	FALSE	TRUE
APW12	5/25/2021	Iron	2.5	FALSE	FALSE
APW12	5/25/2021	Lithium	0.029	FALSE	FALSE
APW12	5/25/2021	Magnesium	94	FALSE	FALSE
APW12	5/25/2021	Manganese	1.7	FALSE	FALSE
APW12	5/25/2021	Molybdenum	0.0038	FALSE	FALSE
APW12	5/25/2021	Potassium	1.1	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW12	5/25/2021	Sodium	98	FALSE	FALSE
APW12	5/25/2021	Sulfate	390	FALSE	FALSE
APW12	5/25/2021	H+	0.000000288	FALSE	FALSE
APW12	5/25/2021	Alkalinity	17	FALSE	FALSE
APW12	6/16/2021	Arsenic	0.0027	FALSE	FALSE
APW12	6/16/2021	Barium	0.039	FALSE	FALSE
APW12	6/16/2021	Boron	0.15	FALSE	FALSE
APW12	6/16/2021	Calcium	210	FALSE	FALSE
APW12	6/16/2021	Chloride	20	FALSE	FALSE
APW12	6/16/2021	Fluoride	0.5	FALSE	TRUE
APW12	6/16/2021	Iron	2.6	FALSE	FALSE
APW12	6/16/2021	Lithium	0.026	FALSE	FALSE
APW12	6/16/2021	Magnesium	89	FALSE	FALSE
APW12	6/16/2021	Manganese	2.1	FALSE	FALSE
APW12	6/16/2021	Molybdenum	0.0316	FALSE	TRUE
APW12	6/16/2021	Potassium	0.95	FALSE	FALSE
APW12	6/16/2021	Sodium	81	FALSE	FALSE
APW12	6/16/2021	Sulfate	290	FALSE	FALSE
APW12	6/16/2021	H+	0.000000355	FALSE	FALSE
APW12	6/16/2021	Alkalinity	17	FALSE	FALSE
APW12	6/30/2021	Arsenic	0.0019	FALSE	FALSE
APW12	6/30/2021	Barium	0.04	FALSE	FALSE
APW12	6/30/2021	Boron	0.11	FALSE	FALSE
APW12	6/30/2021	Calcium	190	FALSE	FALSE
APW12	6/30/2021	Chloride	20	FALSE	FALSE
APW12	6/30/2021	Fluoride	0.5	FALSE	TRUE
APW12	6/30/2021	Iron	1.9	FALSE	FALSE
APW12	6/30/2021	Lithium	0.046	FALSE	FALSE
APW12	6/30/2021	Magnesium	84	FALSE	FALSE
APW12	6/30/2021	Manganese	2.1	FALSE	FALSE
APW12	6/30/2021	Molybdenum	0.0316	FALSE	TRUE
APW12	6/30/2021	Potassium	1.2	FALSE	FALSE
APW12	6/30/2021	Sodium	77	FALSE	FALSE
APW12	6/30/2021	Sulfate	310	FALSE	FALSE
APW12	6/30/2021	H+	0.000000513	FALSE	FALSE
APW12	6/30/2021	Alkalinity	16.3	FALSE	FALSE
APW12	7/15/2021	Arsenic	0.0017	FALSE	FALSE
APW12	7/15/2021	Barium	0.033	FALSE	FALSE
APW12	7/15/2021	Boron	0.28	FALSE	FALSE
APW12	7/15/2021	Calcium	210	FALSE	FALSE
APW12	7/15/2021	Chloride	26	FALSE	FALSE
APW12	7/15/2021	Fluoride	0.5	FALSE	TRUE
APW12	7/15/2021	Iron	0.95	FALSE	FALSE
APW12	7/15/2021	Lithium	0.045	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW12	7/15/2021	Magnesium	99	FALSE	FALSE
APW12	7/15/2021	Manganese	1.6	FALSE	FALSE
APW12	7/15/2021	Molybdenum	0.0316	FALSE	TRUE
APW12	7/15/2021	Potassium	1	FALSE	FALSE
APW12	7/15/2021	Sodium	110	FALSE	FALSE
APW12	7/15/2021	Sulfate	440	FALSE	FALSE
APW12	7/15/2021	H+	0.000000288	FALSE	FALSE
APW12	7/15/2021	Alkalinity	16.8	FALSE	FALSE
APW12	3/15/2023	Arsenic	0.002	FALSE	FALSE
APW12	3/15/2023	Barium	0.038	FALSE	FALSE
APW12	3/15/2023	Boron	0.42	FALSE	FALSE
APW12	3/15/2023	Calcium	230	FALSE	FALSE
APW12	3/15/2023	Chloride	22	FALSE	FALSE
APW12	3/15/2023	Fluoride	0.121	FALSE	FALSE
APW12	3/15/2023	Iron	1.9	TRUE	NA
APW12	3/15/2023	Lithium	0.024	FALSE	FALSE
APW12	3/15/2023	Magnesium	120	FALSE	FALSE
APW12	3/15/2023	Manganese	1.7	TRUE	NA
APW12	3/15/2023	Molybdenum	0.0316	TRUE	NA
APW12	3/15/2023	Potassium	1.1	FALSE	FALSE
APW12	3/15/2023	Sodium	130	FALSE	FALSE
APW12	3/15/2023	Sulfate	56	FALSE	FALSE
APW12	3/15/2023	H+	0.000000316	FALSE	FALSE
APW12	3/15/2023	Alkalinity	16.7	FALSE	FALSE
APW12	4/26/2023	Arsenic	0.0014	FALSE	FALSE
APW12	4/26/2023	Barium	0.028	FALSE	FALSE
APW12	4/26/2023	Boron	0.44	FALSE	FALSE
APW12	4/26/2023	Calcium	230	FALSE	FALSE
APW12	4/26/2023	Chloride	23	FALSE	FALSE
APW12	4/26/2023	Fluoride	0.5	FALSE	TRUE
APW12	4/26/2023	Iron	0.25	FALSE	FALSE
APW12	4/26/2023	Lithium	0.024	FALSE	FALSE
APW12	4/26/2023	Magnesium	110	FALSE	FALSE
APW12	4/26/2023	Manganese	1.4	FALSE	FALSE
APW12	4/26/2023	Molybdenum	0.0316	FALSE	TRUE
APW12	4/26/2023	Potassium	0.94	FALSE	FALSE
APW12	4/26/2023	Sodium	120	FALSE	FALSE
APW12	4/26/2023	Sulfate	540	FALSE	FALSE
APW12	4/26/2023	H+	0.000000302	FALSE	FALSE
APW12	4/26/2023	Alkalinity	15.1	FALSE	FALSE
APW12	10/11/2023	Arsenic	0.0008	FALSE	FALSE
APW12	10/11/2023	Barium	0.0345	FALSE	FALSE
APW12	10/11/2023	Boron	0.724	FALSE	FALSE
APW12	10/11/2023	Calcium	275	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW12	10/11/2023	Chloride	31	FALSE	FALSE
APW12	10/11/2023	Fluoride	0.22	FALSE	FALSE
APW12	10/11/2023	Iron	1.9	TRUE	NA
APW12	10/11/2023	Lithium	0.0365	FALSE	FALSE
APW12	10/11/2023	Magnesium	127	FALSE	FALSE
APW12	10/11/2023	Manganese	1.7	TRUE	NA
APW12	10/11/2023	Molybdenum	0.0387	FALSE	TRUE
APW12	10/11/2023	Potassium	1.29	FALSE	FALSE
APW12	10/11/2023	Sodium	151	FALSE	FALSE
APW12	10/11/2023	Sulfate	712	FALSE	FALSE
APW12	10/11/2023	H+	0.000000776	FALSE	FALSE
APW12	10/11/2023	Alkalinity	16.7	FALSE	FALSE
APW13	2/22/2021	Arsenic	0.0043	FALSE	FALSE
APW13	2/22/2021	Barium	0.055	FALSE	FALSE
APW13	2/22/2021	Boron	0.12	FALSE	FALSE
APW13	2/22/2021	Calcium	110	FALSE	FALSE
APW13	2/22/2021	Chloride	57	FALSE	FALSE
APW13	2/22/2021	Fluoride	0.503	FALSE	FALSE
APW13	2/22/2021	Iron	2.5	FALSE	FALSE
APW13	2/22/2021	Lithium	0.042	FALSE	FALSE
APW13	2/22/2021	Magnesium	58	FALSE	FALSE
APW13	2/22/2021	Manganese	0.64	FALSE	FALSE
APW13	2/22/2021	Molybdenum	0.016	FALSE	FALSE
APW13	2/22/2021	Potassium	2.1	FALSE	FALSE
APW13	2/22/2021	Sodium	120	FALSE	FALSE
APW13	2/22/2021	Sulfate	220	FALSE	FALSE
APW13	2/22/2021	H+	7.94E-08	FALSE	FALSE
APW13	2/22/2021	Alkalinity	14.4	FALSE	FALSE
APW13	3/10/2021	Arsenic	0.0046	FALSE	FALSE
APW13	3/10/2021	Barium	0.054	FALSE	FALSE
APW13	3/10/2021	Boron	0.11	FALSE	FALSE
APW13	3/10/2021	Calcium	120	FALSE	FALSE
APW13	3/10/2021	Chloride	71	FALSE	FALSE
APW13	3/10/2021	Fluoride	0.326	FALSE	FALSE
APW13	3/10/2021	Iron	3.3	FALSE	FALSE
APW13	3/10/2021	Lithium	0.044	FALSE	FALSE
APW13	3/10/2021	Magnesium	61	FALSE	FALSE
APW13	3/10/2021	Manganese	0.66	FALSE	FALSE
APW13	3/10/2021	Molybdenum	0.017	FALSE	FALSE
APW13	3/10/2021	Potassium	2.2	FALSE	FALSE
APW13	3/10/2021	Sodium	120	FALSE	FALSE
APW13	3/10/2021	Sulfate	210	FALSE	FALSE
APW13	3/10/2021	H+	6.31E-08	FALSE	FALSE
APW13	3/10/2021	Alkalinity	14.2	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW13	3/31/2021	Arsenic	0.0047	FALSE	FALSE
APW13	3/31/2021	Barium	0.057	FALSE	FALSE
APW13	3/31/2021	Boron	0.12	FALSE	FALSE
APW13	3/31/2021	Calcium	110	FALSE	FALSE
APW13	3/31/2021	Chloride	46	FALSE	FALSE
APW13	3/31/2021	Fluoride	0.43	FALSE	FALSE
APW13	3/31/2021	Iron	3.4	FALSE	FALSE
APW13	3/31/2021	Lithium	0.041	FALSE	FALSE
APW13	3/31/2021	Magnesium	56	FALSE	FALSE
APW13	3/31/2021	Manganese	0.6	FALSE	FALSE
APW13	3/31/2021	Molybdenum	0.011	FALSE	FALSE
APW13	3/31/2021	Potassium	2.1	FALSE	FALSE
APW13	3/31/2021	Sodium	120	FALSE	FALSE
APW13	3/31/2021	Sulfate	210	FALSE	FALSE
APW13	3/31/2021	H+	0.000000398	FALSE	FALSE
APW13	3/31/2021	Alkalinity	14.7	FALSE	FALSE
APW13	4/29/2021	Arsenic	0.0046	FALSE	FALSE
APW13	4/29/2021	Barium	0.05	FALSE	FALSE
APW13	4/29/2021	Boron	0.11	FALSE	FALSE
APW13	4/29/2021	Calcium	110	FALSE	FALSE
APW13	4/29/2021	Chloride	48	FALSE	FALSE
APW13	4/29/2021	Fluoride	0.327	FALSE	FALSE
APW13	4/29/2021	Iron	2.4	FALSE	FALSE
APW13	4/29/2021	Lithium	0.032	FALSE	FALSE
APW13	4/29/2021	Magnesium	60	FALSE	FALSE
APW13	4/29/2021	Manganese	0.62	FALSE	FALSE
APW13	4/29/2021	Molybdenum	0.011	FALSE	FALSE
APW13	4/29/2021	Potassium	1.9	FALSE	FALSE
APW13	4/29/2021	Sodium	130	FALSE	FALSE
APW13	4/29/2021	Sulfate	210	FALSE	FALSE
APW13	4/29/2021	H+	7.08E-08	FALSE	FALSE
APW13	4/29/2021	Alkalinity	14.9	FALSE	FALSE
APW13	5/25/2021	Arsenic	0.0031	FALSE	FALSE
APW13	5/25/2021	Barium	0.051	FALSE	FALSE
APW13	5/25/2021	Boron	0.12	FALSE	FALSE
APW13	5/25/2021	Calcium	120	FALSE	FALSE
APW13	5/25/2021	Chloride	64	FALSE	FALSE
APW13	5/25/2021	Fluoride	0.402	FALSE	FALSE
APW13	5/25/2021	Iron	2.3	FALSE	FALSE
APW13	5/25/2021	Lithium	0.03	FALSE	FALSE
APW13	5/25/2021	Magnesium	60	FALSE	FALSE
APW13	5/25/2021	Manganese	0.61	FALSE	FALSE
APW13	5/25/2021	Molybdenum	0.0096	FALSE	FALSE
APW13	5/25/2021	Potassium	1.8	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW13	5/25/2021	Sodium	110	FALSE	FALSE
APW13	5/25/2021	Sulfate	220	FALSE	FALSE
APW13	5/25/2021	H+	4.79E-08	FALSE	FALSE
APW13	5/25/2021	Alkalinity	14.9	FALSE	FALSE
APW13	6/17/2021	Arsenic	0.0037	FALSE	FALSE
APW13	6/17/2021	Barium	0.051	FALSE	FALSE
APW13	6/17/2021	Boron	0.1	FALSE	FALSE
APW13	6/17/2021	Calcium	130	FALSE	FALSE
APW13	6/17/2021	Chloride	53	FALSE	FALSE
APW13	6/17/2021	Fluoride	0.487	FALSE	FALSE
APW13	6/17/2021	Iron	2.2	FALSE	FALSE
APW13	6/17/2021	Lithium	0.027	FALSE	FALSE
APW13	6/17/2021	Magnesium	65	FALSE	FALSE
APW13	6/17/2021	Manganese	0.63	FALSE	FALSE
APW13	6/17/2021	Molybdenum	0.0089	FALSE	FALSE
APW13	6/17/2021	Potassium	1.9	FALSE	FALSE
APW13	6/17/2021	Sodium	120	FALSE	FALSE
APW13	6/17/2021	Sulfate	220	FALSE	FALSE
APW13	6/17/2021	H+	5.62E-08	FALSE	FALSE
APW13	6/17/2021	Alkalinity	15	FALSE	FALSE
APW13	7/15/2021	Arsenic	0.006	FALSE	FALSE
APW13	7/15/2021	Barium	0.05	FALSE	FALSE
APW13	7/15/2021	Boron	0.15	FALSE	FALSE
APW13	7/15/2021	Calcium	110	FALSE	FALSE
APW13	7/15/2021	Chloride	55	FALSE	FALSE
APW13	7/15/2021	Fluoride	0.5	FALSE	TRUE
APW13	7/15/2021	Iron	2.2	FALSE	FALSE
APW13	7/15/2021	Lithium	0.036	FALSE	FALSE
APW13	7/15/2021	Magnesium	62	FALSE	FALSE
APW13	7/15/2021	Manganese	0.57	FALSE	FALSE
APW13	7/15/2021	Molybdenum	0.0082	FALSE	FALSE
APW13	7/15/2021	Potassium	1.7	FALSE	FALSE
APW13	7/15/2021	Sodium	120	FALSE	FALSE
APW13	7/15/2021	Sulfate	210	FALSE	FALSE
APW13	7/15/2021	H+	5.13E-08	FALSE	FALSE
APW13	7/15/2021	Alkalinity	14.9	FALSE	FALSE
APW13	3/14/2023	Arsenic	0.002	FALSE	FALSE
APW13	3/14/2023	Barium	0.057	FALSE	FALSE
APW13	3/14/2023	Boron	0.12	FALSE	FALSE
APW13	3/14/2023	Calcium	120	FALSE	FALSE
APW13	3/14/2023	Chloride	47	FALSE	FALSE
APW13	3/14/2023	Fluoride	0.376	FALSE	FALSE
APW13	3/14/2023	Iron	2.4	TRUE	NA
APW13	3/14/2023	Lithium	0.025	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW13	3/14/2023	Magnesium	68	FALSE	FALSE
APW13	3/14/2023	Manganese	0.63	TRUE	NA
APW13	3/14/2023	Molybdenum	0.0096	TRUE	NA
APW13	3/14/2023	Potassium	2.1	FALSE	FALSE
APW13	3/14/2023	Sodium	140	FALSE	FALSE
APW13	3/14/2023	Sulfate	240	FALSE	FALSE
APW13	3/14/2023	H+	5.89E-08	FALSE	FALSE
APW13	3/14/2023	Alkalinity	14.4	FALSE	FALSE
APW13	7/31/2023	Arsenic	0.0053	FALSE	FALSE
APW13	7/31/2023	Barium	0.072	FALSE	FALSE
APW13	7/31/2023	Boron	0.143	FALSE	FALSE
APW13	7/31/2023	Calcium	121	FALSE	FALSE
APW13	7/31/2023	Chloride	48	FALSE	FALSE
APW13	7/31/2023	Fluoride	0.42	FALSE	FALSE
APW13	7/31/2023	Iron	2.56	FALSE	FALSE
APW13	7/31/2023	Lithium	0.023	FALSE	FALSE
APW13	7/31/2023	Magnesium	61.7	FALSE	FALSE
APW13	7/31/2023	Manganese	0.846	FALSE	FALSE
APW13	7/31/2023	Molybdenum	0.0098	FALSE	FALSE
APW13	7/31/2023	Potassium	1.94	FALSE	FALSE
APW13	7/31/2023	Sodium	122	FALSE	FALSE
APW13	7/31/2023	Sulfate	233	FALSE	FALSE
APW13	7/31/2023	H+	0.000000115	FALSE	FALSE
APW13	7/31/2023	Alkalinity	14.9	FALSE	FALSE
APW13	10/10/2023	Arsenic	0.0044	FALSE	FALSE
APW13	10/10/2023	Barium	0.0642	FALSE	FALSE
APW13	10/10/2023	Boron	0.102	FALSE	FALSE
APW13	10/10/2023	Calcium	120	FALSE	FALSE
APW13	10/10/2023	Chloride	53	FALSE	FALSE
APW13	10/10/2023	Fluoride	0.44	FALSE	FALSE
APW13	10/10/2023	Iron	2.4	TRUE	NA
APW13	10/10/2023	Lithium	0.024	FALSE	FALSE
APW13	10/10/2023	Magnesium	57.5	FALSE	FALSE
APW13	10/10/2023	Manganese	0.62	TRUE	NA
APW13	10/10/2023	Molybdenum	0.0087	FALSE	FALSE
APW13	10/10/2023	Potassium	1.93	FALSE	FALSE
APW13	10/10/2023	Sodium	124	FALSE	FALSE
APW13	10/10/2023	Sulfate	234	FALSE	FALSE
APW13	10/10/2023	H+	6.46E-08	FALSE	FALSE
APW13	10/10/2023	Alkalinity	15.1	FALSE	FALSE
APW14	3/31/2021	Arsenic	0.0098	FALSE	FALSE
APW14	3/31/2021	Barium	0.092	FALSE	FALSE
APW14	3/31/2021	Boron	0.11	FALSE	FALSE
APW14	3/31/2021	Calcium	130	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW14	3/31/2021	Chloride	46	FALSE	FALSE
APW14	3/31/2021	Fluoride	0.363	FALSE	FALSE
APW14	3/31/2021	Iron	6.4	FALSE	FALSE
APW14	3/31/2021	Lithium	0.034	FALSE	FALSE
APW14	3/31/2021	Magnesium	61	FALSE	FALSE
APW14	3/31/2021	Manganese	0.42	FALSE	FALSE
APW14	3/31/2021	Molybdenum	0.0068	FALSE	FALSE
APW14	3/31/2021	Potassium	3.2	FALSE	FALSE
APW14	3/31/2021	Sodium	130	FALSE	FALSE
APW14	3/31/2021	Sulfate	330	FALSE	FALSE
APW14	3/31/2021	H+	0.000000316	FALSE	FALSE
APW14	3/31/2021	Alkalinity	14.1	FALSE	FALSE
APW14	5/25/2021	Arsenic	0.0047	FALSE	FALSE
APW14	5/25/2021	Barium	0.098	FALSE	FALSE
APW14	5/25/2021	Boron	0.11	FALSE	FALSE
APW14	5/25/2021	Calcium	130	FALSE	FALSE
APW14	5/25/2021	Chloride	43	FALSE	FALSE
APW14	5/25/2021	Fluoride	0.358	FALSE	FALSE
APW14	5/25/2021	Iron	5	FALSE	FALSE
APW14	5/25/2021	Lithium	0.029	FALSE	FALSE
APW14	5/25/2021	Magnesium	63	FALSE	FALSE
APW14	5/25/2021	Manganese	0.59	FALSE	FALSE
APW14	5/25/2021	Molybdenum	0.0063	FALSE	FALSE
APW14	5/25/2021	Potassium	3.1	FALSE	FALSE
APW14	5/25/2021	Sodium	130	FALSE	FALSE
APW14	5/25/2021	Sulfate	320	FALSE	FALSE
APW14	5/25/2021	H+	3.39E-08	FALSE	FALSE
APW14	5/25/2021	Alkalinity	19.4	FALSE	FALSE
APW14	6/17/2021	Arsenic	0.0054	FALSE	FALSE
APW14	6/17/2021	Barium	0.086	FALSE	FALSE
APW14	6/17/2021	Boron	0.089	FALSE	FALSE
APW14	6/17/2021	Calcium	140	FALSE	FALSE
APW14	6/17/2021	Chloride	45	FALSE	FALSE
APW14	6/17/2021	Fluoride	0.436	FALSE	FALSE
APW14	6/17/2021	Iron	4.3	FALSE	FALSE
APW14	6/17/2021	Lithium	0.024	FALSE	FALSE
APW14	6/17/2021	Magnesium	69	FALSE	FALSE
APW14	6/17/2021	Manganese	0.55	FALSE	FALSE
APW14	6/17/2021	Molybdenum	0.0053	FALSE	FALSE
APW14	6/17/2021	Potassium	2.8	FALSE	FALSE
APW14	6/17/2021	Sodium	130	FALSE	FALSE
APW14	6/17/2021	Sulfate	310	FALSE	FALSE
APW14	6/17/2021	H+	4.17E-08	FALSE	FALSE
APW14	6/17/2021	Alkalinity	14.7	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW14	6/30/2021	Arsenic	0.0061	FALSE	FALSE
APW14	6/30/2021	Barium	0.082	FALSE	FALSE
APW14	6/30/2021	Boron	0.097	FALSE	FALSE
APW14	6/30/2021	Calcium	150	FALSE	FALSE
APW14	6/30/2021	Chloride	49	FALSE	FALSE
APW14	6/30/2021	Fluoride	0.371	FALSE	FALSE
APW14	6/30/2021	Iron	4.9	FALSE	FALSE
APW14	6/30/2021	Lithium	0.047	FALSE	FALSE
APW14	6/30/2021	Magnesium	76	FALSE	FALSE
APW14	6/30/2021	Manganese	0.56	FALSE	FALSE
APW14	6/30/2021	Molybdenum	0.0053	FALSE	FALSE
APW14	6/30/2021	Potassium	3	FALSE	FALSE
APW14	6/30/2021	Sodium	150	FALSE	FALSE
APW14	6/30/2021	Sulfate	330	FALSE	FALSE
APW14	6/30/2021	H+	3.09E-08	FALSE	FALSE
APW14	6/30/2021	Alkalinity	14.1	FALSE	FALSE
APW14	7/15/2021	Arsenic	0.0055	FALSE	FALSE
APW14	7/15/2021	Barium	0.07	FALSE	FALSE
APW14	7/15/2021	Boron	0.12	FALSE	FALSE
APW14	7/15/2021	Calcium	130	FALSE	FALSE
APW14	7/15/2021	Chloride	53	FALSE	FALSE
APW14	7/15/2021	Fluoride	0.5	FALSE	TRUE
APW14	7/15/2021	Iron	4.3	FALSE	FALSE
APW14	7/15/2021	Lithium	0.032	FALSE	FALSE
APW14	7/15/2021	Magnesium	69	FALSE	FALSE
APW14	7/15/2021	Manganese	0.42	FALSE	FALSE
APW14	7/15/2021	Molybdenum	0.0046	FALSE	FALSE
APW14	7/15/2021	Potassium	2.3	FALSE	FALSE
APW14	7/15/2021	Sodium	140	FALSE	FALSE
APW14	7/15/2021	Sulfate	330	FALSE	FALSE
APW14	7/15/2021	H+	4.07E-08	FALSE	FALSE
APW14	7/15/2021	Alkalinity	14.6	FALSE	FALSE
APW14	4/28/2023	Arsenic	0.0055	FALSE	FALSE
APW14	4/28/2023	Barium	0.065	FALSE	FALSE
APW14	4/28/2023	Boron	0.1	FALSE	FALSE
APW14	4/28/2023	Calcium	130	FALSE	FALSE
APW14	4/28/2023	Chloride	46	FALSE	FALSE
APW14	4/28/2023	Fluoride	0.243	FALSE	FALSE
APW14	4/28/2023	Iron	4.3	FALSE	FALSE
APW14	4/28/2023	Lithium	0.016	FALSE	FALSE
APW14	4/28/2023	Magnesium	66	FALSE	FALSE
APW14	4/28/2023	Manganese	0.28	FALSE	FALSE
APW14	4/28/2023	Molybdenum	0.004	FALSE	FALSE
APW14	4/28/2023	Potassium	1.6	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW14	4/28/2023	Sodium	130	FALSE	FALSE
APW14	4/28/2023	Sulfate	380	FALSE	FALSE
APW14	4/28/2023	H+	4.57E-08	FALSE	FALSE
APW14	4/28/2023	Alkalinity	14.4	FALSE	FALSE
APW14	7/31/2023	Arsenic	0.0078	FALSE	FALSE
APW14	7/31/2023	Barium	0.0649	FALSE	FALSE
APW14	7/31/2023	Boron	0.103	FALSE	FALSE
APW14	7/31/2023	Calcium	133	FALSE	FALSE
APW14	7/31/2023	Chloride	42	FALSE	FALSE
APW14	7/31/2023	Fluoride	0.31	FALSE	FALSE
APW14	7/31/2023	Iron	4.45	FALSE	FALSE
APW14	7/31/2023	Lithium	0.0207	FALSE	FALSE
APW14	7/31/2023	Magnesium	67.6	FALSE	FALSE
APW14	7/31/2023	Manganese	0.244	FALSE	FALSE
APW14	7/31/2023	Molybdenum	0.0049	FALSE	FALSE
APW14	7/31/2023	Potassium	2	FALSE	FALSE
APW14	7/31/2023	Sodium	126	FALSE	FALSE
APW14	7/31/2023	Sulfate	370	FALSE	FALSE
APW14	7/31/2023	H+	9.12E-08	FALSE	FALSE
APW14	7/31/2023	Alkalinity	14.2	FALSE	FALSE
APW14	10/10/2023	Arsenic	0.0094	FALSE	FALSE
APW14	10/10/2023	Barium	0.0758	FALSE	FALSE
APW14	10/10/2023	Boron	0.0888	FALSE	FALSE
APW14	10/10/2023	Calcium	138	FALSE	FALSE
APW14	10/10/2023	Chloride	41	FALSE	FALSE
APW14	10/10/2023	Fluoride	0.33	FALSE	FALSE
APW14	10/10/2023	Iron	2.3	TRUE	NA
APW14	10/10/2023	Lithium	0.0205	FALSE	FALSE
APW14	10/10/2023	Magnesium	63.1	FALSE	FALSE
APW14	10/10/2023	Manganese	0.62	TRUE	NA
APW14	10/10/2023	Molybdenum	0.0058	FALSE	FALSE
APW14	10/10/2023	Potassium	1.92	FALSE	FALSE
APW14	10/10/2023	Sodium	133	FALSE	FALSE
APW14	10/10/2023	Sulfate	358	FALSE	FALSE
APW14	10/10/2023	H+	0.000000049	FALSE	FALSE
APW14	10/10/2023	Alkalinity	14.7	FALSE	FALSE
APW15	5/24/2021	Arsenic	0.017	FALSE	FALSE
APW15	5/24/2021	Barium	0.57	FALSE	FALSE
APW15	5/24/2021	Boron	0.15	FALSE	FALSE
APW15	5/24/2021	Calcium	98	FALSE	FALSE
APW15	5/24/2021	Chloride	230	FALSE	FALSE
APW15	5/24/2021	Fluoride	1.68	FALSE	FALSE
APW15	5/24/2021	Iron	10	FALSE	FALSE
APW15	5/24/2021	Lithium	0.141	FALSE	TRUE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW15	5/24/2021	Magnesium	41	FALSE	FALSE
APW15	5/24/2021	Manganese	0.16	FALSE	FALSE
APW15	5/24/2021	Molybdenum	0.012	FALSE	FALSE
APW15	5/24/2021	Potassium	3.2	FALSE	FALSE
APW15	5/24/2021	Sodium	300	FALSE	FALSE
APW15	5/24/2021	Sulfate	1	FALSE	TRUE
APW15	5/24/2021	H+	5.13E-08	FALSE	FALSE
APW15	5/24/2021	Alkalinity	23.3	FALSE	FALSE
APW15	6/17/2021	Arsenic	0.017	FALSE	FALSE
APW15	6/17/2021	Barium	0.6	FALSE	FALSE
APW15	6/17/2021	Boron	0.13	FALSE	FALSE
APW15	6/17/2021	Calcium	95	FALSE	FALSE
APW15	6/17/2021	Chloride	240	FALSE	FALSE
APW15	6/17/2021	Fluoride	3.18	FALSE	FALSE
APW15	6/17/2021	Iron	15	FALSE	FALSE
APW15	6/17/2021	Lithium	0.022	FALSE	FALSE
APW15	6/17/2021	Magnesium	37	FALSE	FALSE
APW15	6/17/2021	Manganese	0.16	FALSE	FALSE
APW15	6/17/2021	Molybdenum	0.012	FALSE	FALSE
APW15	6/17/2021	Potassium	2.9	FALSE	FALSE
APW15	6/17/2021	Sodium	260	FALSE	FALSE
APW15	6/17/2021	Sulfate	1	FALSE	TRUE
APW15	6/17/2021	H+	5.13E-08	FALSE	FALSE
APW15	6/17/2021	Alkalinity	17.3	FALSE	FALSE
APW15	6/30/2021	Arsenic	0.017	FALSE	FALSE
APW15	6/30/2021	Barium	0.6	FALSE	FALSE
APW15	6/30/2021	Boron	0.13	FALSE	FALSE
APW15	6/30/2021	Calcium	98	FALSE	FALSE
APW15	6/30/2021	Chloride	230	FALSE	FALSE
APW15	6/30/2021	Fluoride	2.89	FALSE	FALSE
APW15	6/30/2021	Iron	13	FALSE	FALSE
APW15	6/30/2021	Lithium	0.022	FALSE	FALSE
APW15	6/30/2021	Magnesium	42	FALSE	FALSE
APW15	6/30/2021	Manganese	0.14	FALSE	FALSE
APW15	6/30/2021	Molybdenum	0.0098	FALSE	FALSE
APW15	6/30/2021	Potassium	2.8	FALSE	FALSE
APW15	6/30/2021	Sodium	280	FALSE	FALSE
APW15	6/30/2021	Sulfate	1	FALSE	TRUE
APW15	6/30/2021	H+	7.76E-08	FALSE	FALSE
APW15	6/30/2021	Alkalinity	17.2	FALSE	FALSE
APW15	7/14/2021	Arsenic	0.016	FALSE	FALSE
APW15	7/14/2021	Barium	0.6	FALSE	FALSE
APW15	7/14/2021	Boron	0.16	FALSE	FALSE
APW15	7/14/2021	Calcium	96	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW15	7/14/2021	Chloride	130	FALSE	FALSE
APW15	7/14/2021	Fluoride	8.16	FALSE	FALSE
APW15	7/14/2021	Iron	13	FALSE	FALSE
APW15	7/14/2021	Lithium	0.141	FALSE	TRUE
APW15	7/14/2021	Magnesium	41	FALSE	FALSE
APW15	7/14/2021	Manganese	0.13	FALSE	FALSE
APW15	7/14/2021	Molybdenum	0.0094	FALSE	FALSE
APW15	7/14/2021	Potassium	2.8	FALSE	FALSE
APW15	7/14/2021	Sodium	290	FALSE	FALSE
APW15	7/14/2021	Sulfate	1	FALSE	TRUE
APW15	7/14/2021	H+	6.17E-08	FALSE	FALSE
APW15	7/14/2021	Alkalinity	17.3	FALSE	FALSE
APW16	2/23/2021	Arsenic	0.014	FALSE	FALSE
APW16	2/23/2021	Barium	0.62	FALSE	FALSE
APW16	2/23/2021	Boron	0.14	FALSE	FALSE
APW16	2/23/2021	Calcium	92	FALSE	FALSE
APW16	2/23/2021	Chloride	71	FALSE	FALSE
APW16	2/23/2021	Fluoride	0.629	FALSE	FALSE
APW16	2/23/2021	Iron	1.8	FALSE	FALSE
APW16	2/23/2021	Lithium	0.141	FALSE	TRUE
APW16	2/23/2021	Magnesium	43	FALSE	FALSE
APW16	2/23/2021	Manganese	0.052	FALSE	FALSE
APW16	2/23/2021	Molybdenum	0.0036	FALSE	FALSE
APW16	2/23/2021	Potassium	2.2	FALSE	FALSE
APW16	2/23/2021	Sodium	130	FALSE	FALSE
APW16	2/23/2021	Sulfate	1.9	FALSE	FALSE
APW16	2/23/2021	H+	3.98E-08	FALSE	FALSE
APW16	2/23/2021	Alkalinity	16.2	FALSE	FALSE
APW16	4/28/2021	Arsenic	0.0083	FALSE	FALSE
APW16	4/28/2021	Barium	0.62	FALSE	FALSE
APW16	4/28/2021	Boron	0.12	FALSE	FALSE
APW16	4/28/2021	Calcium	96	FALSE	FALSE
APW16	4/28/2021	Chloride	75	FALSE	FALSE
APW16	4/28/2021	Fluoride	0.742	FALSE	FALSE
APW16	4/28/2021	Iron	7.4	FALSE	FALSE
APW16	4/28/2021	Lithium	0.141	FALSE	TRUE
APW16	4/28/2021	Magnesium	45	FALSE	FALSE
APW16	4/28/2021	Manganese	0.052	FALSE	FALSE
APW16	4/28/2021	Molybdenum	0.0015	FALSE	FALSE
APW16	4/28/2021	Potassium	1.9	FALSE	FALSE
APW16	4/28/2021	Sodium	140	FALSE	FALSE
APW16	4/28/2021	Sulfate	1	FALSE	TRUE
APW16	4/28/2021	H+	3.63E-08	FALSE	FALSE
APW16	4/28/2021	Alkalinity	16.7	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW16	5/24/2021	Arsenic	0.0074	FALSE	FALSE
APW16	5/24/2021	Barium	0.61	FALSE	FALSE
APW16	5/24/2021	Boron	0.15	FALSE	FALSE
APW16	5/24/2021	Calcium	100	FALSE	FALSE
APW16	5/24/2021	Chloride	74	FALSE	FALSE
APW16	5/24/2021	Fluoride	0.639	FALSE	FALSE
APW16	5/24/2021	Iron	6.5	FALSE	FALSE
APW16	5/24/2021	Lithium	0.141	FALSE	TRUE
APW16	5/24/2021	Magnesium	46	FALSE	FALSE
APW16	5/24/2021	Manganese	0.048	FALSE	FALSE
APW16	5/24/2021	Molybdenum	0.0012	FALSE	FALSE
APW16	5/24/2021	Potassium	2	FALSE	FALSE
APW16	5/24/2021	Sodium	150	FALSE	FALSE
APW16	5/24/2021	Sulfate	1	FALSE	TRUE
APW16	5/24/2021	H+	2.82E-08	FALSE	FALSE
APW16	5/24/2021	Alkalinity	22.5	FALSE	FALSE
APW16	6/16/2021	Arsenic	0.0077	FALSE	FALSE
APW16	6/16/2021	Barium	0.57	FALSE	FALSE
APW16	6/16/2021	Boron	0.14	FALSE	FALSE
APW16	6/16/2021	Calcium	100	FALSE	FALSE
APW16	6/16/2021	Chloride	73	FALSE	FALSE
APW16	6/16/2021	Fluoride	0.735	FALSE	FALSE
APW16	6/16/2021	Iron	4.7	FALSE	FALSE
APW16	6/16/2021	Lithium	0.141	FALSE	TRUE
APW16	6/16/2021	Magnesium	44	FALSE	FALSE
APW16	6/16/2021	Manganese	0.04	FALSE	FALSE
APW16	6/16/2021	Molybdenum	0.0316	FALSE	TRUE
APW16	6/16/2021	Potassium	1.9	FALSE	FALSE
APW16	6/16/2021	Sodium	140	FALSE	FALSE
APW16	6/16/2021	Sulfate	1	FALSE	TRUE
APW16	6/16/2021	H+	3.98E-08	FALSE	FALSE
APW16	6/16/2021	Alkalinity	16.7	FALSE	FALSE
APW16	6/30/2021	Arsenic	0.0083	FALSE	FALSE
APW16	6/30/2021	Barium	0.55	FALSE	FALSE
APW16	6/30/2021	Boron	0.13	FALSE	FALSE
APW16	6/30/2021	Calcium	96	FALSE	FALSE
APW16	6/30/2021	Chloride	59	FALSE	FALSE
APW16	6/30/2021	Fluoride	0.766	FALSE	FALSE
APW16	6/30/2021	Iron	4	FALSE	FALSE
APW16	6/30/2021	Lithium	0.141	FALSE	TRUE
APW16	6/30/2021	Magnesium	44	FALSE	FALSE
APW16	6/30/2021	Manganese	0.036	FALSE	FALSE
APW16	6/30/2021	Molybdenum	0.0316	FALSE	TRUE
APW16	6/30/2021	Potassium	2	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW16	6/30/2021	Sodium	140	FALSE	FALSE
APW16	6/30/2021	Sulfate	1	FALSE	TRUE
APW16	6/30/2021	H+	0.0000001	FALSE	FALSE
APW16	6/30/2021	Alkalinity	15	FALSE	FALSE
APW16	7/15/2021	Arsenic	0.0088	FALSE	FALSE
APW16	7/15/2021	Barium	0.56	FALSE	FALSE
APW16	7/15/2021	Boron	0.13	FALSE	FALSE
APW16	7/15/2021	Calcium	95	FALSE	FALSE
APW16	7/15/2021	Chloride	77	FALSE	FALSE
APW16	7/15/2021	Fluoride	0.55	FALSE	FALSE
APW16	7/15/2021	Iron	4.3	FALSE	FALSE
APW16	7/15/2021	Lithium	0.141	FALSE	TRUE
APW16	7/15/2021	Magnesium	45	FALSE	FALSE
APW16	7/15/2021	Manganese	0.043	FALSE	FALSE
APW16	7/15/2021	Molybdenum	0.0316	FALSE	TRUE
APW16	7/15/2021	Potassium	1.8	FALSE	FALSE
APW16	7/15/2021	Sodium	150	FALSE	FALSE
APW16	7/15/2021	Sulfate	1	FALSE	TRUE
APW16	7/15/2021	H+	4.07E-08	FALSE	FALSE
APW16	7/15/2021	Alkalinity	16.7	FALSE	FALSE
APW16	3/15/2023	Arsenic	0.022	FALSE	FALSE
APW16	3/15/2023	Barium	0.52	FALSE	FALSE
APW16	3/15/2023	Boron	0.15	FALSE	FALSE
APW16	3/15/2023	Calcium	95	FALSE	FALSE
APW16	3/15/2023	Chloride	65	FALSE	FALSE
APW16	3/15/2023	Fluoride	0.63	FALSE	FALSE
APW16	3/15/2023	Iron	4	TRUE	NA
APW16	3/15/2023	Lithium	0.141	FALSE	TRUE
APW16	3/15/2023	Magnesium	48	FALSE	FALSE
APW16	3/15/2023	Manganese	0.04	TRUE	NA
APW16	3/15/2023	Molybdenum	0.0316	TRUE	NA
APW16	3/15/2023	Potassium	1.9	FALSE	FALSE
APW16	3/15/2023	Sodium	160	FALSE	FALSE
APW16	3/15/2023	Sulfate	0.93	FALSE	FALSE
APW16	3/15/2023	H+	0.000000038	FALSE	FALSE
APW16	3/15/2023	Alkalinity	16.7	FALSE	FALSE
APW16	4/25/2023	Arsenic	0.021	FALSE	FALSE
APW16	4/25/2023	Barium	0.54	FALSE	FALSE
APW16	4/25/2023	Boron	0.13	FALSE	FALSE
APW16	4/25/2023	Calcium	96	FALSE	FALSE
APW16	4/25/2023	Chloride	71	FALSE	FALSE
APW16	4/25/2023	Fluoride	0.606	FALSE	FALSE
APW16	4/25/2023	Iron	2.3	FALSE	FALSE
APW16	4/25/2023	Lithium	0.141	FALSE	TRUE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW16	4/25/2023	Magnesium	44	FALSE	FALSE
APW16	4/25/2023	Manganese	0.021	FALSE	FALSE
APW16	4/25/2023	Molybdenum	0.0316	FALSE	TRUE
APW16	4/25/2023	Potassium	1.8	FALSE	FALSE
APW16	4/25/2023	Sodium	140	FALSE	FALSE
APW16	4/25/2023	Sulfate	0.65	FALSE	FALSE
APW16	4/25/2023	H+	2.24E-08	FALSE	FALSE
APW16	4/25/2023	Alkalinity	15.6	FALSE	FALSE
APW16	7/31/2023	Arsenic	0.0271	FALSE	FALSE
APW16	7/31/2023	Barium	0.658	FALSE	FALSE
APW16	7/31/2023	Boron	0.147	FALSE	FALSE
APW16	7/31/2023	Calcium	94	FALSE	FALSE
APW16	7/31/2023	Chloride	64	FALSE	FALSE
APW16	7/31/2023	Fluoride	0.72	FALSE	FALSE
APW16	7/31/2023	Iron	2.85	FALSE	FALSE
APW16	7/31/2023	Lithium	0.0025	FALSE	FALSE
APW16	7/31/2023	Magnesium	42.7	FALSE	FALSE
APW16	7/31/2023	Manganese	0.0247	FALSE	FALSE
APW16	7/31/2023	Molybdenum	0.0387	FALSE	TRUE
APW16	7/31/2023	Potassium	1.96	FALSE	FALSE
APW16	7/31/2023	Sodium	135	FALSE	FALSE
APW16	7/31/2023	Sulfate	14	FALSE	FALSE
APW16	7/31/2023	H+	7.41E-08	FALSE	FALSE
APW16	7/31/2023	Alkalinity	16.4	FALSE	FALSE
APW16	10/10/2023	Arsenic	0.0253	FALSE	FALSE
APW16	10/10/2023	Barium	0.597	FALSE	FALSE
APW16	10/10/2023	Boron	0.126	FALSE	FALSE
APW16	10/10/2023	Calcium	92.9	FALSE	FALSE
APW16	10/10/2023	Chloride	69	FALSE	FALSE
APW16	10/10/2023	Fluoride	0.77	FALSE	FALSE
APW16	10/10/2023	Iron	4.3	TRUE	NA
APW16	10/10/2023	Lithium	0.0029	FALSE	FALSE
APW16	10/10/2023	Magnesium	39.6	FALSE	FALSE
APW16	10/10/2023	Manganese	0.0342	TRUE	NA
APW16	10/10/2023	Molybdenum	0.0387	FALSE	TRUE
APW16	10/10/2023	Potassium	2	FALSE	FALSE
APW16	10/10/2023	Sodium	138	FALSE	FALSE
APW16	10/10/2023	Sulfate	8	FALSE	FALSE
APW16	10/10/2023	H+	3.55E-08	FALSE	FALSE
APW16	10/10/2023	Alkalinity	16.7	FALSE	FALSE
APW17	2/23/2021	Arsenic	0.0033	FALSE	FALSE
APW17	2/23/2021	Barium	0.54	FALSE	FALSE
APW17	2/23/2021	Boron	0.091	FALSE	FALSE
APW17	2/23/2021	Calcium	100	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW17	2/23/2021	Chloride	64	FALSE	FALSE
APW17	2/23/2021	Fluoride	0.944	FALSE	FALSE
APW17	2/23/2021	Iron	3.5	FALSE	FALSE
APW17	2/23/2021	Lithium	0.141	FALSE	TRUE
APW17	2/23/2021	Magnesium	48	FALSE	FALSE
APW17	2/23/2021	Manganese	0.075	FALSE	FALSE
APW17	2/23/2021	Molybdenum	0.0085	FALSE	FALSE
APW17	2/23/2021	Potassium	2.2	FALSE	FALSE
APW17	2/23/2021	Sodium	89	FALSE	FALSE
APW17	2/23/2021	Sulfate	34	FALSE	FALSE
APW17	2/23/2021	H+	3.98E-08	FALSE	FALSE
APW17	2/23/2021	Alkalinity	15.4	FALSE	FALSE
APW17	4/29/2021	Arsenic	0.003	FALSE	FALSE
APW17	4/29/2021	Barium	0.6	FALSE	FALSE
APW17	4/29/2021	Boron	0.088	FALSE	FALSE
APW17	4/29/2021	Calcium	120	FALSE	FALSE
APW17	4/29/2021	Chloride	55	FALSE	FALSE
APW17	4/29/2021	Fluoride	0.468	FALSE	FALSE
APW17	4/29/2021	Iron	3.7	FALSE	FALSE
APW17	4/29/2021	Lithium	0.141	FALSE	TRUE
APW17	4/29/2021	Magnesium	50	FALSE	FALSE
APW17	4/29/2021	Manganese	0.044	FALSE	FALSE
APW17	4/29/2021	Molybdenum	0.0055	FALSE	FALSE
APW17	4/29/2021	Potassium	1.9	FALSE	FALSE
APW17	4/29/2021	Sodium	97	FALSE	FALSE
APW17	4/29/2021	Sulfate	36	FALSE	FALSE
APW17	4/29/2021	H+	3.72E-08	FALSE	FALSE
APW17	4/29/2021	Alkalinity	15.4	FALSE	FALSE
APW17	5/24/2021	Arsenic	0.0035	FALSE	FALSE
APW17	5/24/2021	Barium	0.59	FALSE	FALSE
APW17	5/24/2021	Boron	0.087	FALSE	FALSE
APW17	5/24/2021	Calcium	110	FALSE	FALSE
APW17	5/24/2021	Chloride	88	FALSE	FALSE
APW17	5/24/2021	Fluoride	0.474	FALSE	FALSE
APW17	5/24/2021	Iron	2.8	FALSE	FALSE
APW17	5/24/2021	Lithium	0.141	FALSE	TRUE
APW17	5/24/2021	Magnesium	47	FALSE	FALSE
APW17	5/24/2021	Manganese	0.032	FALSE	FALSE
APW17	5/24/2021	Molybdenum	0.005	FALSE	FALSE
APW17	5/24/2021	Potassium	1.8	FALSE	FALSE
APW17	5/24/2021	Sodium	91	FALSE	FALSE
APW17	5/24/2021	Sulfate	40	FALSE	FALSE
APW17	5/24/2021	H+	4.27E-08	FALSE	FALSE
APW17	5/24/2021	Alkalinity	20.1	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW17	6/16/2021	Arsenic	0.0058	FALSE	FALSE
APW17	6/16/2021	Barium	0.62	FALSE	FALSE
APW17	6/16/2021	Boron	0.088	FALSE	FALSE
APW17	6/16/2021	Calcium	120	FALSE	FALSE
APW17	6/16/2021	Chloride	54	FALSE	FALSE
APW17	6/16/2021	Fluoride	0.593	FALSE	FALSE
APW17	6/16/2021	Iron	3.5	FALSE	FALSE
APW17	6/16/2021	Lithium	0.141	FALSE	TRUE
APW17	6/16/2021	Magnesium	50	FALSE	FALSE
APW17	6/16/2021	Manganese	0.038	FALSE	FALSE
APW17	6/16/2021	Molybdenum	0.0048	FALSE	FALSE
APW17	6/16/2021	Potassium	1.8	FALSE	FALSE
APW17	6/16/2021	Sodium	95	FALSE	FALSE
APW17	6/16/2021	Sulfate	40	FALSE	FALSE
APW17	6/16/2021	H+	4.37E-08	FALSE	FALSE
APW17	6/16/2021	Alkalinity	15.4	FALSE	FALSE
APW17	6/30/2021	Arsenic	0.0074	FALSE	FALSE
APW17	6/30/2021	Barium	0.61	FALSE	FALSE
APW17	6/30/2021	Boron	0.084	FALSE	FALSE
APW17	6/30/2021	Calcium	110	FALSE	FALSE
APW17	6/30/2021	Chloride	49	FALSE	FALSE
APW17	6/30/2021	Fluoride	0.548	FALSE	FALSE
APW17	6/30/2021	Iron	3.2	FALSE	FALSE
APW17	6/30/2021	Lithium	0.141	FALSE	TRUE
APW17	6/30/2021	Magnesium	48	FALSE	FALSE
APW17	6/30/2021	Manganese	0.038	FALSE	FALSE
APW17	6/30/2021	Molybdenum	0.0048	FALSE	FALSE
APW17	6/30/2021	Potassium	1.7	FALSE	FALSE
APW17	6/30/2021	Sodium	94	FALSE	FALSE
APW17	6/30/2021	Sulfate	41	FALSE	FALSE
APW17	6/30/2021	H+	4.27E-08	FALSE	FALSE
APW17	6/30/2021	Alkalinity	14.9	FALSE	FALSE
APW17	7/15/2021	Arsenic	0.0083	FALSE	FALSE
APW17	7/15/2021	Barium	0.61	FALSE	FALSE
APW17	7/15/2021	Boron	0.091	FALSE	FALSE
APW17	7/15/2021	Calcium	110	FALSE	FALSE
APW17	7/15/2021	Chloride	31	FALSE	FALSE
APW17	7/15/2021	Fluoride	0.412	FALSE	FALSE
APW17	7/15/2021	Iron	3.4	FALSE	FALSE
APW17	7/15/2021	Lithium	0.141	FALSE	TRUE
APW17	7/15/2021	Magnesium	48	FALSE	FALSE
APW17	7/15/2021	Manganese	0.035	FALSE	FALSE
APW17	7/15/2021	Molybdenum	0.0049	FALSE	FALSE
APW17	7/15/2021	Potassium	1.8	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW17	7/15/2021	Sodium	96	FALSE	FALSE
APW17	7/15/2021	Sulfate	5	FALSE	TRUE
APW17	7/15/2021	H+	4.07E-08	FALSE	FALSE
APW17	7/15/2021	Alkalinity	15.1	FALSE	FALSE
APW17	3/15/2023	Arsenic	0.024	FALSE	FALSE
APW17	3/15/2023	Barium	0.6	FALSE	FALSE
APW17	3/15/2023	Boron	0.097	FALSE	FALSE
APW17	3/15/2023	Calcium	110	FALSE	FALSE
APW17	3/15/2023	Chloride	51	FALSE	FALSE
APW17	3/15/2023	Fluoride	0.449	FALSE	FALSE
APW17	3/15/2023	Iron	3.5	TRUE	NA
APW17	3/15/2023	Lithium	0.141	FALSE	TRUE
APW17	3/15/2023	Magnesium	53	FALSE	FALSE
APW17	3/15/2023	Manganese	0.038	TRUE	NA
APW17	3/15/2023	Molybdenum	0.0042	TRUE	NA
APW17	3/15/2023	Potassium	1.8	FALSE	FALSE
APW17	3/15/2023	Sodium	100	FALSE	FALSE
APW17	3/15/2023	Sulfate	49	FALSE	FALSE
APW17	3/15/2023	H+	3.24E-08	FALSE	FALSE
APW17	3/15/2023	Alkalinity	15.5	FALSE	FALSE
APW17	4/25/2023	Arsenic	0.02	FALSE	FALSE
APW17	4/25/2023	Barium	0.55	FALSE	FALSE
APW17	4/25/2023	Boron	0.083	FALSE	FALSE
APW17	4/25/2023	Calcium	110	FALSE	FALSE
APW17	4/25/2023	Chloride	56	FALSE	FALSE
APW17	4/25/2023	Fluoride	0.483	FALSE	FALSE
APW17	4/25/2023	Iron	2.1	FALSE	FALSE
APW17	4/25/2023	Lithium	0.141	FALSE	TRUE
APW17	4/25/2023	Magnesium	47	FALSE	FALSE
APW17	4/25/2023	Manganese	0.026	FALSE	FALSE
APW17	4/25/2023	Molybdenum	0.0053	FALSE	FALSE
APW17	4/25/2023	Potassium	1.6	FALSE	FALSE
APW17	4/25/2023	Sodium	93	FALSE	FALSE
APW17	4/25/2023	Sulfate	52	FALSE	FALSE
APW17	4/25/2023	H+	0.000000024	FALSE	FALSE
APW17	4/25/2023	Alkalinity	14.2	FALSE	FALSE
APW17	7/25/2023	Arsenic	0.0274	FALSE	FALSE
APW17	7/25/2023	Barium	0.609	FALSE	FALSE
APW17	7/25/2023	Boron	0.121	FALSE	FALSE
APW17	7/25/2023	Calcium	106	FALSE	FALSE
APW17	7/25/2023	Chloride	53	FALSE	FALSE
APW17	7/25/2023	Fluoride	0.58	FALSE	FALSE
APW17	7/25/2023	Iron	2.57	FALSE	FALSE
APW17	7/25/2023	Lithium	0.0025	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW17	7/25/2023	Magnesium	44.7	FALSE	FALSE
APW17	7/25/2023	Manganese	0.0233	FALSE	FALSE
APW17	7/25/2023	Molybdenum	0.0052	FALSE	FALSE
APW17	7/25/2023	Potassium	1.83	FALSE	FALSE
APW17	7/25/2023	Sodium	90.1	FALSE	FALSE
APW17	7/25/2023	Sulfate	56	FALSE	FALSE
APW17	7/25/2023	H+	0.000000115	FALSE	FALSE
APW17	7/25/2023	Alkalinity	15.3	FALSE	FALSE
APW17	10/10/2023	Arsenic	0.032	FALSE	FALSE
APW17	10/10/2023	Barium	0.741	FALSE	FALSE
APW17	10/10/2023	Boron	0.0788	FALSE	FALSE
APW17	10/10/2023	Calcium	107	FALSE	FALSE
APW17	10/10/2023	Chloride	59	FALSE	FALSE
APW17	10/10/2023	Fluoride	0.54	FALSE	FALSE
APW17	10/10/2023	Iron	5.14	TRUE	NA
APW17	10/10/2023	Lithium	0.0024	FALSE	FALSE
APW17	10/10/2023	Magnesium	42.3	FALSE	FALSE
APW17	10/10/2023	Manganese	0.0342	TRUE	NA
APW17	10/10/2023	Molybdenum	0.0172	FALSE	FALSE
APW17	10/10/2023	Potassium	1.9	FALSE	FALSE
APW17	10/10/2023	Sodium	89.1	FALSE	FALSE
APW17	10/10/2023	Sulfate	64	FALSE	FALSE
APW17	10/10/2023	H+	3.24E-08	FALSE	FALSE
APW17	10/10/2023	Alkalinity	15.6	FALSE	FALSE
APW18	6/16/2021	Arsenic	0.0043	FALSE	FALSE
APW18	6/16/2021	Barium	0.36	FALSE	FALSE
APW18	6/16/2021	Boron	0.19	FALSE	FALSE
APW18	6/16/2021	Calcium	64	FALSE	FALSE
APW18	6/16/2021	Chloride	29	FALSE	FALSE
APW18	6/16/2021	Fluoride	6.67	FALSE	FALSE
APW18	6/16/2021	Iron	4.1	FALSE	FALSE
APW18	6/16/2021	Lithium	0.141	FALSE	TRUE
APW18	6/16/2021	Magnesium	37	FALSE	FALSE
APW18	6/16/2021	Manganese	0.14	FALSE	FALSE
APW18	6/16/2021	Molybdenum	0.0096	FALSE	FALSE
APW18	6/16/2021	Potassium	8.8	FALSE	FALSE
APW18	6/16/2021	Sodium	120	FALSE	FALSE
APW18	6/16/2021	Sulfate	4.8	FALSE	FALSE
APW18	6/16/2021	H+	2.82E-08	FALSE	FALSE
APW18	6/16/2021	Alkalinity	14.9	FALSE	FALSE
APW18	6/30/2021	Arsenic	0.0316	FALSE	TRUE
APW18	6/30/2021	Barium	0.36	FALSE	FALSE
APW18	6/30/2021	Boron	0.11	FALSE	FALSE
APW18	6/30/2021	Calcium	60	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW18	6/30/2021	Chloride	28	FALSE	FALSE
APW18	6/30/2021	Fluoride	3.23	FALSE	FALSE
APW18	6/30/2021	Iron	3.5	FALSE	FALSE
APW18	6/30/2021	Lithium	0.141	FALSE	TRUE
APW18	6/30/2021	Magnesium	38	FALSE	FALSE
APW18	6/30/2021	Manganese	0.13	FALSE	FALSE
APW18	6/30/2021	Molybdenum	0.0048	FALSE	FALSE
APW18	6/30/2021	Potassium	7.6	FALSE	FALSE
APW18	6/30/2021	Sodium	120	FALSE	FALSE
APW18	6/30/2021	Sulfate	2.2	FALSE	FALSE
APW18	6/30/2021	H+	2.63E-08	FALSE	FALSE
APW18	6/30/2021	Alkalinity	14.6	FALSE	FALSE
APW18	7/15/2021	Arsenic	0.0015	FALSE	FALSE
APW18	7/15/2021	Barium	0.33	FALSE	FALSE
APW18	7/15/2021	Boron	0.12	FALSE	FALSE
APW18	7/15/2021	Calcium	64	FALSE	FALSE
APW18	7/15/2021	Chloride	31	FALSE	FALSE
APW18	7/15/2021	Fluoride	4.67	FALSE	FALSE
APW18	7/15/2021	Iron	4.6	FALSE	FALSE
APW18	7/15/2021	Lithium	0.141	FALSE	TRUE
APW18	7/15/2021	Magnesium	39	FALSE	FALSE
APW18	7/15/2021	Manganese	0.16	FALSE	FALSE
APW18	7/15/2021	Molybdenum	0.0051	FALSE	FALSE
APW18	7/15/2021	Potassium	8.1	FALSE	FALSE
APW18	7/15/2021	Sodium	120	FALSE	FALSE
APW18	7/15/2021	Sulfate	1.9	FALSE	FALSE
APW18	7/15/2021	H+	2.57E-08	FALSE	FALSE
APW18	7/15/2021	Alkalinity	14.9	FALSE	FALSE
APW18	4/25/2023	Arsenic	0.0027	FALSE	FALSE
APW18	4/25/2023	Barium	0.35	FALSE	FALSE
APW18	4/25/2023	Boron	0.1	FALSE	FALSE
APW18	4/25/2023	Calcium	75	FALSE	FALSE
APW18	4/25/2023	Chloride	24	FALSE	FALSE
APW18	4/25/2023	Fluoride	0.518	FALSE	FALSE
APW18	4/25/2023	Iron	1.8	FALSE	FALSE
APW18	4/25/2023	Lithium	0.0052	FALSE	FALSE
APW18	4/25/2023	Magnesium	40	FALSE	FALSE
APW18	4/25/2023	Manganese	0.055	FALSE	FALSE
APW18	4/25/2023	Molybdenum	0.0029	FALSE	FALSE
APW18	4/25/2023	Potassium	2.6	FALSE	FALSE
APW18	4/25/2023	Sodium	110	FALSE	FALSE
APW18	4/25/2023	Sulfate	52	FALSE	FALSE
APW18	4/25/2023	H+	1.66E-08	FALSE	FALSE
APW18	4/25/2023	Alkalinity	14.1	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
APW18	7/25/2023	Arsenic	0.0023	FALSE	FALSE
APW18	7/25/2023	Barium	0.368	FALSE	FALSE
APW18	7/25/2023	Boron	0.128	FALSE	FALSE
APW18	7/25/2023	Calcium	73.2	FALSE	FALSE
APW18	7/25/2023	Chloride	26	FALSE	FALSE
APW18	7/25/2023	Fluoride	0.63	FALSE	FALSE
APW18	7/25/2023	Iron	1.82	FALSE	FALSE
APW18	7/25/2023	Lithium	0.0052	FALSE	FALSE
APW18	7/25/2023	Magnesium	36.8	FALSE	FALSE
APW18	7/25/2023	Manganese	0.0791	FALSE	FALSE
APW18	7/25/2023	Molybdenum	0.0032	FALSE	FALSE
APW18	7/25/2023	Potassium	2.76	FALSE	FALSE
APW18	7/25/2023	Sodium	107	FALSE	FALSE
APW18	7/25/2023	Sulfate	49	FALSE	FALSE
APW18	7/25/2023	H+	6.03E-08	FALSE	FALSE
APW18	7/25/2023	Alkalinity	15.1	FALSE	FALSE
APW18	10/10/2023	Arsenic	0.0026	FALSE	FALSE
APW18	10/10/2023	Barium	0.443	FALSE	FALSE
APW18	10/10/2023	Boron	0.0971	FALSE	FALSE
APW18	10/10/2023	Calcium	75.5	FALSE	FALSE
APW18	10/10/2023	Chloride	23	FALSE	FALSE
APW18	10/10/2023	Fluoride	0.59	FALSE	FALSE
APW18	10/10/2023	Iron	1.82	TRUE	NA
APW18	10/10/2023	Lithium	0.0052	FALSE	FALSE
APW18	10/10/2023	Magnesium	37.6	FALSE	FALSE
APW18	10/10/2023	Manganese	0.052	TRUE	NA
APW18	10/10/2023	Molybdenum	0.0043	FALSE	FALSE
APW18	10/10/2023	Potassium	2.34	FALSE	FALSE
APW18	10/10/2023	Sodium	104	FALSE	FALSE
APW18	10/10/2023	Sulfate	49	FALSE	FALSE
APW18	10/10/2023	H+	8.91E-09	FALSE	FALSE
APW18	10/10/2023	Alkalinity	15.2	FALSE	FALSE
XPW01	3/9/2021	Arsenic	0.049	FALSE	FALSE
XPW01	3/9/2021	Barium	0.14	FALSE	FALSE
XPW01	3/9/2021	Boron	11	FALSE	FALSE
XPW01	3/9/2021	Calcium	63	FALSE	FALSE
XPW01	3/9/2021	Chloride	38	FALSE	FALSE
XPW01	3/9/2021	Fluoride	2.37	FALSE	FALSE
XPW01	3/9/2021	Iron	1	FALSE	FALSE
XPW01	3/9/2021	Lithium	0.13	FALSE	FALSE
XPW01	3/9/2021	Magnesium	0.81	FALSE	FALSE
XPW01	3/9/2021	Manganese	0.015	FALSE	FALSE
XPW01	3/9/2021	Molybdenum	0.59	FALSE	FALSE
XPW01	3/9/2021	Potassium	150	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
XPW01	3/9/2021	Sodium	8000	FALSE	FALSE
XPW01	3/9/2021	Sulfate	14000	FALSE	FALSE
XPW01	3/9/2021	H+	3.98E-13	FALSE	FALSE
XPW01	3/9/2021	Alkalinity	11.2	FALSE	FALSE
XPW01	3/30/2021	Arsenic	0.049	FALSE	FALSE
XPW01	3/30/2021	Barium	0.064	FALSE	FALSE
XPW01	3/30/2021	Boron	9.9	FALSE	FALSE
XPW01	3/30/2021	Calcium	54	FALSE	FALSE
XPW01	3/30/2021	Chloride	32	FALSE	FALSE
XPW01	3/30/2021	Fluoride	2.7	FALSE	FALSE
XPW01	3/30/2021	Iron	0.43	FALSE	FALSE
XPW01	3/30/2021	Lithium	0.14	FALSE	FALSE
XPW01	3/30/2021	Magnesium	0.32	FALSE	FALSE
XPW01	3/30/2021	Manganese	0.0054	FALSE	FALSE
XPW01	3/30/2021	Molybdenum	0.54	FALSE	FALSE
XPW01	3/30/2021	Potassium	130	FALSE	FALSE
XPW01	3/30/2021	Sodium	6700	FALSE	FALSE
XPW01	3/30/2021	Sulfate	19000	FALSE	FALSE
XPW01	3/30/2021	H+	3.98E-13	FALSE	FALSE
XPW01	3/30/2021	Alkalinity	14.2	FALSE	FALSE
XPW01	7/14/2021	Arsenic	0.052	FALSE	FALSE
XPW01	7/14/2021	Barium	0.039	FALSE	FALSE
XPW01	7/14/2021	Boron	12	FALSE	FALSE
XPW01	7/14/2021	Calcium	31	FALSE	FALSE
XPW01	7/14/2021	Chloride	27	FALSE	FALSE
XPW01	7/14/2021	Fluoride	1.92	FALSE	FALSE
XPW01	7/14/2021	Iron	0.26	FALSE	FALSE
XPW01	7/14/2021	Lithium	0.15	FALSE	FALSE
XPW01	7/14/2021	Magnesium	0.79	FALSE	FALSE
XPW01	7/14/2021	Manganese	0.046	FALSE	FALSE
XPW01	7/14/2021	Molybdenum	0.38	FALSE	FALSE
XPW01	7/14/2021	Potassium	98	FALSE	FALSE
XPW01	7/14/2021	Sodium	5700	FALSE	FALSE
XPW01	7/14/2021	Sulfate	11000	FALSE	FALSE
XPW01	7/14/2021	H+	6.31E-13	FALSE	FALSE
XPW01	7/14/2021	Alkalinity	14.9	FALSE	FALSE
XPW01	7/24/2023	Arsenic	0.0641	FALSE	FALSE
XPW01	7/24/2023	Barium	0.0448	FALSE	FALSE
XPW01	7/24/2023	Boron	13.3	FALSE	FALSE
XPW01	7/24/2023	Calcium	10.3	FALSE	FALSE
XPW01	7/24/2023	Chloride	44	FALSE	FALSE
XPW01	7/24/2023	Fluoride	4.18	FALSE	FALSE
XPW01	7/24/2023	Iron	0.658	FALSE	FALSE
XPW01	7/24/2023	Lithium	0.0545	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
XPW01	7/24/2023	Magnesium	0.343	FALSE	FALSE
XPW01	7/24/2023	Manganese	0.0084	FALSE	FALSE
XPW01	7/24/2023	Molybdenum	0.185	FALSE	FALSE
XPW01	7/24/2023	Potassium	42.4	FALSE	FALSE
XPW01	7/24/2023	Sodium	2050	FALSE	FALSE
XPW01	7/24/2023	Sulfate	2530	FALSE	FALSE
XPW01	7/24/2023	H+	2E-13	FALSE	FALSE
XPW01	7/24/2023	Alkalinity	18.2	FALSE	FALSE
XPW02	3/9/2021	Arsenic	0.091	FALSE	FALSE
XPW02	3/9/2021	Barium	0.024	FALSE	FALSE
XPW02	3/9/2021	Boron	2.5	FALSE	FALSE
XPW02	3/9/2021	Calcium	20	FALSE	FALSE
XPW02	3/9/2021	Chloride	9.6	FALSE	FALSE
XPW02	3/9/2021	Fluoride	0.61	FALSE	FALSE
XPW02	3/9/2021	Iron	0.13	FALSE	FALSE
XPW02	3/9/2021	Lithium	0.141	FALSE	TRUE
XPW02	3/9/2021	Magnesium	0.33	FALSE	FALSE
XPW02	3/9/2021	Manganese	0.0044	FALSE	FALSE
XPW02	3/9/2021	Molybdenum	0.097	FALSE	FALSE
XPW02	3/9/2021	Potassium	16	FALSE	FALSE
XPW02	3/9/2021	Sodium	72	FALSE	FALSE
XPW02	3/9/2021	Sulfate	150	FALSE	FALSE
XPW02	3/9/2021	H+	6.31E-10	FALSE	FALSE
XPW02	3/9/2021	Alkalinity	5.32	FALSE	FALSE
XPW02	4/28/2021	Arsenic	0.082	FALSE	FALSE
XPW02	4/28/2021	Barium	0.042	FALSE	FALSE
XPW02	4/28/2021	Boron	2.6	FALSE	FALSE
XPW02	4/28/2021	Calcium	25	FALSE	FALSE
XPW02	4/28/2021	Chloride	9.7	FALSE	FALSE
XPW02	4/28/2021	Fluoride	0.637	FALSE	FALSE
XPW02	4/28/2021	Iron	0.59	FALSE	FALSE
XPW02	4/28/2021	Lithium	0.023	FALSE	FALSE
XPW02	4/28/2021	Magnesium	0.55	FALSE	FALSE
XPW02	4/28/2021	Manganese	0.01	FALSE	FALSE
XPW02	4/28/2021	Molybdenum	0.11	FALSE	FALSE
XPW02	4/28/2021	Potassium	16	FALSE	FALSE
XPW02	4/28/2021	Sodium	77	FALSE	FALSE
XPW02	4/28/2021	Sulfate	190	FALSE	FALSE
XPW02	4/28/2021	H+	1.29E-10	FALSE	FALSE
XPW02	4/28/2021	Alkalinity	5.28	FALSE	FALSE
XPW02	7/14/2021	Arsenic	0.077	FALSE	FALSE
XPW02	7/14/2021	Barium	0.025	FALSE	FALSE
XPW02	7/14/2021	Boron	2.5	FALSE	FALSE
XPW02	7/14/2021	Calcium	21	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
XPW02	7/14/2021	Chloride	10	FALSE	FALSE
XPW02	7/14/2021	Fluoride	0.508	FALSE	FALSE
XPW02	7/14/2021	Iron	0.23	FALSE	FALSE
XPW02	7/14/2021	Lithium	0.028	FALSE	FALSE
XPW02	7/14/2021	Magnesium	0.34	FALSE	FALSE
XPW02	7/14/2021	Manganese	0.0061	FALSE	FALSE
XPW02	7/14/2021	Molybdenum	0.086	FALSE	FALSE
XPW02	7/14/2021	Potassium	16	FALSE	FALSE
XPW02	7/14/2021	Sodium	73	FALSE	FALSE
XPW02	7/14/2021	Sulfate	160	FALSE	FALSE
XPW02	7/14/2021	H+	1.82E-10	FALSE	FALSE
XPW02	7/14/2021	Alkalinity	4.96	FALSE	FALSE
XPW02	2/23/2022	Arsenic	0.024	TRUE	NA
XPW02	2/23/2022	Barium	0.0781	TRUE	NA
XPW02	2/23/2022	Boron	2.4	FALSE	FALSE
XPW02	2/23/2022	Calcium	40	FALSE	FALSE
XPW02	2/23/2022	Chloride	12	FALSE	FALSE
XPW02	2/23/2022	Fluoride	0.314	FALSE	FALSE
XPW02	2/23/2022	Iron	0.23	TRUE	NA
XPW02	2/23/2022	Lithium	0.028	TRUE	NA
XPW02	2/23/2022	Magnesium	1.2	FALSE	FALSE
XPW02	2/23/2022	Manganese	0.0061	TRUE	NA
XPW02	2/23/2022	Molybdenum	0.054	TRUE	NA
XPW02	2/23/2022	Potassium	18	FALSE	FALSE
XPW02	2/23/2022	Sodium	70	FALSE	FALSE
XPW02	2/23/2022	Sulfate	210	FALSE	FALSE
XPW02	2/23/2022	H+	2.88E-10	FALSE	FALSE
XPW02	2/23/2022	Alkalinity	4.91	FALSE	FALSE
XPW02	8/15/2022	Arsenic	0.024	TRUE	NA
XPW02	8/15/2022	Barium	0.0781	TRUE	NA
XPW02	8/15/2022	Boron	2.4	FALSE	FALSE
XPW02	8/15/2022	Calcium	29	FALSE	FALSE
XPW02	8/15/2022	Chloride	8.9	FALSE	FALSE
XPW02	8/15/2022	Fluoride	0.46	FALSE	FALSE
XPW02	8/15/2022	Iron	0.23	TRUE	NA
XPW02	8/15/2022	Lithium	0.028	TRUE	NA
XPW02	8/15/2022	Magnesium	0.37	FALSE	FALSE
XPW02	8/15/2022	Manganese	0.0061	TRUE	NA
XPW02	8/15/2022	Molybdenum	0.086	TRUE	NA
XPW02	8/15/2022	Potassium	15	FALSE	FALSE
XPW02	8/15/2022	Sodium	65	FALSE	FALSE
XPW02	8/15/2022	Sulfate	160	FALSE	FALSE
XPW02	8/15/2022	H+	1.86E-10	FALSE	FALSE
XPW02	8/15/2022	Alkalinity	4.96	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
XPW02	4/27/2023	Arsenic	0.077	TRUE	NA
XPW02	4/27/2023	Barium	0.025	TRUE	NA
XPW02	4/27/2023	Boron	2.3	FALSE	FALSE
XPW02	4/27/2023	Calcium	23	FALSE	FALSE
XPW02	4/27/2023	Chloride	8.8	FALSE	FALSE
XPW02	4/27/2023	Fluoride	0.536	FALSE	FALSE
XPW02	4/27/2023	Iron	0.11	FALSE	FALSE
XPW02	4/27/2023	Lithium	0.024	TRUE	NA
XPW02	4/27/2023	Magnesium	0.316	FALSE	TRUE
XPW02	4/27/2023	Manganese	0.0316	FALSE	TRUE
XPW02	4/27/2023	Molybdenum	0.086	TRUE	NA
XPW02	4/27/2023	Potassium	14	FALSE	FALSE
XPW02	4/27/2023	Sodium	64	FALSE	FALSE
XPW02	4/27/2023	Sulfate	150	FALSE	FALSE
XPW02	4/27/2023	H+	2.63E-10	FALSE	FALSE
XPW02	4/27/2023	Alkalinity	5.32	FALSE	FALSE
XPW02	7/24/2023	Arsenic	0.0619	FALSE	FALSE
XPW02	7/24/2023	Barium	0.0138	FALSE	FALSE
XPW02	7/24/2023	Boron	1.7	FALSE	FALSE
XPW02	7/24/2023	Calcium	27.6	FALSE	FALSE
XPW02	7/24/2023	Chloride	16	FALSE	FALSE
XPW02	7/24/2023	Fluoride	0.46	FALSE	FALSE
XPW02	7/24/2023	Iron	0.0441	FALSE	FALSE
XPW02	7/24/2023	Lithium	0.0207	FALSE	FALSE
XPW02	7/24/2023	Magnesium	0.202	FALSE	FALSE
XPW02	7/24/2023	Manganese	0.0021	FALSE	FALSE
XPW02	7/24/2023	Molybdenum	0.0491	FALSE	FALSE
XPW02	7/24/2023	Potassium	16.4	FALSE	FALSE
XPW02	7/24/2023	Sodium	69.1	FALSE	FALSE
XPW02	7/24/2023	Sulfate	213	FALSE	FALSE
XPW02	7/24/2023	H+	3.16E-10	FALSE	FALSE
XPW02	7/24/2023	Alkalinity	5.32	FALSE	FALSE
XPW02	10/10/2023	Arsenic	0.0645	FALSE	FALSE
XPW02	10/10/2023	Barium	0.0781	FALSE	FALSE
XPW02	10/10/2023	Boron	1.91	FALSE	FALSE
XPW02	10/10/2023	Calcium	37.2	FALSE	FALSE
XPW02	10/10/2023	Chloride	16	FALSE	FALSE
XPW02	10/10/2023	Fluoride	0.49	FALSE	FALSE
XPW02	10/10/2023	Iron	0.5	TRUE	NA
XPW02	10/10/2023	Lithium	0.0308	FALSE	FALSE
XPW02	10/10/2023	Magnesium	0.668	FALSE	FALSE
XPW02	10/10/2023	Manganese	0.0057	TRUE	NA
XPW02	10/10/2023	Molybdenum	0.0496	FALSE	FALSE
XPW02	10/10/2023	Potassium	19.4	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
XPW02	10/10/2023	Sodium	74.9	FALSE	FALSE
XPW02	10/10/2023	Sulfate	239	FALSE	FALSE
XPW02	10/10/2023	H+	1.82E-10	FALSE	FALSE
XPW02	10/10/2023	Alkalinity	5.12	FALSE	FALSE
XPW03	3/9/2021	Arsenic	0.031	FALSE	FALSE
XPW03	3/9/2021	Barium	0.11	FALSE	FALSE
XPW03	3/9/2021	Boron	1.2	FALSE	FALSE
XPW03	3/9/2021	Calcium	47	FALSE	FALSE
XPW03	3/9/2021	Chloride	9.2	FALSE	FALSE
XPW03	3/9/2021	Fluoride	0.569	FALSE	FALSE
XPW03	3/9/2021	Iron	0.5	FALSE	FALSE
XPW03	3/9/2021	Lithium	0.024	FALSE	FALSE
XPW03	3/9/2021	Magnesium	0.44	FALSE	FALSE
XPW03	3/9/2021	Manganese	0.0057	FALSE	FALSE
XPW03	3/9/2021	Molybdenum	0.054	FALSE	FALSE
XPW03	3/9/2021	Potassium	15	FALSE	FALSE
XPW03	3/9/2021	Sodium	58	FALSE	FALSE
XPW03	3/9/2021	Sulfate	93	FALSE	FALSE
XPW03	3/9/2021	H+	1.58E-11	FALSE	FALSE
XPW03	3/9/2021	Alkalinity	5.75	FALSE	FALSE
XPW03	4/28/2021	Arsenic	0.035	FALSE	FALSE
XPW03	4/28/2021	Barium	0.37	FALSE	FALSE
XPW03	4/28/2021	Boron	1.2	FALSE	FALSE
XPW03	4/28/2021	Calcium	55	FALSE	FALSE
XPW03	4/28/2021	Chloride	11	FALSE	FALSE
XPW03	4/28/2021	Fluoride	0.598	FALSE	FALSE
XPW03	4/28/2021	Iron	3	FALSE	FALSE
XPW03	4/28/2021	Lithium	0.029	FALSE	FALSE
XPW03	4/28/2021	Magnesium	2.1	FALSE	FALSE
XPW03	4/28/2021	Manganese	0.028	FALSE	FALSE
XPW03	4/28/2021	Molybdenum	0.054	FALSE	FALSE
XPW03	4/28/2021	Potassium	17	FALSE	FALSE
XPW03	4/28/2021	Sodium	55	FALSE	FALSE
XPW03	4/28/2021	Sulfate	96	FALSE	FALSE
XPW03	4/28/2021	H+	5.01E-12	FALSE	FALSE
XPW03	4/28/2021	Alkalinity	6.56	FALSE	FALSE
XPW03	7/14/2021	Arsenic	0.032	FALSE	FALSE
XPW03	7/14/2021	Barium	0.44	FALSE	FALSE
XPW03	7/14/2021	Boron	1.3	FALSE	FALSE
XPW03	7/14/2021	Calcium	72	FALSE	FALSE
XPW03	7/14/2021	Chloride	11	FALSE	FALSE
XPW03	7/14/2021	Fluoride	0.372	FALSE	FALSE
XPW03	7/14/2021	Iron	3.6	FALSE	FALSE
XPW03	7/14/2021	Lithium	0.04	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
XPW03	7/14/2021	Magnesium	2.5	FALSE	FALSE
XPW03	7/14/2021	Manganese	0.03	FALSE	FALSE
XPW03	7/14/2021	Molybdenum	0.055	FALSE	FALSE
XPW03	7/14/2021	Potassium	18	FALSE	FALSE
XPW03	7/14/2021	Sodium	55	FALSE	FALSE
XPW03	7/14/2021	Sulfate	120	FALSE	FALSE
XPW03	7/14/2021	H+	6.31E-12	FALSE	FALSE
XPW03	7/14/2021	Alkalinity	5.52	FALSE	FALSE
XPW03	8/16/2022	Arsenic	0.0405	TRUE	NA
XPW03	8/16/2022	Barium	0.0781	TRUE	NA
XPW03	8/16/2022	Boron	1.4	FALSE	FALSE
XPW03	8/16/2022	Calcium	30	FALSE	FALSE
XPW03	8/16/2022	Chloride	11	FALSE	FALSE
XPW03	8/16/2022	Fluoride	1.17	FALSE	FALSE
XPW03	8/16/2022	Iron	0.5	TRUE	NA
XPW03	8/16/2022	Lithium	0.0308	TRUE	NA
XPW03	8/16/2022	Magnesium	0.53	FALSE	FALSE
XPW03	8/16/2022	Manganese	0.0061	TRUE	NA
XPW03	8/16/2022	Molybdenum	0.11	TRUE	NA
XPW03	8/16/2022	Potassium	14	FALSE	FALSE
XPW03	8/16/2022	Sodium	160	FALSE	FALSE
XPW03	8/16/2022	Sulfate	180	FALSE	FALSE
XPW03	8/16/2022	H+	6.31E-12	FALSE	FALSE
XPW03	8/16/2022	Alkalinity	8.84	FALSE	FALSE
XPW03	7/26/2023	Arsenic	0.05	FALSE	FALSE
XPW03	7/26/2023	Barium	0.0603	FALSE	FALSE
XPW03	7/26/2023	Boron	1.77	FALSE	FALSE
XPW03	7/26/2023	Calcium	22.8	FALSE	FALSE
XPW03	7/26/2023	Chloride	21	FALSE	FALSE
XPW03	7/26/2023	Fluoride	1.11	FALSE	FALSE
XPW03	7/26/2023	Iron	0.238	FALSE	FALSE
XPW03	7/26/2023	Lithium	0.121	FALSE	FALSE
XPW03	7/26/2023	Magnesium	0.134	FALSE	FALSE
XPW03	7/26/2023	Manganese	0.0023	FALSE	FALSE
XPW03	7/26/2023	Molybdenum	0.122	FALSE	FALSE
XPW03	7/26/2023	Potassium	22.5	FALSE	FALSE
XPW03	7/26/2023	Sodium	190	FALSE	FALSE
XPW03	7/26/2023	Sulfate	138	FALSE	FALSE
XPW03	7/26/2023	H+	3.16E-12	FALSE	FALSE
XPW03	7/26/2023	Alkalinity	9.42	FALSE	FALSE
XPW03	10/10/2023	Arsenic	0.0545	FALSE	FALSE
XPW03	10/10/2023	Barium	0.0618	FALSE	FALSE
XPW03	10/10/2023	Boron	2.06	FALSE	FALSE
XPW03	10/10/2023	Calcium	24.8	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
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Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
XPW03	10/10/2023	Chloride	21	FALSE	FALSE
XPW03	10/10/2023	Fluoride	1.01	FALSE	FALSE
XPW03	10/10/2023	Iron	0.5	TRUE	NA
XPW03	10/10/2023	Lithium	0.0324	FALSE	FALSE
XPW03	10/10/2023	Magnesium	0.103	FALSE	FALSE
XPW03	10/10/2023	Manganese	0.0057	TRUE	NA
XPW03	10/10/2023	Molybdenum	0.142	FALSE	FALSE
XPW03	10/10/2023	Potassium	23.2	FALSE	FALSE
XPW03	10/10/2023	Sodium	206	FALSE	FALSE
XPW03	10/10/2023	Sulfate	132	FALSE	FALSE
XPW03	10/10/2023	H+	1.58E-12	FALSE	FALSE
XPW03	10/10/2023	Alkalinity	8.55	FALSE	FALSE
XPW04	4/28/2021	Arsenic	0.0071	FALSE	FALSE
XPW04	4/28/2021	Barium	0.22	FALSE	FALSE
XPW04	4/28/2021	Boron	2.8	FALSE	FALSE
XPW04	4/28/2021	Calcium	120	FALSE	FALSE
XPW04	4/28/2021	Chloride	37	FALSE	FALSE
XPW04	4/28/2021	Fluoride	0.628	FALSE	FALSE
XPW04	4/28/2021	Iron	0.37	FALSE	FALSE
XPW04	4/28/2021	Lithium	0.02	FALSE	FALSE
XPW04	4/28/2021	Magnesium	0.7	FALSE	FALSE
XPW04	4/28/2021	Manganese	0.0033	FALSE	FALSE
XPW04	4/28/2021	Molybdenum	0.52	FALSE	FALSE
XPW04	4/28/2021	Potassium	62	FALSE	FALSE
XPW04	4/28/2021	Sodium	1800	FALSE	FALSE
XPW04	4/28/2021	Sulfate	3800	FALSE	FALSE
XPW04	4/28/2021	H+	3.16E-12	FALSE	FALSE
XPW04	4/28/2021	Alkalinity	8.03	FALSE	FALSE
XPW04	7/14/2021	Arsenic	0.0067	FALSE	FALSE
XPW04	7/14/2021	Barium	0.089	FALSE	FALSE
XPW04	7/14/2021	Boron	2.3	FALSE	FALSE
XPW04	7/14/2021	Calcium	60	FALSE	FALSE
XPW04	7/14/2021	Chloride	34	FALSE	FALSE
XPW04	7/14/2021	Fluoride	0.542	FALSE	FALSE
XPW04	7/14/2021	Iron	0.19	FALSE	FALSE
XPW04	7/14/2021	Lithium	0.141	FALSE	TRUE
XPW04	7/14/2021	Magnesium	0.83	FALSE	FALSE
XPW04	7/14/2021	Manganese	0.0027	FALSE	FALSE
XPW04	7/14/2021	Molybdenum	0.14	FALSE	FALSE
XPW04	7/14/2021	Potassium	34	FALSE	FALSE
XPW04	7/14/2021	Sodium	680	FALSE	FALSE
XPW04	7/14/2021	Sulfate	1600	FALSE	FALSE
XPW04	7/14/2021	H+	1E-10	FALSE	FALSE
XPW04	7/14/2021	Alkalinity	9.01	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
XPW04	2/23/2022	Arsenic	0.0405	TRUE	NA
XPW04	2/23/2022	Barium	0.114	TRUE	NA
XPW04	2/23/2022	Boron	2.2	FALSE	FALSE
XPW04	2/23/2022	Calcium	68	FALSE	FALSE
XPW04	2/23/2022	Chloride	30	FALSE	FALSE
XPW04	2/23/2022	Fluoride	0.683	FALSE	FALSE
XPW04	2/23/2022	Iron	0.26	TRUE	NA
XPW04	2/23/2022	Lithium	0.0308	TRUE	NA
XPW04	2/23/2022	Magnesium	1.7	FALSE	FALSE
XPW04	2/23/2022	Manganese	0.015	TRUE	NA
XPW04	2/23/2022	Molybdenum	0.142	TRUE	NA
XPW04	2/23/2022	Potassium	34	FALSE	FALSE
XPW04	2/23/2022	Sodium	700	FALSE	FALSE
XPW04	2/23/2022	Sulfate	1800	FALSE	FALSE
XPW04	2/23/2022	H+	3.09E-10	FALSE	FALSE
XPW04	2/23/2022	Alkalinity	8.55	FALSE	FALSE
XPW04	8/16/2022	Arsenic	0.0405	TRUE	NA
XPW04	8/16/2022	Barium	0.114	TRUE	NA
XPW04	8/16/2022	Boron	3.7	FALSE	FALSE
XPW04	8/16/2022	Calcium	120	FALSE	FALSE
XPW04	8/16/2022	Chloride	54	FALSE	FALSE
XPW04	8/16/2022	Fluoride	0.994	FALSE	FALSE
XPW04	8/16/2022	Iron	0.26	TRUE	NA
XPW04	8/16/2022	Lithium	0.0324	TRUE	NA
XPW04	8/16/2022	Magnesium	0.14	FALSE	FALSE
XPW04	8/16/2022	Manganese	0.0054	TRUE	NA
XPW04	8/16/2022	Molybdenum	0.59	TRUE	NA
XPW04	8/16/2022	Potassium	87	FALSE	FALSE
XPW04	8/16/2022	Sodium	4000	FALSE	FALSE
XPW04	8/16/2022	Sulfate	4000	FALSE	FALSE
XPW04	8/16/2022	H+	3.98E-12	FALSE	FALSE
XPW04	8/16/2022	Alkalinity	8.84	FALSE	FALSE
XPW04	7/24/2023	Arsenic	0.0699	FALSE	FALSE
XPW04	7/24/2023	Barium	0.0749	FALSE	FALSE
XPW04	7/24/2023	Boron	4.57	FALSE	FALSE
XPW04	7/24/2023	Calcium	76.3	FALSE	FALSE
XPW04	7/24/2023	Chloride	186	FALSE	FALSE
XPW04	7/24/2023	Fluoride	1.54	FALSE	FALSE
XPW04	7/24/2023	Iron	0.242	FALSE	FALSE
XPW04	7/24/2023	Lithium	0.0324	FALSE	FALSE
XPW04	7/24/2023	Magnesium	0.275	FALSE	FALSE
XPW04	7/24/2023	Manganese	0.003	FALSE	FALSE
XPW04	7/24/2023	Molybdenum	0.676	FALSE	FALSE
XPW04	7/24/2023	Potassium	88.6	FALSE	FALSE

Attachment 9. PCA Input Data
Geochemical Conceptual Site Model
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Well ID	Date	Parameter	Result (mg/L)	Imputed Value	Half RL Used
XPW04	7/24/2023	Sodium	4560	FALSE	FALSE
XPW04	7/24/2023	Sulfate	9420	FALSE	FALSE
XPW04	7/24/2023	H+	3.16E-13	FALSE	FALSE
XPW04	7/24/2023	Alkalinity	11.8	FALSE	FALSE
XPW04	10/10/2023	Arsenic	0.0405	FALSE	FALSE
XPW04	10/10/2023	Barium	0.114	FALSE	FALSE
XPW04	10/10/2023	Boron	3.07	FALSE	FALSE
XPW04	10/10/2023	Calcium	122	FALSE	FALSE
XPW04	10/10/2023	Chloride	148	FALSE	FALSE
XPW04	10/10/2023	Fluoride	0.87	FALSE	FALSE
XPW04	10/10/2023	Iron	0.37	TRUE	NA
XPW04	10/10/2023	Lithium	0.026	FALSE	FALSE
XPW04	10/10/2023	Magnesium	0.586	FALSE	FALSE
XPW04	10/10/2023	Manganese	0.0054	TRUE	NA
XPW04	10/10/2023	Molybdenum	0.629	FALSE	FALSE
XPW04	10/10/2023	Potassium	93.7	FALSE	FALSE
XPW04	10/10/2023	Sodium	4080	FALSE	FALSE
XPW04	10/10/2023	Sulfate	9130	FALSE	FALSE
XPW04	10/10/2023	H+	1E-12	FALSE	FALSE
XPW04	10/10/2023	Alkalinity	9.16	FALSE	FALSE

ATTACHMENT 10
LABORATORY TREATABILITY STUDY REPORT

Prepared for:

Golder Associates, Inc.
701 Emerson Road, Suite 250
Creve Coeur, Missouri, 63141

FINAL

Laboratory Treatability Study to Evaluate Arsenic, Boron, Lithium, and Sulfate Adsorption and Desorption in Geologic Materials and Groundwater

Vistra Newton, IL

Prepared by:

130 Stone Rd W
Guelph, Ontario N1G 3Z2

SiREM Ref: TL0478
27 July 2022

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LIST OF ABBREVIATIONS

%	percent
°C	degrees Celsius
µg/g	micrograms per gram
µg/L	micrograms per liter
µL	microliters
µm	micrometers
ALS	ALS Environmental
As	arsenic
B	boron
CEC	cation exchange capacity
CO_2	carbon dioxide
DI	deionized
DOC	dissolved organic carbon
EGC	eluent generator cartridge
EPA	Environmental Protection Agency
GM:GW	geologic material to groundwater
Golder	Golder Associates Inc.
H_2	hydrogen gas
HDPE	high-density polyethylene
IC	ion chromatograph
ICP-MS	inductively coupled plasma-mass spectrometry
Li	lithium
LOI	loss on ignition
meq/100g	milliequivalents per 100 grams
mg/L	milligrams per liter
min	minutes
mL	milliliters
mM	millimolar
mV	millivolts
N_2	nitrogen
O_2	oxygen
ORP	oxidation reduction potential
QL	quantitation limit
RPM	revolutions per minute
SGS	SGS Environmental
SO_4^{2-}	sulfate
SPLP	synthetic precipitation leaching procedure
TDS	total dissolved solids
TOC	total organic carbon
VFA	volatile fatty acid
XRD	X-ray diffraction

1. INTRODUCTION

Golder Associates, Inc. (Golder) retained SiREM to perform a laboratory treatability study to assess the adsorption and desorption behaviour of arsenic (As), boron (B), lithium (Li), and sulfate (SO_4^{2-}) in groundwater and geologic material from the Vistra Newton site in IL (the Site). The purpose of the study was to assess the sorption characteristics of As, B, Li, and SO_4^{2-} and generate site-specific sorption coefficients and further assess the stability of sorbed As, B, Li, and SO_4^{2-} under oxidizing, reducing, and alkaline conditions.

The geologic materials were collected by Golder personnel on 17-21 August 2021 and received by SiREM on 10 September 2021. The groundwater (APW-02, APW-04, APW-14, APW-05 and APW-05S) was collected by Golder personnel on 16 and 17 August 2021 and was received by SiREM on 23 August 2021. The groundwater samples were received outside of temperature at 19 degrees Celsius (°C). Therefore, the groundwater samples were re-collected on 31 August 2021 and received by SiREM on 2 September 2021 at 6 °C. The groundwater received on 2 September 2021 was the only groundwater used during the study. The materials received and chosen for the study are summarized in the Table below. The chain of custodies received with these samples are provided in Appendix A.

Test	Depth	Client ID (Sediment)	Client ID (Groundwater)
Adsorption	60.0'-67.1'	N-SB-05 (60.0'-67.1')	APW-04
	12.0'-18.0'	N-SB-04 (12.0'-18.0')	APW-14
Desorption	65.0'-71.5'	N-SB-02 (65.0'-71.5')	APW-05
	12.5'-20.0'	N-SB-02 (12.5'-20.0')	

The remainder of this report is divided into two sections. Section 2 presents the experimental materials and methods, and Section 3 presents the results.

2. MATERIALS AND METHODS

The following sections describe the materials and methods used for baseline sampling and homogenization (Section 2.1), adsorption test reactor construction and incubation (Section 2.2), desorption test reactor construction and incubation (Section 2.3), and study sampling and analysis (Section 2.4).

2.1 Baseline Sampling and Homogenization

2.1.1 Baseline Elemental and Mineralogy Sampling and Analysis

Site geologic material from all locations and depths were individually homogenized, and sub-sampled on 21 September 2021 for total metals and anions including As, B, Li, and SO_4^{2-}, total organic carbon (TOC), cation exchange capacity (CEC), X-ray diffraction (XRD), and loss on ignition (LOI) analyses, and on 1 March 2022 for synthetic precipitation leaching procedure (SPLP) for As, B, Li, and SO_4^{2-} (N-SB-XPW01 and N-SB-XPW04 only). Site groundwater was also sub-sampled on 21 September 2021 for analysis of dissolved metals and anions, dissolved organic carbon (DOC) and total dissolved solids (TDS).

Samples were collected in a temporary anaerobic glove bag filled with a 100 percent (%) nitrogen (N_2) headspace. After homogenization and sample collection the geologic material was removed from the anaerobic glove bag and stored at 4 ºC in N_2 purged polypropylene bags with minimized headspace until required for test set-up.

2.2 Adsorption Test Reactor Construction and Incubation

Adsorption test reactors were constructed in an anaerobic chamber (Coy Laboratory Products, Grass Lake, MI) filled with an atmosphere of approximately 80% N_2, 10% carbon dioxide (CO_2) and 10% hydrogen (H_2) (Linde Gases, Guelph, ON). H_2 in the anaerobic chamber functions to scavenge trace oxygen (O_2) via a palladium catalyst. Anaerobic conditions in the anaerobic chamber were verified using an indicator containing resazurin (Sigma, St. Louis, MO) in a mineral medium which turns pink in the presence of O_2. APW-04 groundwater and N-SB-05 (60.0'-67.1') geologic material was used to construct the first set of reactors. The second set of reactors were constructed using APW-14 groundwater with N-SB-04 (12.0'-18.0') geologic material. For both sets of reactors, geologic material was added on 14 February 2022 (Day -1) and the groundwater was spiked with As, B, Li, and SO_4^{2-} on 15 February 2022 (Day 0) and subsequently added to the reactors.

Reactors were constructed by filling sterile 125 milliliter (mL) (nominal volume), and 250 mL (nominal volume) Nalgene® bottles (Systems Plus, New Hamburg, ON) with a specified mass of geologic material and groundwater. The geologic material to groundwater (GM:GW) ratios tested in each set of reactors were 2:1, 1:1, 1:5, 1:10, and 1:20, based on the wet weight of the geologic material. Groundwater only controls were also constructed for each set.

In consultation with Golder, it was determined that the starting aqueous concentrations of As, B, Li, and SO_4^{2-} in the groundwater should be 200 micrograms per liter (µg/L), 10 milligrams per liter (mg/L), 300 µg/L, and 774 mg/L, respectively. The concentrations of all species were not at the target concentrations, therefore immediately before construction of the reactors, the entire volume of groundwater needed to construct each set of reactors was spiked with respective solutions prepared from the appropriate salt as detailed in the table below to target these concentrations in the aqueous phase of the reactors at the start of the adsorption test. Spiking occurred on 15 February 2022 (Day 0).

Compound	Target (mg/L)	Salt Used to Prepare Spiking Solution	Chemical Formula
Arsenic	0.2	Metaarsenite	$NaAsO_2$
Boron	10	Boric Acid	H_3BO_3
Lithium	0.3	Lithium Chloride	LiCl
Sulfate	774	Sodium Sulfate	Na_2SO_4

After construction, the reactors were incubated in the anaerobic chamber for a period of 7 days. During incubation the reactors were inverted once a day to increase the contact between the geologic material and groundwater. During quiescent incubation all reactors were covered to minimize photodegradation and incubated at 22 °C (room temperature). Table 1 details the

reactor construction, incubation, amendments, and sampling parameters of the adsorption test reactors.

2.3 Desorption Test Reactor Construction and Incubation

Desorption test reactors were constructed in an anaerobic chamber filled with an atmosphere of approximately 80% N_2, 10% CO_2 and 10% H_2 on 21 March 2022 (Day 0). The APW-05 groundwater and N-SB-02 (65.0'-71.5') geologic material was used to construct the first set of reactors. The second set of reactors was constructed using APW-05 groundwater with N-SB-02 (12.5'-20.0') geologic material.

Reactors were constructed by filling sterile 125 mL (nominal volume) Nalgene® bottles with a specified mass of geologic material and groundwater. Based on the adsorption test results, the GM:GW ratio (based on the wet weight of geologic material) was selected to be 1:10 in both sets of reactors.

After construction, all reactors were incubated for a period of 7 days. The control reactors for each set were tested under ambient conditions in the anaerobic glove chamber with no amendments throughout the incubation period. Treatment reactors for each set were tested under highly reducing and highly oxidizing conditions. These conditions were established in the reactors through daily amendments of either H_2 or O_2, respectively. The H_2 sparged reactors were kept in the anaerobic glove chamber throughout the incubation period, whereas the O_2 sparged reactors were transferred out of the glove chamber and incubated on the lab bench under aerobic conditions.

During the incubation period, reactors were inverted once a day to increase the contact between the geologic material and groundwater. During quiescent incubation all reactors were covered to minimize photodegradation and incubated at 22 °C (room temperature). Table 2 details the reactor construction, incubation, amendments, and sampling parameters of the desorption test reactors.

2.4 Sampling and Analysis

2.4.1 Baseline and Reactor Sampling

Site geologic materials were sub-sampled for baseline analysis of total metals, CEC, TOC, XRD, and LOI on 21 September 2021. Site materials N-SB-XPW01 (10.0'-12.7') and N-SB-XPW04 (10.0'-15.0') were further sub-sampled for baseline analysis of SPLP on 1 March 2022. Site groundwater was sub-sampled for baseline analysis of dissolved metals including As, B, Li and SO_4^{2-}, DOC, and TDS on 21 September 2021.

The adsorption and desorption control reactors were sampled on Day 0 and Day 7 of their incubation periods. Treatment test reactors from both tests were sampled on Day 7. Samples from the adsorption and desorption tests were submitted for analysis of pH, oxidation reduction potential (ORP), anions (including total volatile fatty acids [VFAs], chloride, nitrite-N, nitrate-N, SO_4^{2-}, and phosphate) and dissolved metals. The controls from the desorption test were additionally submitted for TDS on Day 0.

Site geologic material sub-samples were collected in 250 mL wide-mouth amber glass jars and shipped on ice to ALS Environmental in Waterloo, ON (ALS) or SGS Environmental in Lakefield, ON (SGS). Site groundwater and test reactor samples submitted for pH, ORP, TDS and anions analysis were collected using 30 mL plastic syringes (Fisher Scientific, Whitby, ON) and analysed by SiREM. Samples submitted for dissolved metals were collected as described in Section 2.4.6 and shipped on ice to ALS or SGS for analysis.

2.4.2 Analysis of pH

The pH measurements were performed using an Oakton pH spear with a combination pH electrode (Oakton, Vernon Hills, IL). A 0.5 mL sample was collected (as described in section 2.4.1), placed into a 1.5 mL micro-centrifuge tube, and measured on the lab bench. The pH spear was calibrated at each sampling event according to the manufacturer's instructions using pH 4.0, 7.0 and 10 standards.

2.4.3 Analysis of ORP

The ORP measurements were performed using a YSI Multilab IDS Meter with YSI 4210 ORP glass electrode (Mandel Scientific, Guelph, ON). A 1.2 mL sample was collected (as described in section 2.4.1) and placed in a 5 mL Thermo-Fisher vial. The vial was removed from the glove box and the ORP was measured on the lab bench. The ORP probe was tested at each sampling event according to the manufacturer's instructions using Zobell's solution.

2.4.4 Analysis of TDS

The TDS measurements were performed using a combination conductivity and TDS meter (Hach Model 44600, CO). A 1.5 mL sample was collected (as described in section 2.4.1) and placed in a 5 mL Thermo-Fisher vial. The vial was removed from the glove box and the TDS was measured on the lab bench.

2.4.5 Analysis of Anions and Total VFAs

Anion and total VFA analysis was performed on a Thermo-Fisher ICS-2100 ion chromatograph (IC) equipped with a Thermo-Fisher AS-DV autosampler and an AS18 column. An isocratic separation was performed using 33 millimolar (mM) reagent grade sodium hydroxide eluent generator cartridge (EGC) (Thermo Scientific, Burlington, ON) eluent for 13 minutes (min). One standard was analysed with each set of samples tested to verify the seven-point calibration using external standards of known concentrations. External standards were prepared gravimetrically using chemicals of the highest purity available (Sigma St Louis, MO or Bioshop, Burlington, ON). Data was integrated using Chromeleon 7® Chromatography software (Thermo-Fisher, Burlington, ON). The quantitation limits (QLs) were as follows: 0.07 mg/L total VFAs, 0.07 mg/L chloride, 0.09 mg/L nitrite, 0.09 mg/L nitrate, 0.07 mg/L SO_4^{2-}, 0.07 mg/L phosphate and 0.08 mg/L bromide. The total VFAs value was initially calibrated as lactate, but includes lactate, formate, acetate, propionate, pyruvate, and butyrate.

A 0.5 mL sample was withdrawn from the reactors (as described in section 2.4.1), after which the sample was placed in a 1.5 mL micro-centrifuge tube. Samples were centrifuged for 5 min at

13,000 revolutions per minute (RPM) to remove solids. The supernatant was sub-sampled, diluted 50-fold in deionized (DI) water and placed in a Thermo-Fisher auto sampler vial with a cap that filters the sample during automated injection onto the IC through a 25 microliter (µL) sample loop.

2.4.6 Analysis of Groundwater at ALS and SGS

Dissolved metals and DOC analyses were completed at both ALS and SGS.

Dissolved metals analysis was completed using an inductively coupled plasma-mass spectrometer (ICP-MS). DOC analysis was completed using a modified version of ASTM 1915-13, method E. Reactor samples were collected by decanting the sample into a 30 mL plastic syringe (Fisher Scientific, Whitby, ON) and filtering the sample with a 0.45 micrometer (µm) syringe filter into a 30 mL high-density polyethylene (HDPE) bottle with 150 µL of nitric acid preservative. The samples were then packaged and shipped to ALS or SGS for analysis.

Baseline groundwater samples were submitted to SGS in Lakefield, ON for analysis. However, due to delays in reporting times that SGS could not improve, the analytical laboratory used to complete the dissolved metals analysis for the adsorption and desorption tests was changed to ALS in Waterloo, ON, which could meet the reporting timelines required for the study. Analyses at both labs were completed using similar ICP-MS methodologies.

All groundwater laboratory reports are presented in Appendix B.

2.4.7 Analysis of Geologic Material at ALS and SGS

Total metals and TOC analyses were completed using an acid digestion based on Environmental Protection Agency (EPA) method 3050B, followed by ICP-MS analysis of the extract based on Standard Method 5310C. The total metals and TOC reports from SGS are presented in Appendix C.

CEC analysis was completed using a custom direct method developed by SGS. The CEC report from SGS is presented in Appendix D.

XRD analysis was completed using a custom X-ray crystallography method developed by SGS. LOI analysis was completed using a temperature-controlled furnace along with a crucible to determine the mass prior and post ignition. The XRD and LOI report from SGS is presented in Appendix E.

SPLP analysis was completed using an extract produced by the synthetic precipitation leaching procedure as per EPA 1312 is analysed by Collision/Reaction Cell ICPMS. The extract is filtered through a 0.6-to-0.8-micron glass fibre filter. The SPLP report from ALS is presented in Appendix F.

3. RESULTS

Tables 3, 4, 5, 6 and 7 present a summary of baseline groundwater dissolved metals and DOC results, a summary of baseline geologic material total metals and TOC results, a summary of baseline geologic material CEC results, a summary of baseline geologic material XRD and LOI results, and a summary of baseline geologic material SPLP results.

Tables 8, 9, and 10 present the dissolved metals, anions, and pH and ORP results from the Adsorption Tests.

Table 11 presents the calculated site-specific sorption coefficients for As, B, Li, and SO_4^{2-}. Three types of sorption coefficient were calculated for each analyte in each material combination based on the results from the adsorption tests: a linear coefficient, a Langmuir coefficient, and a Freundlich coefficient. The calculations used to prepare the sorption coefficients are presented in Appendix G.

Tables 12, 13, and 14 present the dissolved metals, anions, and pH, ORP, and TDS results from the Desorption Tests.

Dissolved metals, DOC, TDS, and anion results are reported in units of mg/L. Total metals results are reported in units of micrograms per gram (µg/g). CEC results are presented as milliequivalents per 100 grams of soil (meq/100g). Total SO_4^{2-}, TOC, XRD, and LOI results are presented as a percentage of the total composition of the material. SPLP results are reported in units of µg/L. ORP results are reported in units of millivolts (mV).

TABLES

TABLE 1: SUMMARY OF ADSORPTION TEST REACTOR CONTROLS, TREATMENTS, AND AMENDMENTS

Vistra Newton, IL Site

Groundwater Sample ID	Geologic Material Sample ID	Treatment	Description	Number of Replicates	Incubation Period and Sampling Frequency	Microcosm Content						Number of Analyses		
						Groundwater (L)	Saturated Geologic Material (kg)	Arsenic	Boron	Lithium	Sulfate	Dissolved Metals	Anions	pH/ORP
APW-04	--	Groundwater Only Control	Groundwater Only	2 (2)*	7 Days (Sampled on Day 0 and 7)	0.100	0.000	Amended with 346.80 µL of a 2 g/L As(III) solution to target a 0.2 mg/L As concentration on Day 0.	Amended with 11.40 mL of a 10 g/L H_3BO_3 solution to target a 10 mg/L B concentration on Day 0.	Amended with 3.40 mL of a 1 g/L LiCl solution to target a 0.3 mg/L Li concentration on Day 0.	Amended with 12.20 mL of a 100 g/L Na_2SO_4 solution to target a 774 mg/L SO_4^{2-} concentration on Day 0.	2	2	2
	N-SB-05 (60.0'-67.1')	2:1 Soil:Water Ratio	Geologic Material and Water in a 2:1 ratio, shaken once daily during incubation	2	7 Days (Sampled on Day 7)	0.100	0.200	Amended with 346.80 µL of a 2 g/L As(III) solution to target a 0.2 mg/L As concentration on Day 0.	Amended with 11.40 mL of a 10 g/L H_3BO_3 solution to target a 10 mg/L B concentration on Day 0.	Amended with 3.40 mL of a 1 g/L LiCl solution to target a 0.3 mg/L Li concentration on Day 0.	Amended with 12.20 mL of a 100 g/L Na_2SO_4 solution to target a 774 mg/L SO_4^{2-} concentration on Day 0.	2	2	2
		1:1 Soil:Water Ratio	Geologic Material and Water in a 1:1 ratio, shaken once daily during incubation	2		0.100	0.100	Amended with 346.80 µL of a 2 g/L As(III) solution to target a 0.2 mg/L As concentration on Day 0.	Amended with 11.40 mL of a 10 g/L H_3BO_3 solution to target a 10 mg/L B concentration on Day 0.	Amended with 3.40 mL of a 1 g/L LiCl solution to target a 0.3 mg/L Li concentration on Day 0.	Amended with 12.20 mL of a 100 g/L Na_2SO_4 solution to target a 774 mg/L SO_4^{2-} concentration on Day 0.	2	2	2
		1:5 Soil:Water Ratio	Geologic Material and Water in a 1:5 ratio, shaken once daily during incubation	2		0.100	0.020	Amended with 346.80 µL of a 2 g/L As(III) solution to target a 0.2 mg/L As concentration on Day 0.	Amended with 11.40 mL of a 10 g/L H_3BO_3 solution to target a 10 mg/L B concentration on Day 0.	Amended with 3.40 mL of a 1 g/L LiCl solution to target a 0.3 mg/L Li concentration on Day 0.	Amended with 12.20 mL of a 100 g/L Na_2SO_4 solution to target a 774 mg/L SO_4^{2-} concentration on Day 0.	2	2	2
		1:10 Soil:Water Ratio	Geologic Material and Water in a 1:10 ratio, shaken once daily during incubation	2		0.100	0.010	Amended with 346.80 µL of a 2 g/L As(III) solution to target a 0.2 mg/L As concentration on Day 0.	Amended with 11.40 mL of a 10 g/L H_3BO_3 solution to target a 10 mg/L B concentration on Day 0.	Amended with 3.40 mL of a 1 g/L LiCl solution to target a 0.3 mg/L Li concentration on Day 0.	Amended with 12.20 mL of a 100 g/L Na_2SO_4 solution to target a 774 mg/L SO_4^{2-} concentration on Day 0.	2	2	2
		1:20 Soil:Water Ratio	Geologic Material and Water in a 1:20 ratio, shaken once daily during incubation	2		0.100	0.004	Amended with 346.80 µL of a 2 g/L As(III) solution to target a 0.2 mg/L As concentration on Day 0.	Amended with 11.40 mL of a 10 g/L H_3BO_3 solution to target a 10 mg/L B concentration on Day 0.	Amended with 3.40 mL of a 1 g/L LiCl solution to target a 0.3 mg/L Li concentration on Day 0.	Amended with 12.20 mL of a 100 g/L Na_2SO_4 solution to target a 774 mg/L SO_4^{2-} concentration on Day 0.	2	2	2
APW-14	--	Groundwater Only Control	Groundwater Only	2 (2)*	7 Days (Sampled on Day 0 and 7)	0.100	0.000	Amended with 344.72 µL of a 2 g/L As(III) solution to target a 0.2 mg/L As concentration on Day 0.	Amended with 11.32 mL of a 10 g/L H_3BO_3 solution to target a 10 mg/L B concentration on Day 0.	Amended with 3.39 mL of a 1 g/L LiCl solution to target a 0.3 mg/L Li concentration on Day 0.	Amended with 24.41 mL of a 100 g/L Na_2SO_4 solution to target a 774 mg/L SO_4^{2-} concentration on Day 0.	2	2	2
	N-SB-04 (12.0'-18.0')	2:1 Soil:Water Ratio	Geologic Material and Water in a 2:1 ratio, shaken once daily during incubation	2	7 Days (Sampled on Day 7)	0.100	0.200	Amended with 344.72 µL of a 2 g/L As(III) solution to target a 0.2 mg/L As concentration on Day 0.	Amended with 11.32 mL of a 10 g/L H_3BO_3 solution to target a 10 mg/L B concentration on Day 0.	Amended with 3.39 mL of a 1 g/L LiCl solution to target a 0.3 mg/L Li concentration on Day 0.	Amended with 12.20 mL of a 100 g/L Na_2SO_4 solution to target a 774 mg/L SO_4^{2-} concentration on Day 0.	2	2	2
		1:1 Soil:Water Ratio	Geologic Material and Water in a 1:1 ratio, shaken once daily during incubation	2		0.100	0.100	Amended with 344.72 µL of a 2 g/L As(III) solution to target a 0.2 mg/L As concentration on Day 0.	Amended with 11.32 mL of a 10 g/L H_3BO_3 solution to target a 10 mg/L B concentration on Day 0.	Amended with 3.39 mL of a 1 g/L LiCl solution to target a 0.3 mg/L Li concentration on Day 0.	Amended with 12.20 mL of a 100 g/L Na_2SO_4 solution to target a 774 mg/L SO_4^{2-} concentration on Day 0.	2	2	2
		1:5 Soil:Water Ratio	Geologic Material and Water in a 1:5 ratio, shaken once daily during incubation	2		0.100	0.020	Amended with 344.72 µL of a 2 g/L As(III) solution to target a 0.2 mg/L As concentration on Day 0.	Amended with 11.32 mL of a 10 g/L H_3BO_3 solution to target a 10 mg/L B concentration on Day 0.	Amended with 3.39 mL of a 1 g/L LiCl solution to target a 0.3 mg/L Li concentration on Day 0.	Amended with 12.20 mL of a 100 g/L Na_2SO_4 solution to target a 774 mg/L SO_4^{2-} concentration on Day 0.	2	2	2
		1:10 Soil:Water Ratio	Geologic Material and Water in a 1:10 ratio, shaken once daily during incubation	2		0.100	0.010	Amended with 344.72 µL of a 2 g/L As(III) solution to target a 0.2 mg/L As concentration on Day 0.	Amended with 11.32 mL of a 10 g/L H_3BO_3 solution to target a 10 mg/L B concentration on Day 0.	Amended with 3.39 mL of a 1 g/L LiCl solution to target a 0.3 mg/L Li concentration on Day 0.	Amended with 12.20 mL of a 100 g/L Na_2SO_4 solution to target a 774 mg/L SO_4^{2-} concentration on Day 0.	2	2	2
		1:20 Soil:Water Ratio	Geologic Material and Water in a 1:20 ratio, shaken once daily during incubation	2		0.100	0.004	Amended with 344.72 µL of a 2 g/L As(III) solution to target a 0.2 mg/L As concentration on Day 0.	Amended with 11.32 mL of a 10 g/L H_3BO_3 solution to target a 10 mg/L B concentration on Day 0.	Amended with 3.39 mL of a 1 g/L LiCl solution to target a 0.3 mg/L Li concentration on Day 0.	Amended with 12.20 mL of a 100 g/L Na_2SO_4 solution to target a 774 mg/L SO_4^{2-} concentration on Day 0.	2	2	2

*Numbers in brackets represent additional control reactors required for analytical sample volumes.

Notes:

µL - microliter
As - arsenic
B- boron
Cl - chloride
g/L - grams per liter
H - hydrogen
ID - identification
kg - kilogram
L - liter
Li - lithium
mg/L - milligrams per liter
Na - sodium
O - oxygen
ORP - oxidation-reduction potential
$SO4^{2-}$ - sulfate

TABLE 2: SUMMARY OF DESORPTION TEST REACTOR CONTROLS, TREATMENTS, AND AMENDMENTS
Vistra Newton, IL Site

Groundwater Sample ID	Geologic Material Sample ID	Treatment	Description	Number of Replicates	Incubation Period and Sampling Frequency	Microcosm Contents		Amendments		Number of Analyses		
						Groundwater (L)	Saturated Geologic Material (kg)	Oxygen Gas	Hydrogen Gas	Dissolved Metals	Anions	pH/ORP
APW-05	N-SB-02 (65.0'-71.5')	Ambiant Control	Incubated under anaerobic conditions and shaken once daily during incubation	2 (2)*	7 Days (Sampled on Day 0 and 7)	0.1	0.02	--	--	2	2	2
		Oxidizing Conditions	Daily oxygen gas addition and incubated under aerobic conditions and shaken once daily during incubation	2	7 Days (Sampled on Day 7)	0.1	0.02	Amended with 5 mL of pure oxygen gas every day.	--	2	2	2
		Reducing Conditions	Daily hydrogen gas addition and incubated under anaerobic conditions and shaken once daily during incubation	2		0.1	0.02	--	Amended with 5 mL of pure hydrogen gas every day.	2	2	2
	N-SB-02 (12.5'-20.0')	Ambiant Control	Incubated under anaerobic conditions and shaken once daily during incubation	2 (2)*	7 Days (Sampled on Day 0 and 7)	0.1	0.02	--	--	2	2	2
		Oxidizing Conditions	Daily oxygen gas addition and incubated under aerobic conditions and shaken once daily during incubation	2	7 Days (Sampled on Day 7)	0.1	0.02	Amended with 5 mL of pure oxygen gas every day.	--	2	2	2
		Reducing Conditions	Daily hydrogen gas addition and incubated under anaerobic conditions and shaken once daily during incubation	2		0.1	0.02	--	Amended with 5 mL of pure hydrogen gas every day.	2	2	2

*Numbers in brackets represent additional control reactors required for analytical sample volumes.

Notes:

ID - identification
kg - kilogram
L - liter
mL - milliliters
ORP - oxidation-reduction potential

TABLE 3: SUMMARY OF BASELINE GROUNDWATER TOTAL DISSOLVED METALS, DOC and TDS RESULTS

Vistra Newton, IL Site

Groundwater Sample ID	Date	Dissovled Arsenic	Dissolved Boron	Dissolved Lithium	Dissolved Sulfate	DOC	TDS	Comments
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
APW-05	21-Sep-21	0.0144	0.12	0.011	771	4.0	454	Field samples sub-sampled under anaerobic conditions.
APW-05S	21-Sep-21	0.0008	0.043	0.034	2,335	100	1,839	Field samples sub-sampled under anaerobic conditions.
APW-02	21-Sep-21	<0.0002	0.14	0.11	1,690	108	2,840	Field samples sub-sampled under anaerobic conditions.
APW-14	21-Sep-21	0.0012	0.11	0.023	<0.07	57	759	Field samples sub-sampled under anaerobic conditions.
APW-04	21-Sep-21	<0.0002	0.038	0.022	387	67	1,053	Field samples sub-sampled under anaerobic conditions.

Notes:

< - compound not detected, the associated value is the detection limit

DOC - dissolved organic carbon

ID - identification

mg/L - milligrams per litre

TDS - total dissolved soilds

TABLE 4: SUMMARY OF BASELINE GEOLOGIC MATERIAL TOTAL METALS AND TOC RESULTS
Vistra Newton, IL Site

Geologic Material Sample ID	Date	Total Arsenic	Total Boron	Total Lithium	Total Sulfate	TOC	Comments
		µg/g	g/t	µg/g	µg/g	%	
N-SB-05 (18.0'-20.0')	21-Sep-21	5.0	< 40	10	< 0.1	0.18	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-05 (60.0'-67.1')	21-Sep-21	3.3	< 40	8.0	< 0.1	0.091	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-18 (77.5'-80.0')	21-Sep-21	14	< 40	9.3	< 0.1	0.31	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-02 (12.5'-20.0')	21-Sep-21	8.4	< 40	29	< 0.1	0.24	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-02 (65.0'-71.5')	21-Sep-21	5.1	< 40	8.5	< 0.1	0.45	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-14 (44.2'-52.0')	22-Sep-21	6.9	< 40	25	< 0.1	0.45	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-04 (12.0'-18.0')	22-Sep-21	13	< 40	32	< 0.1	< 0.025	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-04 (38.7'-45.4')	22-Sep-21	11	< 40	15	< 0.1	0.25	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-XPW04 (10.0'-15.0')	22-Sep-21	17	< 40	37	1.6	0.96	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-XPW01 (10.0'-12.7')	22-Sep-21	8.1	< 40	17	0.60	0.69	Field samples homogenized and sub-sampled under anaerobic conditions.

Notes:

% - percent
< - compound not detected, the associated value is the detection limit
µg/g - micrograms per gram
g/t - grams per tonne
ID - identification
TOC - total organic carbon

TABLE 5: SUMMARY OF BASELINE GEOLOGIC MATERIAL CEC RESULTS

Vistra Newton, IL Site

Geologic Material Sample ID	Date	CEC	Comments
		meq/100g	
N-SB-05 (18.0'-20.0')	21-Sep-21	9.5	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-05 (60.0'-67.1')	21-Sep-21	4.4	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-18 (77.5'-80.0')	21-Sep-21	2.3	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-02 (12.5'-20.0')	21-Sep-21	13	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-02 (65.0'-71.5')	21-Sep-21	1.6	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-14 (44.2'-52.0')	22-Sep-21	12	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-04 (12.0'-18.0')	22-Sep-21	23	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-04 (38.7'-45.4')	22-Sep-21	5.7	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-XPW04 (10.0'-15.0')	22-Sep-21	21	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-XPW01 (10.0'-12.7')	22-Sep-21	22	Field samples homogenized and sub-sampled under anaerobic conditions.

Notes:

CEC - cation exchange capacity

ID - identification

meq/100g - millequivalents per 100 grams of soil

TABLE 6: SUMMARY OF BASELINE GEOLOGIC MATERIAL XRD AND LOI RESULTS

Vistra Newton, IL Site

Geologic MaterialSample ID		N-SB-05 (18.0'-20.0')	N-SB-05 (60.0'-67.0')	N-SB-18 (77.5'-80.0')	N-SB-02 (12.5'-20.0')	N-SB-02 (65.0'-71.5')	N-SB-14 (44.2'-52.0')	N-SB-04 (12.0'-18.0')	N-SB-04 (38.7'-45.4')	N-SB-XPW04 (10.0'-15.0')	N-SB-XPW01 (10.0'-12.7')
Date		**21-Sep-21**	**21-Sep-21**	**21-Sep-21**	**21-Sep-21**	**21-Sep-21**	**22-Sep-21**	**22-Sep-21**	**22-Sep-21**	**22-Sep-21**	**22-Sep-21**
Mineral	**Mineral Composition**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Quartz	SiO_2	46.0	41.3	32.7	48.9	47.6	48.0	47.3	51.7	22.6	68.7
Albite	$NaAlSi_3O_8$	8.2	8.8	4.1	8.4	5.2	13.6	9.1	12.7	14.5	10.0
Calcite	$CaCO_3$	20.7	12.9	13.3	3.6	4.9	9.3	11.1	9.7	13.2	0.1
Dolomite	$CaMg(CO_3)_2$	9.5	18.5	27.3	12.7	26.1	6.8	5.0	6.0	-	0.1
Ankerite	$CaFe(CO_3)_2$	3.3	2.3	8.3	2.2	2.6	2.6	4.1	4.4	-	0.0
Microcline	$KAlSi_3O_8$	4.5	4.5	4.2	7.6	5.1	6.2	5.4	4.2	-	8.8
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$	5.0	1.6	1.2	8.7	1.0	5.5	10.5	3.1	-	8.5
Diopside	$CaMgSi_2O_6$	0.9	2.9	2.0	1.7	1.5	2.5	1.0	1.4	15.2	1.4
Biotite	$K(Mg,Fe)_3(AlSi_3O_{10})(OH)_2$	1.8	1.8	0.8	3.5	1.5	1.8	2.4	2.1	-	2.5
Actinolite	$Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$	-	2.9	2.1	-	-	-	-	2.3	-	-
Chlorite	$(Fe,(Mg,Mn)_5,Al)(Si_3Al)O_{10}(OH)_8$	-	2.6	1.9	2.8	2.7	3.8	4.2	2.3	-	-
Fluorapatite	$Ca_5(PO_4)_3F$	-	-	2.0	-	1.8	-	-	-	-	-
Perovskite	$CaTiO_3$	-	-	-	-	-	-	-	-	8.7	-
Periclase	MgO	-	-	-	-	-	-	-	-	1.6	-
Hematite	Fe_2O_3	-	-	-	-	-	-	-	-	3.4	-
Magnetite	Fe_3O_4	-	-	-	-	-	-	-	-	0.1	-
Gehlenite	$Ca_2(Mg_{0.25}Al_{0.75})(Si_{1.25}Al_{0.75}O_7)$	-	-	-	-	-	-	-	-	13.9	-
Mullite	~Al6Si3O15	-	-	-	-	-	-	-	-	3.7	-
Ganophyllite	$K_{2.16}Mn_{16}Si_{26.9}O_{67.8}(OH)_8$	-	-	-	-	-	-	-	-	3.1	-
LOI	--	9.4	14	20	12	18	13	13	12	LNR	6.5

Notes:

-- - not applicable
% - percent
Al - aluminum
C - carbon
Ca - calcium
Fe - iron
H - hydrogen
K - potassium
LNR - indicates insufficient sample to perform the analysis
LOI - loss on ignition
Mg - magnesium
Mn - manganese
Na - sodium
O - oxygen
Si - silicon
XRD - X-ray diffraction

TABLE 7: SUMMARY OF BASELINE GEOLOGIC MATERIAL SPLP RESULTS
Vistra Newton, IL Site

Geologic Material Sample ID	Date	Total Arsenic	Total Boron	Comments
		µg/L	µg/L	
N-SB-XPW01 (10.0'-12.7')	1-Mar-22	34.9	810	Field samples homogenized and sub-sampled under anaerobic conditions.
N-SB-XPW04 (10.0'-15.0')	1-Mar-22	<5.0	620	Field samples homogenized and sub-sampled under anaerobic conditions.

Notes:

< - compound not detected, the associated value is the detection limit
µg/L - micrograms per liter
ID - identification
SPLP - synthetic precipitation leaching procedure

TABLE 8: SUMMARY OF ADSORPTION TEST TOTAL DISSOLVED METALS RESULTS

Vistra Newton, IL Site

Groundwater Sample ID	Geologic Material Sample ID	Treatment	Date	Day	Replicate	Dissovled Arsenic	Dissolved Boron	Dissolved Lithium	Dissolved Sulfate	Dissolved Sulfur	Comments
						mg/L	mg/L	mg/L	mg/L	mg/L	
APW-04	--	Groundwater Only Control	15-Feb-22	0							Groundwater spiked with metaarsenite, boric acid, lithium chloride and sodium sulfate solutions to target concentrations of 0.2, 10, 0.3 and 774 mg/L respectively.
					APW-04-1a	0.19	9.2	0.28	1,097	455	
					APW-04-2a	0.19	9.5	0.29	1,077	458	
					Average Concentration (mg/L)	**0.19**	**9.3**	**0.28**	**1,087**	**457**	
			22-Feb-22	7	APW-04-1	0.20	9.2	0.26	721	433	
					APW-04-2	0.012	9.4	0.25	407	431	
					Average Concentration (mg/L)	**0.10**	**9.3**	**0.26**	**564**	**432**	
	N-SB-05 (60.0'-67.1')	2:1 Soil:Water Ratio	15-Feb-22	0							Groundwater spiked with metaarsenite, boric acid, lithium chloride and sodium sulfate solutions to target concentrations of 0.2, 10, 0.3 and 774 mg/L respectively.
			22-Feb-22	7	N-SB-05-(60.0-67.1) :APW-04 2:1-1	<0.010	5.9	<0.10	440	343	
					N-SB-05-(60.0-67.1) :APW-04 2:1-2	<0.010	5.8	<0.10	463	345	
					Average Concentration (mg/L)	**ND**	**5.9**	**ND**	**451**	**344**	
		1:1 Soil:Water Ratio	15-Feb-22	0							Groundwater spiked with metaarsenite, boric acid, lithium chloride and sodium sulfate solutions to target concentrations of 0.2, 10, 0.3 and 774 mg/L respectively.
			22-Feb-22	7	N-SB-05-(60.0-67.1) :APW-04 1:1-1	<0.010	7.2	0.13	807	414	
					N-SB-05-(60.0-67.1) :APW-04 1:1-2	<0.010	7.4	0.14	740	401	
					Average Concentration (mg/L)	**ND**	**7.3**	**0.14**	**773**	**408**	
		1:5 Soil:Water Ratio	15-Feb-22	0							Groundwater spiked with metaarsenite, boric acid, lithium chloride and sodium sulfate solutions to target concentrations of 0.2, 10, 0.3 and 774 mg/L respectively.
			22-Feb-22	7	N-SB-05-(60.0-67.1) :APW-04 1:5-1	<0.010	8.6	0.17	813	433	
					N-SB-05-(60.0-67.1) :APW-04 1:5-2	0.011	9.6	0.24	788	449	
					Average Concentration (mg/L)	**0.0055**	**9.1**	**0.21**	**800**	**441**	
		1:10 Soil:Water Ratio	15-Feb-22	0							Groundwater spiked with metaarsenite, boric acid, lithium chloride and sodium sulfate solutions to target concentrations of 0.2, 10, 0.3 and 774 mg/L respectively.
			22-Feb-22	7	N-SB-05-(60.0-67.1) :APW-04 1:10-1	0.017	10	0.26	889	466	
					N-SB-05-(60.0-67.1) :APW-04 1:10-2	0.019	9.6	0.25	996	446	
					Average Concentration (mg/L)	**0.018**	**10**	**0.26**	**943**	**456**	
		1:20 Soil:Water Ratio	15-Feb-22	0							Groundwater spiked with metaarsenite, boric acid, lithium chloride and sodium sulfate solutions to target concentrations of 0.2, 10, 0.3 and 774 mg/L respectively.
			22-Feb-22	7	N-SB-05-(60.0-67.1) :APW-04 1:20-1	0.041	9.2	0.24	776	450	
					N-SB-05-(60.0-67.1) :APW-04 1:20-2	0.034	8.9	0.23	1,212	446	
					Average Concentration (mg/L)	**0.038**	**9.1**	**0.24**	**994**	**448**	
APW-14	--	Groundwater Only Control	15-Feb-22	0							Groundwater spiked with metaarsenite, boric acid, lithium chloride and sodium sulfate solutions to target concentrations of 0.2, 10, 0.3 and 774 mg/L respectively.
					APW-14-1a	0.20	9.5	0.28	1,010	407	
					APW-14-2a	0.20	9.6	0.28	1,004	412	
					Average Concentration (mg/L)	**0.20**	**9.5**	**0.28**	**1,007**	**410**	
			22-Feb-22	7	APW-14-1	0.11	9.2	0.25	1,366	409	
					APW-14-2	0.11	10	0.25	773	395	
					Average Concentration (mg/L)	**0.11**	**9.6**	**0.25**	**1,069**	**402**	
	N-SB-04 (12.0'-18.0')	2:1 Soil:Water Ratio	15-Feb-22	0							Groundwater spiked with metaarsenite, boric acid, lithium chloride and sodium sulfate solutions to target concentrations of 0.2, 10, 0.3 and 774 mg/L respectively.
			22-Feb-22	7	N-SB-04-(12.0-18.0) :APW-14 2:1-1	<0.010	5.6	<0.10	773	402	
					N-SB-04-(12.0-18.0) :APW-14 2:1-2	<0.010	5.6	<0.10	938	415	
					Average Concentration (mg/L)	**ND**	**5.6**	**ND**	**856**	**409**	
		1:1 Soil:Water Ratio	15-Feb-22	0							Groundwater spiked with metaarsenite, boric acid, lithium chloride and sodium sulfate solutions to target concentrations of 0.2, 10, 0.3 and 774 mg/L respectively.
			22-Feb-22	7	N-SB-04-(12.0-18.0) :APW-14 1:1-1	<0.010	7.2	0.15	853	394	
					N-SB-04-(12.0-18.0) :APW-14 1:1-2	<0.010	7.0	0.13	630	403	
					Average Concentration (mg/L)	**ND**	**7.1**	**0.14**	**741**	**399**	
		1:5 Soil:Water Ratio	15-Feb-22	0							Groundwater spiked with metaarsenite, boric acid, lithium chloride and sodium sulfate solutions to target concentrations of 0.2, 10, 0.3 and 774 mg/L respectively.
			22-Feb-22	7	N-SB-04-(12.0-18.0) :APW-14 1:5-1	<0.010	10	0.26	716	459	
					N-SB-04-(12.0-18.0) :APW-14 1:5-2	<0.010	8.9	0.20	1,081	400	
					Average Concentration (mg/L)	**ND**	**9.6**	**0.23**	**899**	**430**	
		1:10 Soil:Water Ratio	15-Feb-22	0							Groundwater spiked with metaarsenite, boric acid, lithium chloride and sodium sulfate solutions to target concentrations of 0.2, 10, 0.3 and 774 mg/L respectively.
			22-Feb-22	7	N-SB-04-(12.0-18.0) :APW-14 1:10-1	<0.010	9.7	0.22	914	385	
					N-SB-04-(12.0-18.0) :APW-14 1:10-2	<0.010	9.7	0.23	998	379	
					Average Concentration (mg/L)	**ND**	**9.7**	**0.23**	**956**	**382**	
		1:20 Soil:Water Ratio	15-Feb-22	0							Groundwater spiked with metaarsenite, boric acid, lithium chloride and sodium sulfate solutions to target concentrations of 0.2, 10, 0.3 and 774 mg/L respectively.
			22-Feb-22	7	N-SB-04-(12.0-18.0) :APW-14 1:20-1	<0.010	9.8	0.26	650	386	
					N-SB-04-(12.0-18.0) :APW-14 1:20-2	<0.010	9.0	0.24	724	376	
					Average Concentration (mg/L)	**ND**	**9.4**	**0.25**	**687**	**381**	

Notes:

-- - not applicable
< - compound not detected, the associated value is the detection limit
µg/L - micrograms per liter
mg/L - milligrams per liter
mL - milliliter
ND - not detected

TABLE 9: SUMMARY OF ADSORPTION TEST ANION RESULTS
Newton, IL Site

Groundwater Sample ID	Geologic Material Sample ID	Treatment	Date	Day	Replicate	Total VFA	Chloride	Nitrate-N	Nitrite-N	Sulfate	Phosphate
						mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
APW-04	--	Groundwater Only Control	15-Feb-22	0	APW-04-1a	141	59	<1.7	4.1	1,097	<1.7
					APW-04-2a	66	50	<1.7	<1.7	1,077	<1.7
					Average	**104**	**54**	**ND**	**2.0**	**1,087**	**ND**
			22-Feb-22	7	APW-04-1	<1.5	54	<1.7	<1.7	721	<1.4
					APW-04-2	<1.5	89	<1.7	<1.7	407	<1.4
					Average	**ND**	**71**	**ND**	**ND**	**564**	**ND**
	N-SB-05 (60.0'-67.1')	2:1 Soil:Water Ratio	22-Feb-22	7	N-SB-05-(60.0-67.1) :APW-04 2:1-1	<1.5	55	<1.7	<1.7	440	<1.4
					N-SB-05-(60.0-67.1) :APW-04 2:1-2	<1.5	54	<1.7	6.96	463	<1.4
					Average	**ND**	**54**	**ND**	**7.0**	**451**	**ND**
		1:1 Soil:Water Ratio	22-Feb-22	7	N-SB-05-(60.0-67.1) :APW-04 1:1-1	<1.5	43	<1.7	<1.7	807	<1.4
					N-SB-05-(60.0-67.1) :APW-04 1:1-2	<1.5	43	<1.7	<1.7	740	<1.4
					Average	**ND**	**43**	**ND**	**ND**	**773**	**ND**
		1:5 Soil:Water Ratio	22-Feb-22	7	N-SB-05-(60.0-67.1) :APW-04 1:5-1	<1.5	38	<1.7	<1.7	813	<1.4
					N-SB-05-(60.0-67.1) :APW-04 1:5-2	<1.5	46	<1.7	<1.7	788	<1.4
					Average	**ND**	**42**	**ND**	**ND**	**800**	**ND**
		1:10 Soil:Water Ratio	22-Feb-22	7	N-SB-05-(60.0-67.1) :APW-04 1:10-1	<1.5	36	<1.7	<1.7	889	<1.4
					N-SB-05-(60.0-67.1) :APW-04 1:10-2	<1.5	41	<1.7	<1.7	996	<1.4
					Average	**ND**	**38**	**ND**	**ND**	**943**	**ND**
		1:20 Soil:Water Ratio	22-Feb-22	7	N-SB-05-(60.0-67.1) :APW-04 1:20-1	<1.5	44	<1.7	<1.7	776	<1.4
					N-SB-05-(60.0-67.1) :APW-04 1:20-2	<1.5	52	<1.7	<1.7	1,212	<1.4
					Average	**ND**	**48**	**ND**	**ND**	**994**	**ND**
APW-14	--	Groundwater Only Control	15-Feb-22	0	APW-14-1a	149	51	<1.7	3.4	1,010	<1.7
					APW-14-2a	140	41	<1.7	<1.7	1,004	<1.7
					Average	**144**	**46**	**ND**	**1.7**	**1,007**	**ND**
			22-Feb-22	7	APW-14-1	<1.5	54	<1.7	<1.7	1,366	<1.4
					APW-14-2	<1.5	51	<1.7	<1.7	773	<1.4
					Average	**ND**	**52**	**ND**	**ND**	**1,069**	**ND**
	N-SB-04 (12.0'-18.0')	2:1 Soil:Water Ratio	22-Feb-22	7	N-SB-04-(12.0-18.0) :APW-14 2:1-1	<1.5	39	<1.7	<1.7	773	<1.4
					N-SB-04-(12.0-18.0) :APW-14 2:1-2	<1.5	44	<1.7	<1.7	938	<1.4
					Average	**ND**	**41**	**ND**	**ND**	**856**	**ND**
		1:1 Soil:Water Ratio	22-Feb-22	7	N-SB-04-(12.0-18.0) :APW-14 1:1-1	<1.5	49	<1.7	<1.7	853	<1.4
					N-SB-04-(12.0-18.0) :APW-14 1:1-2	3.8	63	<1.7	<1.7	630	<1.4
					Average	**3.8**	**56**	**ND**	**ND**	**741**	**ND**
		1:5 Soil:Water Ratio	22-Feb-22	7	N-SB-04-(12.0-18.0) :APW-14 1:5-1	<1.5	40	<1.7	<1.7	716	<1.4
					N-SB-04-(12.0-18.0) :APW-14 1:5-2	<1.5	71	<1.7	<1.7	1,081	<1.4
					Average	**ND**	**56**	**ND**	**ND**	**899**	**ND**
		1:10 Soil:Water Ratio	22-Feb-22	7	N-SB-04-(12.0-18.0) :APW-14 1:10-1	<1.5	49	<1.7	<1.7	914	<1.4
					N-SB-04-(12.0-18.0) :APW-14 1:10-2	<1.5	58	<1.7	<1.7	998	<1.4
					Average	**ND**	**53**	**ND**	**ND**	**956**	**ND**
		1:20 Soil:Water Ratio	22-Feb-22	7	N-SB-04-(12.0-18.0) :APW-14 1:20-1	<1.5	33	<1.7	<1.7	650	<1.4
					N-SB-04-(12.0-18.0) :APW-14 1:20-2	<1.5	46	<1.7	<1.7	724	<1.4
					Average	**ND**	**39**	**ND**	**ND**	**687**	**ND**

Notes:

< - compound not detected, the associated value is the detection limit
mg/L - milligrams per liter
ND - not detected
VFAs - total volatile fatty acids, calibrated as lactate but may include other VFAs such as formate, acetate, propionate, pyruvate and butyrate

TABLE 10: SUMMARY OF ADSORPTION TEST pH AND ORP RESULTS
Vistra Newton, IL Site

Groundwater Sample ID	Geologic Material Sample ID	Treatment	Date	Day	Replicate	pH	ORP
							mV
APW-04	--	Groundwater Only Control	15-Feb-22	0	APW-04-1a	6.92	2
					APW-04-2a	6.92	29
					Average	**6.92**	**16**
			22-Feb-22	7	APW-04-1	7.02	67
					APW-04-2	7.04	13
					Average	**7.03**	**40**
	N-SB-05 (60.0'-67.1')	2:1 Soil:Water Ratio	22-Feb-22	7	N-SB-05-(60.0-67.1) :APW-04 2:1-1	7.02	-20
					N-SB-05-(60.0-67.1) :APW-04 2:1-2	7.02	-43
					Average	**7.02**	**-32**
		1:1 Soil:Water Ratio	22-Feb-22	7	N-SB-05-(60.0-67.1) :APW-04 1:1-1	7.02	-49
					N-SB-05-(60.0-67.1) :APW-04 1:1-2	7.02	-48
					Average	**7.02**	**-49**
		1:5 Soil:Water Ratio	22-Feb-22	7	N-SB-05-(60.0-67.1) :APW-04 1:5-1	7.04	-40
					N-SB-05-(60.0-67.1) :APW-04 1:5-2	7.02	-70
					Average	**7.03**	**-55**
		1:10 Soil:Water Ratio	22-Feb-22	7	N-SB-05-(60.0-67.1) :APW-04 1:10-1	7.02	-92
					N-SB-05-(60.0-67.1) :APW-04 1:10-2	7.02	-52
					Average	**7.02**	**-72**
		1:20 Soil:Water Ratio	22-Feb-22	7	N-SB-05-(60.0-67.1) :APW-04 1:20-1	7.03	-27
					N-SB-05-(60.0-67.1) :APW-04 1:20-2	7.02	-5
					Average	**7.03**	**-16**
APW-14	--	Groundwater Only Control	15-Feb-22	0	APW-14-1a	6.99	17
					APW-14-2a	6.99	4
					Average	**6.99**	**11**
			22-Feb-22	7	APW-14-1	7.00	-28
					APW-14-2	7.00	-24
					Average	**7.00**	**-26**
	N-SB-04 (12.0'-18.0')	2:1 Soil:Water Ratio	22-Feb-22	7	N-SB-04-(12.0-18.0) :APW-14 2:1-1	7.02	-72
					N-SB-04-(12.0-18.0) :APW-14 2:1-2	7.02	-150
					Average	**7.02**	**-111**
		1:1 Soil:Water Ratio	22-Feb-22	7	N-SB-04-(12.0-18.0) :APW-14 1:1-1	7.03	-47
					N-SB-04-(12.0-18.0) :APW-14 1:1-2	7.04	35
					Average	**7.04**	**-6**
		1:5 Soil:Water Ratio	22-Feb-22	7	N-SB-04-(12.0-18.0) :APW-14 1:5-1	7.06	53
					N-SB-04-(12.0-18.0) :APW-14 1:5-2	7.05	17
					Average	**7.06**	**35**
		1:10 Soil:Water Ratio	22-Feb-22	7	N-SB-04-(12.0-18.0) :APW-14 1:10-1	7.05	21
					N-SB-04-(12.0-18.0) :APW-14 1:10-2	7.06	34
					Average	**7.06**	**28**
		1:20 Soil:Water Ratio	22-Feb-22	7	N-SB-04-(12.0-18.0) :APW-14 1:20-1	7.08	41
					N-SB-04-(12.0-18.0) :APW-14 1:20-2	7.04	38
					Average	**7.06**	**40**

Notes:

-- - not applicable
< - compound not detected, the associated value is the detection limit
mg/L - milligrams per liter
mL - milliliter
mV - millivolts
ND - not detected
ORP - oxidation-reduction potential

TABLE 11: SUMMARY OF CALCULATED SITE-SPECIFIC SORPTION COEFFICIENTS
Vistra Newton, IL Site

Groundwater Sample ID	Geologic Material Sample ID	Sorption Coefficient Type	Arsenic		Boron		Lithium		Sulfate	
			Sorption Coefficient L/kg	R^2	Sorption Coefficient L/kg	R^2	Sorption Coefficient L/kg	R^2	Sorption Coefficient L/kg	R^2
APW-04	N-SB-05 (60.0'-67.1')	Linear K_D	112	0.991	-1.35	0.157	2.30	0.239	3.58	0.621
		Langmuir K_L	4.58E+08	0.950	-6.23E+04	0.027	4.23E+08	0.989	-6.26E+02	0.134
		Freundlich K_F	177	0.906	57.4	0.012	136	0.226	4.11	0.535
APW-14	N-SB-04 (12.0'-18.0')	Linear K_D	--	--	-0.890	0.367	2.18	0.435	-25.600	0.47
		Langmuir K_L	--	--	-1.56E+05	0.185	1.19E+09	0.9996	-2.20E+03	0.07
		Freundlich K_F	--	--	68.7	0.987	231	0.543	2.14E+11	0.330

Notes:

-- - not applicable
ID - identification
K_D - linear sorption coefficient
K_F - Freundlich sorption coefficient
K_L - Langmuir sorption coefficient
L/kg - liters per kilogram
R^2 - coefficient of determination

TABLE 12: SUMMARY OF DESORPTION TEST TOTAL DISSOLVED METALS RESULTS
Vistra Newton, IL Site

Groundwater Sample ID	Geologic Material Sample ID	Treatment	Date	Day	Replicate	Dissolved Arsenic	Dissolved Boron	Dissolved Lithium	Dissolved Sulfate	Dissolved Sulfur	Comments
						mg/L	mg/L	mg/L	mg/L	mg/L	
APW-05	N-SB-02 (65.0-71.5)	Ambient Control	21-Mar-22	0	N-SB-02D (65.0-71.5):APW-05 Unamended-1a	0.0018	<0.100	<0.0100	22	7.3	
					N-SB-02D (65.0-71.5):APW-05 Unamended-2a	0.0015	<0.100	<0.0100	23	7.1	
					Average	**0.0017**	**ND**	**ND**	**22**	**7.2**	
			28-Mar-22	7	N-SB-02D (65.0-71.5):APW-05 Unamended-1	0.0013	<0.100	<0.0100	23	7.4	
					N-SB-02D (65.0-71.5):APW-05 Unamended-2	<0.00100	<0.100	<0.0100	24	7.6	
					Average	**0.00066**	**ND**	**ND**	**23**	**7.5**	
		Oxygen Sparged	21-Mar-22	0							Began daily sparging with 5 mL of oxygen gas.
			28-Mar-22	7	N-SB-02D (65.0-71.5):APW-05 Oxygen-1	0.0010	<0.100	<0.0100	19	6.1	
					N-SB-02D (65.0-71.5):APW-05 Oxygen-2	<0.00100	<0.100	0.033	24	7.8	
					Average	**0.00052**	**ND**	**0.017**	**22**	**7.0**	
		Hydrogen Sparged	21-Mar-22	0							Began daily sparging with 5 mL of hydrogen gas.
			28-Mar-22	7	N-SB-02D (65.0-71.5):APW-05 Hydrogen-1	0.0014	<0.100	<0.0100	23	7.1	
					N-SB-02D (65.0-71.5):APW-05 Hydrogen-2	0.0017	<0.100	<0.0100	25	8.5	
					Average	**0.0016**	**ND**	**ND**	**24**	**7.8**	
	N-SB-02 (12.5-20.0)	Ambient Control	23-Mar-22	0	N-SB-02S (12.5-20.0):APW-05 Unamended-1a	0.0071	<0.100	<0.0100	17	<5.00	
					N-SB-02S (12.5-20.0):APW-05 Unamended-2a	0.0059	<0.100	<0.0100	20	6.2	
					Average	**0.0065**	**ND**	**ND**	**19**	**3.1**	
			30-Mar-22	7	N-SB-02S (12.5-20.0):APW-05 Unamended-1	<0.00100	<0.100	0.016	67	23	
					N-SB-02S (12.5-20.0):APW-05 Unamended-2	<0.00100	<0.100	0.015	179	61	
					Average	**ND**	**ND**	**0.016**	**123**	**42**	
		Oxygen Sparged	23-Mar-22	0							Began daily sparging with 5 mL of oxygen gas.
			30-Mar-22	7	N-SB-02S (12.5-20.0):APW-05 Oxygen-1	<0.00100	<0.100	0.014	98	34	
					N-SB-02S (12.5-20.0):APW-05 Oxygen-2	<0.00100	<0.100	0.016	145	48	
					Average	**ND**	**ND**	**0.015**	**121**	**41**	
		Hydrogen Sparged	23-Mar-22	0							Began daily sparging with 5 mL of hydrogen gas.
			30-Mar-22	7	N-SB-02S (12.5-20.0):APW-05 Hydrogen-1	<0.00100	<0.100	0.016	168	55	
					N-SB-02S (12.5-20.0):APW-05 Hydrogen-2	<0.00100	<0.100	0.016	182	60	
					Average	**ND**	**ND**	**0.016**	**175**	**58**	

Notes:

< - compound not detected, the associated value is the detection limit
µL - microliter
M - molar
mg/L - milligrams per liter
mL - milliliter
NaOH - sodium hydroxide
ND - not detected

TABLE 13: SUMMARY OF DESORPTION TEST ANION RESULTS

Vistra Newton, IL Site

Groundwater Sample ID	Geologic Material Sample ID	Treatment	Date	Day	Replicate	Total VFAs	Chloride	Nitrite-N	Nitrate-N	Sulfate	Phosphate	Comments
						mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
APW-05	N-SB-02 (65.0-71.5)	Ambient Control	21-Mar-22	0	N-SB-02D (65.0-71.5):APW-05 Unamended-1a	66	75	<1.7	5.9	22	<1.4	
					N-SB-02D (65.0-71.5):APW-05 Unamended-2a	75	121	<1.7	6.4	23	<1.4	
					Average	**70**	**98**	**ND**	**6.2**	**22**	**ND**	
			28-Mar-22	7	N-SB-02D (65.0-71.5):APW-05 Unamended-1	4.9	50	<0.09	<0.09	23	<0.07	
					N-SB-02D (65.0-71.5):APW-05 Unamended-2	<0.07	48	<0.09	<0.09	24	<0.07	
					Average	**2.5**	**49**	**ND**	**ND**	**23**	**ND**	
		Oxygen Sparged	21-Mar-22	0								Began daily sparging with 5 mL of oxygen gas
			28-Mar-22	7	N-SB-02D (65.0-71.5):APW-05 Oxygen-1	<0.07	52	<0.09	1.6	19	<0.07	
					N-SB-02D (65.0-71.5):APW-05 Oxygen-2	<0.07	52	<0.09	1.7	24	<0.07	
					Average	**ND**	**52**	**ND**	**1.7**	**22**	**ND**	
		Hydrogen Sparged	21-Mar-22	0								Began daily sparging with 5 mL of hydrogen gas
			28-Mar-22	7	N-SB-02D (65.0-71.5):APW-05 Hydrogen-1	<0.07	52	<0.09	<0.09	23	<0.07	
					N-SB-02D (65.0-71.5):APW-05 Hydrogen-2	<0.07	57	<0.09	<0.09	25	<0.07	
					Average	**ND**	**55**	**ND**	**ND**	**24**	**ND**	
	N-SB-02 (12.5-20.0)	Ambient Control	23-Mar-22	0	N-SB-02S (12.5-20.0):APW-05 Unamended-1a	70	62	<1.7	6.1	17	<1.4	
					N-SB-02S (12.5-20.0):APW-05 Unamended-2a	70	62	<1.7	6.1	20	<1.4	
					Average	**70**	**62**	**ND**	**6.1**	**19**	**ND**	
			30-Mar-22	7	N-SB-02S (12.5-20.0):APW-05 Unamended-1	<0.07	70	<0.09	<0.09	67	0.74	
					N-SB-02S (12.5-20.0):APW-05 Unamended-2	<0.07	52	<0.09	<0.09	179	<0.07	
					Average	**ND**	**61**	**ND**	**ND**	**123**	**0.37**	
		Oxygen Sparged	23-Mar-22	0								Began daily sparging with 5 mL of oxygen gas
			30-Mar-22	7	N-SB-02S (12.5-20.0):APW-05 Oxygen-1	<0.07	83	<0.09	1.0	98	1.0	
					N-SB-02S (12.5-20.0):APW-05 Oxygen-2	<0.07	54	<0.09	1.3	145	<0.07	
					Average	**ND**	**69**	**ND**	**1.2**	**121**	**0.51**	
		Hydrogen Sparged	23-Mar-22	0								Began daily sparging with 5 mL of hydrogen gas
			30-Mar-22	7	N-SB-02S (12.5-20.0):APW-05 Hydrogen-1	<0.07	69	<0.09	<0.09	168	<0.07	
					N-SB-02S (12.5-20.0):APW-05 Hydrogen-2	4.3	56	<0.09	<0.09	182	<0.07	
					Average	**2.2**	**63**	**ND**	**ND**	**175**	**ND**	

Notes:

< - compound not detected, the associated value is the detection limit
µL - microliter
M - molar
mg/L - milligrams per liter
mL - milliliter
NaOH - sodium hydroxide
ND - not detected
VFAs - total volatile fatty acids, calibrated as lactate but may include other VFAs such as formate, acetate, propionate, pyruvate and butyrate

TABLE 14: SUMMARY OF DESORPTION TEST pH AND ORP RESULTS
Vistra Newton, IL Site

Groundwater Sample ID	Geologic Material Sample ID	Treatment	Date	Day	Replicate	pH	ORP	Comments
							mV	
APW-05	N-SB-02 (65.0'-71.5')	Ambient Control	21-Mar-22	0	N-SB-02D (65.0-71.5):APW-05 Unamended-1a	7.13	136	
					N-SB-02D (65.0-71.5):APW-05 Unamended-2a	7.21	142	
					Average	**7.17**	**139**	
			28-Mar-22	7	N-SB-02D (65.0-71.5):APW-05 Unamended-1	7.08	41	
					N-SB-02D (65.0-71.5):APW-05 Unamended-2	7.07	51	
					Average	**7.08**	**46**	
		Oxygen Sparged	21-Mar-22	0				Began daily sparging with 5 mL of oxygen gas.
			28-Mar-22	7	N-SB-02D (65.0-71.5):APW-05 Oxygen-1	7.65	217	
					N-SB-02D (65.0-71.5):APW-05 Oxygen-2	7.56	210	
					Average	**7.61**	**214**	
		Hydrogen Sparged	21-Mar-22	0				Began daily sparging with 5 mL of hydrogen gas.
			28-Mar-22	7	N-SB-02D (65.0-71.5):APW-05 Hydrogen-1	7.02	33	
					N-SB-02D (65.0-71.5):APW-05 Hydrogen-2	7.03	68	
					Average	**7.03**	**51**	
	N-SB-02 (12.5'-20.0')	Ambient Control	23-Mar-22	0	N-SB-02S (12.5-20.0):APW-05 Unamended-1a	7.15	137	
					N-SB-02S (12.5-20.0):APW-05 Unamended-2a	7.17	139	
					Average	**7.16**	**138**	
			30-Mar-22	7	N-SB-02S (12.5-20.0):APW-05 Unamended-1	7.13	62	
					N-SB-02S (12.5-20.0):APW-05 Unamended-2	7.09	--	
					Average	**7.11**	**31**	
		Oxygen Sparged	23-Mar-22	0				Began daily sparging with 5 mL of oxygen gas.
			30-Mar-22	7	N-SB-02S (12.5-20.0):APW-05 Oxygen-1	7.49	227	
					N-SB-02S (12.5-20.0):APW-05 Oxygen-2	7.55	215	
					Average	**7.52**	**221**	
		Hydrogen Sparged	23-Mar-22	0				Began daily sparging with 5 mL of hydrogen gas.
			30-Mar-22	7	N-SB-02S (12.5-20.0):APW-05 Hydrogen-1	7.03	--	
					N-SB-02S (12.5-20.0):APW-05 Hydrogen-2	7.04	32	
					Average	**7.04**	**16**	

Notes:

-- - not applicable
µL - microliter
$CaCO_3$ - calcium carbonate
M - molar
mL - milliliter
mV - millivolts
ORP - oxidation- reduction potential
TDS - total dissolved solids
TOC - total organic carbon

APPENDIX A:
Chain of Custody Documentation

SIREM

Chain-of-Custody Form

siremlab.com

130 Stone Road West
Guelph ON, Canada N1G 3Z2
(519) 822-2265

S-8312

*Project Name: Newton MNA	*Project #: 21454831
*Project Manager: Jeff Ingram	*Company: Golder Associates
*Email Address: JIngram@golder.com	
Address (Street): 13515 Barrett Parkway Dr., Suite 260	
City: Ballwin / State/Province: MO / Country: USA	
*Phone #: (719)- 213-8548	
*Sampler's Signature:	*Sampler's Printed Name: Eric Schneider

Analysis

Preservative Key: 0. None; 1. HCL; 2. Other; 3. Other; 4. Other; 5. Other; 6. Other

Client Sample ID	Sampling Date	Sampling Time	Matrix	# of Containers	Gene-Trac DHC	Gene-Trac VC	Gene-Trac DHB	Gene-Trac DHG	Treatability Study	Other Information
APW-02	8-17-21	1345	L	1	✓	✓	✓	✓	✓	Confirm Sample Analyses with Jeff Ingram Prior to Analysis
APW-04	8-17-21	1150	"	1	"	"	"	"	"	
APW-05	8-16-21	1603	"	8	"	"	"	"	"	
APW-05S	8-16-21	1556	"	4	"	"	"	"	"	
APW-14	8-17-21	0945	"	1	"	"	"	"	"	

Billing Information

P.O. # 21454831

*Bill To: Golder Associates

Turnaround Time Requested

Normal ☑

Rush ☐

For Lab Use Only

Cooler Condition: Good

Cooler Temperature: 19°C

Custody Seals: Yes ☐ No ☑

For Lab Use Only

23-Aug-21 @ Brent

Received 8 Samples Labeled APW-05S And Only 4 Samples Labeled APW-05

Proposal #:

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature:	Signature: Brent	Signature:	Signature:	Signature:	Signature:
Printed Name: Eric Schneider	Printed Name: Natasha Brent	Printed Name:	Printed Name:	Printed Name:	Printed Name:
Firm: Golder Associates	Firm: SIREM	Firm:	Firm:	Firm:	Firm:
Date/Time: 8/18/2021/12:15	Date/Time: 23-Aug-21 @ 13:00	Date/Time:	Date/Time:	Date/Time:	Date/Time:

Distribution: White - return to Originator; Yellow - Lab Copy; Pink - Retained by Client

* Mandatory Fields

SiREM

Chain-of-Custody Form

siremlab.com

130 Stone Rd. W
Guelph, ON N1G 3Z2
(519) 822-2265

Lab # 583606

*Project Name: Vistra MNA - Newton	*Project #: 21454831
*Project Manager: Jeff Ingram	*Company: Golder Associates
*Email Address: Jeffrey_Ingram@golder.com	
Address (Street): 13515 Barrett Parkway Drive Suite 260	
City: Ballwin	State/Province: MO
Country: USA	
*Phone #: 314-984-8800	
*Sampler's Signature:	*Sampler's Printed Name: Eric Schneider

Client Sample ID	Sampling Date	Sampling Time	Matrix	# of Containers	Gene-Trac DHC	Gene-Trac FGA	Gene-Trac DHB	Gene-Trac DHG	Gene-Trac NGS	Volatile Fatty Acids	Dissolved hydrocarbon gases	Treatability Study
✓ APW-05	8/31/21	0950	GW	1								X
✓ APW-05 (LS)		1027		2								
✓ APW-02		1142		1								
✓ APW-14		1237		1								
✓ APW-04		1355		1								

Analysis

Preservative Key
0. None
1. HCL
2. Other
3. Other
4. Other
5. Other
6. Other

Other Information
Please Contact Jeffrey Ingram Prior to Analysis

Billing Information
P.O. #: 21454831
*Bill To:

Turnaround Time Requested
Normal ☐
Rush ☐

For Lab Use Only
Cooler Condition: 4°C
Cooler Temperature: GOOD
Custody Seals: Yes ☐ No ☒

For Lab Use Only
Proposal #:

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name: Eric Schneider	Printed Name: Bethany Kinsman	Printed Name	Printed Name	Printed Name	Printed Name
Firm: Golder Associates	Firm: SiREM	Firm	Firm	Firm	Firm
Date/Time: 8/31/2021 1630	Date/Time: Sept.02.21 3:53pm	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - return to Originator; Yellow - Lab Copy; Pink - Retained by Client

* Mandatory Fields

SiREM

Chain-of-Custody Form

siremlab.com

130 Stone Road West
Guelph ON, Canada N1G 3Z
(519) 822-2265

Lab # S-8394

Pg. 1 of 1

*Project Name: Newton MNA	*Project #: 21454831
*Project Manager: Jeff Ingram	*Company: Golder
*Email Address: JIngram@golder.com	
Address (Street): 13515 Barrett Parkway Dr. Suite 260	
City: Ballwin	State/Province: MO	Country: USA
*Phone #: 636-485-8185	
*Sampler's Signature: B Talbert	*Sampler's Printed Name: Brendan Talbert

Preservative Key: 0. None; 1. HCL; 2. Other ____; 3. Other ____; 4. Other ____; 5. Other ____; 6. Other ____

Client Sample ID	Sampling Date	Sampling Time	Matrix	# of Containers	Gene-Trac DHC	Gene-Trac VC	Gene-Trac DHB	Gene-Trac DHG	Treatability Study	Other Information
N-SB-05 (18.0-20.0)	8-17-21	1240	S	2					✓	
N-SB-05 (60.0-67.1)	8-17-21	1540							✓	
N-SB-18 (77.5-80.0)	8-18-21	1000							✓	
N-SB-02 (12.5-20.0)	⊥	1410							✓	
N-SB-02 (65.0-71.5)	8-19-21	1200							✓	
N-SB-14 (~~60.0-52.0~~)	⊥	1445							✓	N-SB-14 (44.2-52.0)
N-SB-04 (12.0-18.0)	8-21-21	0735							✓	
N-SB-04 (~~38.7-45.4~~)		0830							✓	N-SB-04 (38.7-45.4)
N-SB-XPW04 (10.0-15.0)		0920							✓	
N-SB-XPW01 (10.0-12.7)	⊥	1010	⊥	⊥					✓	

Billing Information

P.O. #: 21454831

*Bill To: 13515 Barrett Pkwy Dr., Ste 260, Ballwin, MO 63021

Turnaround Time Requested

Normal ☒
Rush ☐

For Lab Use Only

Cooler Condition: good
Cooler Temperature: 2°C
Custody Seals: Yes ☑ No ☐

For Lab Use Only

Proposal #: ____

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: B Talbert	Signature: B Kinsman	Signature:	Signature:	Signature:	Signature:
Printed Name: Brendan Talbert	Printed Name: Bethany Kinsman	Printed Name:	Printed Name:	Printed Name:	Printed Name:
Firm: Golder	Firm: SiREM	Firm:	Firm:	Firm:	Firm:
Date/Time:	Date/Time: Sept. 10.21 2:30 pm	Date/Time:	Date/Time:	Date/Time:	Date/Time:

Distribution: White - return to Originator; Yellow - Lab Copy; Pink - Retained by Client

* Mandatory Fields

APPENDIX B:
ALS and SGS Groundwater Dissolved Metals and DOC Laboratory Reports

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

15-October-2021

SiREM Laboratory
Attn : Michael Healey

130 Stone Road W
Guelph, ON
N1G 3Z2, Canada

Phone: 519-822-2265
Fax:519-822-3151

Date Rec. : 23 September 2021
LR Report: **CA13848-SEP21**
Reference: P.O# 800003210A

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: APW-05	6: APW-05 (S)
Sample Date & Time					21-Sep-21 13:00	21-Sep-21 13:15
Temp Upon Receipt [°C]	---	---	---	---	10.0	10.0
TOC [mg/L]	27-Sep-21	20:20	29-Sep-21	09:12	4	100
SO4 [mg/L]	01-Oct-21	08:19	01-Oct-21	16:58	3	2200
Ag (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	< 0.00005	< 0.00005
Al (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.006	0.002
As (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.0144	0.0008
Ba (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.263	0.0425
Be (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	< 0.000007	< 0.000007
B (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.116	0.043
Bi (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.00003	0.00038
Ca (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	55.5	413
Cd (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	< 0.000003	0.000009
Co (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.000196	0.00125
Cr (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.00024	0.00013
Cu (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.0008	0.0002
Fe (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.073	0.018
K (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	1.64	2.04
Li (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.0106	0.0344
Mg (diss) [mg/L]	27-Sep-21	11:00	29-Sep-21	17:16	26.7	277
Mn (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.0266	0.498
Mo (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.00875	0.00121
Na (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	125	240
Ni (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.0004	0.0049
Pb (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	< 0.00009	< 0.00009
Sb (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	< 0.0009	< 0.0009
Se (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	< 0.00004	0.00015
Sn (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	< 0.00006	< 0.00006

OnLine LIMS

00026779969

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Test method information available upon request. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples. SGS Canada Inc. Environment-Health & Safety statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : **CA13848-SEP21**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: APW-05	6: APW-05 (S)
Sr (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.353	1.44
Ti (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.00010	0.00005
Tl (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	< 0.000005	0.000028
U (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.000180	0.0230
V (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.00005	0.00007
W (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.00005	0.00003
Y (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	< 0.00002	0.00014
Zn (diss) [mg/L]	27-Sep-21	12:00	29-Sep-21	17:16	0.009	0.004

Analysis	7: APW-02	8: APW-14	9: APW-04
Sample Date & Time	21-Sep-21 13:30	21-Sep-21 13:45	21-Sep-21 14:00
Temp Upon Receipt [°C]	10.0	10.0	10.0
TOC [mg/L]	108	57	67
SO4 [mg/L]	3600	410	890
Ag (diss) [mg/L]	< 0.00005	< 0.00005	< 0.00005
Al (diss) [mg/L]	0.003	0.002	0.001
As (diss) [mg/L]	< 0.0002	0.0012	< 0.0002
Ba (diss) [mg/L]	0.00913	0.0682	0.0137
Be (diss) [mg/L]	< 0.000007	< 0.000007	< 0.000007
B (diss) [mg/L]	0.139	0.107	0.038
Bi (diss) [mg/L]	0.00036	0.00002	0.00039
Ca (diss) [mg/L]	529	136	235
Cd (diss) [mg/L]	0.000053	< 0.000003	0.000032
Co (diss) [mg/L]	0.000625	0.000121	0.000186
Cr (diss) [mg/L]	0.00018	0.00018	0.00037
Cu (diss) [mg/L]	0.0003	0.0004	0.0009
Fe (diss) [mg/L]	0.038	0.051	0.134
K (diss) [mg/L]	6.78	2.33	1.76
Li (diss) [mg/L]	0.107	0.0227	0.0219
Mg (diss) [mg/L]	426	61.2	169
Mn (diss) [mg/L]	0.608	0.381	0.332
Mo (diss) [mg/L]	0.00137	0.00443	0.00114
Na (diss) [mg/L]	351	123	95.7
Ni (diss) [mg/L]	0.0079	0.0002	0.0030
Pb (diss) [mg/L]	< 0.00009	< 0.00009	< 0.00009
Sb (diss) [mg/L]	< 0.0009	< 0.0009	< 0.0009
Se (diss) [mg/L]	< 0.00004	< 0.00004	0.00006
Sn (diss) [mg/L]	< 0.00006	< 0.00006	< 0.00006
Sr (diss) [mg/L]	1.85	0.603	0.557

OnLine LIMS

00026779969

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Test method information available upon request. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples. SGS Canada Inc. Environment-Health & Safety statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : **CA13848-SEP21**

Analysis	7: APW-02	8: APW-14	9: APW-04
Ti (diss) [mg/L]	0.00010	0.00013	< 0.00005
Tl (diss) [mg/L]	0.000073	< 0.000005	0.000025
U (diss) [mg/L]	0.0334	0.000666	0.00771
V (diss) [mg/L]	0.00006	0.00003	0.00023
W (diss) [mg/L]	0.00008	0.00003	0.00013
Y (diss) [mg/L]	0.00009	< 0.00002	0.00007
Zn (diss) [mg/L]	0.008	0.005	0.009

Catharine Arnold

CHARTERED CATHARINE ARNOLD CHEMIST

Catharine Arnold, B.Sc., C.Chem
Project Specialist,
Environment, Health & Safety

OnLine LIMS

00026779969

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Test method information available upon request. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples. SGS Canada Inc. Environment-Health & Safety statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

SIREM
ATTN: Michael Healey
130 Stone Road West
Guelph ON N1G 3Z2

Date Received: 16-FEB-22
Report Date: 22-FEB-22 15:28 (MT)
Version: FINAL

Client Phone: 519-822-2265

Certificate of Analysis

Lab Work Order #: L2686539

Project P.O. #: NOT SUBMITTED
Job Reference: NEWTON MNA
C of C Numbers:
Legal Site Desc:

Gayle Braun
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2686539-1 APW-04-1A Sampled By: RH on 15-FEB-22 @ 12:30 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					22-FEB-22	R5727977
Aluminum (Al)-Dissolved	<0.050	DLHC	0.050	mg/L	22-FEB-22	22-FEB-22	R5728039
Antimony (Sb)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Arsenic (As)-Dissolved	0.193	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Barium (Ba)-Dissolved	0.0111	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Beryllium (Be)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Bismuth (Bi)-Dissolved	0.00068	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Boron (B)-Dissolved	9.19	DLHC	0.10	mg/L	22-FEB-22	22-FEB-22	R5728039
Cadmium (Cd)-Dissolved	<0.000050	DLHC	0.000050	mg/L	22-FEB-22	22-FEB-22	R5728039
Calcium (Ca)-Dissolved	207	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Cesium (Cs)-Dissolved	<0.00010	DLHC	0.00010	mg/L	22-FEB-22	22-FEB-22	R5728039
Chromium (Cr)-Dissolved	<0.0050	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Cobalt (Co)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Copper (Cu)-Dissolved	<0.0020	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039
Iron (Fe)-Dissolved	<0.10	DLHC	0.10	mg/L	22-FEB-22	22-FEB-22	R5728039
Lead (Pb)-Dissolved	<0.00050	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Lithium (Li)-Dissolved	0.279	DLHC	0.010	mg/L	22-FEB-22	22-FEB-22	R5728039
Magnesium (Mg)-Dissolved	177	DLHC	0.050	mg/L	22-FEB-22	22-FEB-22	R5728039
Manganese (Mn)-Dissolved	0.232	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Molybdenum (Mo)-Dissolved	0.00076	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Nickel (Ni)-Dissolved	<0.0050	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Phosphorus (P)-Dissolved	<0.50	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Potassium (K)-Dissolved	1.61	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Rubidium (Rb)-Dissolved	<0.0020	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039
Selenium (Se)-Dissolved	<0.00050	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Silicon (Si)-Dissolved	10.8	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Silver (Ag)-Dissolved	<0.00050	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Sodium (Na)-Dissolved	290	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Strontium (Sr)-Dissolved	0.559	DLHC	0.010	mg/L	22-FEB-22	22-FEB-22	R5728039
Sulfur (S)-Dissolved	455	DLHC	5.0	mg/L	22-FEB-22	22-FEB-22	R5728039
Tellurium (Te)-Dissolved	<0.0020	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039
Thallium (Tl)-Dissolved	<0.00010	DLHC	0.00010	mg/L	22-FEB-22	22-FEB-22	R5728039
Thorium (Th)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Tin (Sn)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Titanium (Ti)-Dissolved	<0.0030	DLHC	0.0030	mg/L	22-FEB-22	22-FEB-22	R5728039
Tungsten (W)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Uranium (U)-Dissolved	0.00870	DLHC	0.00010	mg/L	22-FEB-22	22-FEB-22	R5728039
Vanadium (V)-Dissolved	<0.0050	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Zinc (Zn)-Dissolved	<0.010	DLHC	0.010	mg/L	22-FEB-22	22-FEB-22	R5728039
Zirconium (Zr)-Dissolved	<0.0020	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039
L2686539-2 APW-04-2A							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2686539-2 APW-04-2A Sampled By: RH on 15-FEB-22 @ 12:45 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					22-FEB-22	R5727977
Aluminum (Al)-Dissolved	<0.050	DLHC	0.050	mg/L	22-FEB-22	22-FEB-22	R5728039
Antimony (Sb)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Arsenic (As)-Dissolved	0.194	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Barium (Ba)-Dissolved	0.0111	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Beryllium (Be)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Bismuth (Bi)-Dissolved	0.00069	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Boron (B)-Dissolved	9.45	DLHC	0.10	mg/L	22-FEB-22	22-FEB-22	R5728039
Cadmium (Cd)-Dissolved	<0.000050	DLHC	0.000050	mg/L	22-FEB-22	22-FEB-22	R5728039
Calcium (Ca)-Dissolved	210	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Cesium (Cs)-Dissolved	<0.00010	DLHC	0.00010	mg/L	22-FEB-22	22-FEB-22	R5728039
Chromium (Cr)-Dissolved	<0.0050	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Cobalt (Co)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Copper (Cu)-Dissolved	<0.0020	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039
Iron (Fe)-Dissolved	<0.10	DLHC	0.10	mg/L	22-FEB-22	22-FEB-22	R5728039
Lead (Pb)-Dissolved	<0.00050	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Lithium (Li)-Dissolved	0.285	DLHC	0.010	mg/L	22-FEB-22	22-FEB-22	R5728039
Magnesium (Mg)-Dissolved	185	DLHC	0.050	mg/L	22-FEB-22	22-FEB-22	R5728039
Manganese (Mn)-Dissolved	0.236	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Molybdenum (Mo)-Dissolved	0.00087	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Nickel (Ni)-Dissolved	<0.0050	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Phosphorus (P)-Dissolved	<0.50	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Potassium (K)-Dissolved	1.61	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Rubidium (Rb)-Dissolved	<0.0020	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039
Selenium (Se)-Dissolved	<0.00050	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Silicon (Si)-Dissolved	10.8	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Silver (Ag)-Dissolved	<0.00050	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Sodium (Na)-Dissolved	297	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Strontium (Sr)-Dissolved	0.533	DLHC	0.010	mg/L	22-FEB-22	22-FEB-22	R5728039
Sulfur (S)-Dissolved	458	DLHC	5.0	mg/L	22-FEB-22	22-FEB-22	R5728039
Tellurium (Te)-Dissolved	<0.0020	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039
Thallium (Tl)-Dissolved	<0.00010	DLHC	0.00010	mg/L	22-FEB-22	22-FEB-22	R5728039
Thorium (Th)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Tin (Sn)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Titanium (Ti)-Dissolved	<0.0030	DLHC	0.0030	mg/L	22-FEB-22	22-FEB-22	R5728039
Tungsten (W)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Uranium (U)-Dissolved	0.00824	DLHC	0.00010	mg/L	22-FEB-22	22-FEB-22	R5728039
Vanadium (V)-Dissolved	<0.0050	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Zinc (Zn)-Dissolved	0.018	DLHC	0.010	mg/L	22-FEB-22	22-FEB-22	R5728039
Zirconium (Zr)-Dissolved	<0.0020	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039
L2686539-3 APW-14-1A							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2686539-3 APW-14-1A Sampled By: RH on 15-FEB-22 @ 13:00 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					22-FEB-22	R5727977
Aluminum (Al)-Dissolved	<0.050	DLHC	0.050	mg/L	22-FEB-22	22-FEB-22	R5728039
Antimony (Sb)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Arsenic (As)-Dissolved	0.203	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Barium (Ba)-Dissolved	0.0586	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Beryllium (Be)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Bismuth (Bi)-Dissolved	<0.00050	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Boron (B)-Dissolved	9.50	DLHC	0.10	mg/L	22-FEB-22	22-FEB-22	R5728039
Cadmium (Cd)-Dissolved	<0.000050	DLHC	0.000050	mg/L	22-FEB-22	22-FEB-22	R5728039
Calcium (Ca)-Dissolved	127	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Cesium (Cs)-Dissolved	<0.00010	DLHC	0.00010	mg/L	22-FEB-22	22-FEB-22	R5728039
Chromium (Cr)-Dissolved	<0.0050	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Cobalt (Co)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Copper (Cu)-Dissolved	<0.0020	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039
Iron (Fe)-Dissolved	<0.10	DLHC	0.10	mg/L	22-FEB-22	22-FEB-22	R5728039
Lead (Pb)-Dissolved	<0.00050	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Lithium (Li)-Dissolved	0.282	DLHC	0.010	mg/L	22-FEB-22	22-FEB-22	R5728039
Magnesium (Mg)-Dissolved	70.6	DLHC	0.050	mg/L	22-FEB-22	22-FEB-22	R5728039
Manganese (Mn)-Dissolved	0.249	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Molybdenum (Mo)-Dissolved	0.00469	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Nickel (Ni)-Dissolved	<0.0050	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Phosphorus (P)-Dissolved	<0.50	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Potassium (K)-Dissolved	2.26	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Rubidium (Rb)-Dissolved	<0.0020	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039
Selenium (Se)-Dissolved	<0.00050	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Silicon (Si)-Dissolved	9.39	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Silver (Ag)-Dissolved	<0.00050	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Sodium (Na)-Dissolved	526	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Strontium (Sr)-Dissolved	0.594	DLHC	0.010	mg/L	22-FEB-22	22-FEB-22	R5728039
Sulfur (S)-Dissolved	407	DLHC	5.0	mg/L	22-FEB-22	22-FEB-22	R5728039
Tellurium (Te)-Dissolved	<0.0020	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039
Thallium (Tl)-Dissolved	<0.00010	DLHC	0.00010	mg/L	22-FEB-22	22-FEB-22	R5728039
Thorium (Th)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Tin (Sn)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Titanium (Ti)-Dissolved	<0.0030	DLHC	0.0030	mg/L	22-FEB-22	22-FEB-22	R5728039
Tungsten (W)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Uranium (U)-Dissolved	0.00075	DLHC	0.00010	mg/L	22-FEB-22	22-FEB-22	R5728039
Vanadium (V)-Dissolved	<0.0050	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Zinc (Zn)-Dissolved	<0.010	DLHC	0.010	mg/L	22-FEB-22	22-FEB-22	R5728039
Zirconium (Zr)-Dissolved	<0.0020	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039
L2686539-4 APW-14-2A							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2686539-4 APW-14-2A Sampled By: RH on 15-FEB-22 @ 13:15 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					22-FEB-22	R5727977
Aluminum (Al)-Dissolved	<0.050	DLHC	0.050	mg/L	22-FEB-22	22-FEB-22	R5728039
Antimony (Sb)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Arsenic (As)-Dissolved	0.200	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Barium (Ba)-Dissolved	0.0602	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Beryllium (Be)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Bismuth (Bi)-Dissolved	<0.00050	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Boron (B)-Dissolved	9.56	DLHC	0.10	mg/L	22-FEB-22	22-FEB-22	R5728039
Cadmium (Cd)-Dissolved	<0.000050	DLHC	0.000050	mg/L	22-FEB-22	22-FEB-22	R5728039
Calcium (Ca)-Dissolved	129	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Cesium (Cs)-Dissolved	<0.00010	DLHC	0.00010	mg/L	22-FEB-22	22-FEB-22	R5728039
Chromium (Cr)-Dissolved	<0.0050	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Cobalt (Co)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Copper (Cu)-Dissolved	0.0023	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039
Iron (Fe)-Dissolved	<0.10	DLHC	0.10	mg/L	22-FEB-22	22-FEB-22	R5728039
Lead (Pb)-Dissolved	<0.00050	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Lithium (Li)-Dissolved	0.284	DLHC	0.010	mg/L	22-FEB-22	22-FEB-22	R5728039
Magnesium (Mg)-Dissolved	70.3	DLHC	0.050	mg/L	22-FEB-22	22-FEB-22	R5728039
Manganese (Mn)-Dissolved	0.247	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Molybdenum (Mo)-Dissolved	0.00459	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Nickel (Ni)-Dissolved	<0.0050	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Phosphorus (P)-Dissolved	<0.50	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Potassium (K)-Dissolved	2.27	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Rubidium (Rb)-Dissolved	<0.0020	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039
Selenium (Se)-Dissolved	<0.00050	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Silicon (Si)-Dissolved	9.53	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Silver (Ag)-Dissolved	<0.00050	DLHC	0.00050	mg/L	22-FEB-22	22-FEB-22	R5728039
Sodium (Na)-Dissolved	539	DLHC	0.50	mg/L	22-FEB-22	22-FEB-22	R5728039
Strontium (Sr)-Dissolved	0.599	DLHC	0.010	mg/L	22-FEB-22	22-FEB-22	R5728039
Sulfur (S)-Dissolved	412	DLHC	5.0	mg/L	22-FEB-22	22-FEB-22	R5728039
Tellurium (Te)-Dissolved	<0.0020	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039
Thallium (Tl)-Dissolved	<0.00010	DLHC	0.00010	mg/L	22-FEB-22	22-FEB-22	R5728039
Thorium (Th)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Tin (Sn)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Titanium (Ti)-Dissolved	<0.0030	DLHC	0.0030	mg/L	22-FEB-22	22-FEB-22	R5728039
Tungsten (W)-Dissolved	<0.0010	DLHC	0.0010	mg/L	22-FEB-22	22-FEB-22	R5728039
Uranium (U)-Dissolved	0.00073	DLHC	0.00010	mg/L	22-FEB-22	22-FEB-22	R5728039
Vanadium (V)-Dissolved	<0.0050	DLHC	0.0050	mg/L	22-FEB-22	22-FEB-22	R5728039
Zinc (Zn)-Dissolved	0.011	DLHC	0.010	mg/L	22-FEB-22	22-FEB-22	R5728039
Zirconium (Zr)-Dissolved	<0.0020	DLHC	0.0020	mg/L	22-FEB-22	22-FEB-22	R5728039

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L2686539-1, -2, -3, -4
Matrix Spike	Boron (B)-Dissolved	MS-B	L2686539-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2686539-1, -2, -3, -4
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2686539-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2686539-1, -2, -3, -4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2686539-1, -2, -3, -4
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2686539-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2686539-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2686539-1, -2, -3, -4
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2686539-1, -2, -3, -4
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2686539-1, -2, -3, -4

Sample Parameter Qualifier key listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MET-D-CCMS-WT	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2686539 Report Date: 22-FEB-22

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5728039								
WG3698272-4 DUP		**WG3698272-3**						
Aluminum (Al)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-FEB-22
Antimony (Sb)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-FEB-22
Arsenic (As)-Dissolved		0.193	0.195		mg/L	1.3	20	22-FEB-22
Barium (Ba)-Dissolved		0.0111	0.0110		mg/L	1.3	20	22-FEB-22
Beryllium (Be)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-FEB-22
Bismuth (Bi)-Dissolved		0.00068	0.00071		mg/L	3.5	20	22-FEB-22
Boron (B)-Dissolved		9.19	9.19		mg/L	0.0	20	22-FEB-22
Cadmium (Cd)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-FEB-22
Calcium (Ca)-Dissolved		207	212		mg/L	2.1	20	22-FEB-22
Cesium (Cs)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-FEB-22
Chromium (Cr)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	22-FEB-22
Cobalt (Co)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-FEB-22
Copper (Cu)-Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	22-FEB-22
Iron (Fe)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	22-FEB-22
Lead (Pb)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-FEB-22
Lithium (Li)-Dissolved		0.279	0.283		mg/L	1.6	20	22-FEB-22
Magnesium (Mg)-Dissolved		177	180		mg/L	1.8	20	22-FEB-22
Manganese (Mn)-Dissolved		0.232	0.237		mg/L	2.3	20	22-FEB-22
Molybdenum (Mo)-Dissolved		0.00076	0.00077		mg/L	1.4	20	22-FEB-22
Nickel (Ni)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	22-FEB-22
Phosphorus (P)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	22-FEB-22
Potassium (K)-Dissolved		1.61	1.61		mg/L	0.1	20	22-FEB-22
Rubidium (Rb)-Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	22-FEB-22
Selenium (Se)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-FEB-22
Silicon (Si)-Dissolved		10.8	10.7		mg/L	0.6	20	22-FEB-22
Silver (Ag)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-FEB-22
Sodium (Na)-Dissolved		290	296		mg/L	2.0	20	22-FEB-22
Strontium (Sr)-Dissolved		0.559	0.550		mg/L	1.7	20	22-FEB-22
Sulfur (S)-Dissolved		455	458		mg/L	0.7	20	22-FEB-22
Tellurium (Te)-Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	22-FEB-22
Thallium (Tl)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-FEB-22
Thorium (Th)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-FEB-22
Tin (Sn)-Dissolved		<0.0010	<0.0010		mg/L			22-FEB-22

Quality Control Report

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5728039								
WG3698272-4 DUP		**WG3698272-3**						
Tin (Sn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-FEB-22
Titanium (Ti)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	22-FEB-22
Tungsten (W)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-FEB-22
Uranium (U)-Dissolved		0.00870	0.00847		mg/L	2.6	20	22-FEB-22
Vanadium (V)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	22-FEB-22
Zinc (Zn)-Dissolved		<0.010	0.014	RPD-NA	mg/L	N/A	20	22-FEB-22
Zirconium (Zr)-Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	22-FEB-22
WG3698272-2 LCS								
Aluminum (Al)-Dissolved			104.3		%		80-120	22-FEB-22
Antimony (Sb)-Dissolved			101.5		%		80-120	22-FEB-22
Arsenic (As)-Dissolved			99.8		%		80-120	22-FEB-22
Barium (Ba)-Dissolved			98.0		%		80-120	22-FEB-22
Beryllium (Be)-Dissolved			104.5		%		80-120	22-FEB-22
Bismuth (Bi)-Dissolved			102.7		%		80-120	22-FEB-22
Boron (B)-Dissolved			100.8		%		80-120	22-FEB-22
Cadmium (Cd)-Dissolved			92.1		%		80-120	22-FEB-22
Calcium (Ca)-Dissolved			101.7		%		80-120	22-FEB-22
Cesium (Cs)-Dissolved			102.4		%		80-120	22-FEB-22
Chromium (Cr)-Dissolved			100.2		%		80-120	22-FEB-22
Cobalt (Co)-Dissolved			100.5		%		80-120	22-FEB-22
Copper (Cu)-Dissolved			98.2		%		80-120	22-FEB-22
Iron (Fe)-Dissolved			98.2		%		80-120	22-FEB-22
Lead (Pb)-Dissolved			101.1		%		80-120	22-FEB-22
Lithium (Li)-Dissolved			103.0		%		80-120	22-FEB-22
Magnesium (Mg)-Dissolved			112.3		%		80-120	22-FEB-22
Manganese (Mn)-Dissolved			100.7		%		80-120	22-FEB-22
Molybdenum (Mo)-Dissolved			99.3		%		80-120	22-FEB-22
Nickel (Ni)-Dissolved			97.9		%		80-120	22-FEB-22
Phosphorus (P)-Dissolved			107.6		%		80-120	22-FEB-22
Potassium (K)-Dissolved			100.1		%		80-120	22-FEB-22
Rubidium (Rb)-Dissolved			103.5		%		80-120	22-FEB-22
Selenium (Se)-Dissolved			98.8		%		80-120	22-FEB-22
Silicon (Si)-Dissolved			102.3		%		60-140	22-FEB-22

Quality Control Report

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5728039								
WG3698272-2 LCS								
Silver (Ag)-Dissolved			98.6		%		80-120	22-FEB-22
Sodium (Na)-Dissolved			100.8		%		80-120	22-FEB-22
Strontium (Sr)-Dissolved			99.6		%		80-120	22-FEB-22
Sulfur (S)-Dissolved			101.6		%		80-120	22-FEB-22
Tellurium (Te)-Dissolved			96.9		%		80-120	22-FEB-22
Thallium (Tl)-Dissolved			102.7		%		80-120	22-FEB-22
Thorium (Th)-Dissolved			98.5		%		80-120	22-FEB-22
Tin (Sn)-Dissolved			93.1		%		80-120	22-FEB-22
Titanium (Ti)-Dissolved			98.0		%		80-120	22-FEB-22
Tungsten (W)-Dissolved			96.5		%		80-120	22-FEB-22
Uranium (U)-Dissolved			100.1		%		80-120	22-FEB-22
Vanadium (V)-Dissolved			102.1		%		80-120	22-FEB-22
Zinc (Zn)-Dissolved			97.7		%		80-120	22-FEB-22
Zirconium (Zr)-Dissolved			96.5		%		80-120	22-FEB-22
WG3698272-1 MB								
Aluminum (Al)-Dissolved			<0.0050		mg/L		0.005	22-FEB-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	22-FEB-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	22-FEB-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	22-FEB-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	22-FEB-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	22-FEB-22
Chromium (Cr)-Dissolved			<0.00050		mg/L		0.0005	22-FEB-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	22-FEB-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	22-FEB-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	22-FEB-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	22-FEB-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	22-FEB-22
Manganese (Mn)-Dissolved			<0.00050		mg/L		0.0005	22-FEB-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	22-FEB-22

Quality Control Report

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5728039								
WG3698272-1 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	22-FEB-22
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	22-FEB-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	22-FEB-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	22-FEB-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	22-FEB-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	22-FEB-22
Silver (Ag)-Dissolved			<0.000050		mg/L		0.00005	22-FEB-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	22-FEB-22
Strontium (Sr)-Dissolved			<0.0010		mg/L		0.001	22-FEB-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	22-FEB-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	22-FEB-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	22-FEB-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	22-FEB-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	22-FEB-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	22-FEB-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	22-FEB-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	22-FEB-22
WG3698272-5 MS		**WG3698272-3**						
Aluminum (Al)-Dissolved			92.5		%		70-130	22-FEB-22
Antimony (Sb)-Dissolved			94.6		%		70-130	22-FEB-22
Arsenic (As)-Dissolved			N/A	MS-B	%		-	22-FEB-22
Beryllium (Be)-Dissolved			95.8		%		70-130	22-FEB-22
Bismuth (Bi)-Dissolved			91.2		%		70-130	22-FEB-22
Boron (B)-Dissolved			N/A	MS-B	%		-	22-FEB-22
Cadmium (Cd)-Dissolved			85.5		%		70-130	22-FEB-22
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	22-FEB-22
Cesium (Cs)-Dissolved			96.4		%		70-130	22-FEB-22
Chromium (Cr)-Dissolved			94.4		%		70-130	22-FEB-22
Cobalt (Co)-Dissolved			93.0		%		70-130	22-FEB-22
Copper (Cu)-Dissolved			86.4		%		70-130	22-FEB-22
Iron (Fe)-Dissolved			80.2		%		70-130	22-FEB-22

Quality Control Report

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5728039								
WG3698272-5 MS		**WG3698272-3**						
Lead (Pb)-Dissolved			95.8		%		70-130	22-FEB-22
Lithium (Li)-Dissolved			N/A	MS-B	%		-	22-FEB-22
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	22-FEB-22
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	22-FEB-22
Molybdenum (Mo)-Dissolved			91.5		%		70-130	22-FEB-22
Nickel (Ni)-Dissolved			81.8		%		70-130	22-FEB-22
Phosphorus (P)-Dissolved			104.0		%		70-130	22-FEB-22
Rubidium (Rb)-Dissolved			88.8		%		70-130	22-FEB-22
Selenium (Se)-Dissolved			97.0		%		70-130	22-FEB-22
Silicon (Si)-Dissolved			N/A	MS-B	%		-	22-FEB-22
Sodium (Na)-Dissolved			N/A	MS-B	%		-	22-FEB-22
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	22-FEB-22
Sulfur (S)-Dissolved			N/A	MS-B	%		-	22-FEB-22
Tellurium (Te)-Dissolved			90.4		%		70-130	22-FEB-22
Thallium (Tl)-Dissolved			91.3		%		70-130	22-FEB-22
Thorium (Th)-Dissolved			91.8		%		70-130	22-FEB-22
Tin (Sn)-Dissolved			86.8		%		70-130	22-FEB-22
Titanium (Ti)-Dissolved			96.4		%		70-130	22-FEB-22
Tungsten (W)-Dissolved			93.4		%		70-130	22-FEB-22
Uranium (U)-Dissolved			N/A	MS-B	%		-	22-FEB-22
Vanadium (V)-Dissolved			98.5		%		70-130	22-FEB-22
Zinc (Zn)-Dissolved			75.0		%		70-130	22-FEB-22
Zirconium (Zr)-Dissolved			93.1		%		70-130	22-FEB-22

Quality Control Report

Workorder: L2686539 Report Date: 22-FEB-22

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

SIREM
ATTN: Michael Healey
130 Stone Road West
Guelph ON N1G 3Z2

Date Received: 24-FEB-22
Report Date: 28-FEB-22 15:30 (MT)
Version: FINAL

Client Phone: 519-822-2265

Certificate of Analysis

Lab Work Order #: L2688199

Project P.O. #: NOT SUBMITTED
Job Reference: NEWTON MNA
C of C Numbers: 1, 2
Legal Site Desc:

Gayle Braun
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-1 APW-04-1 Sampled By: CLIENT on 22-FEB-22 @ 09:30 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	0.196	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.012	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	9.2	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	212	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.26	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	188	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	0.239	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	10.5	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	296	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.55	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	433	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0087	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-2 APW-04-2							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-2 APW-04-2 Sampled By: CLIENT on 22-FEB-22 @ 09:45 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	0.198	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.012	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	9.4	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	208	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.25	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	174	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	0.246	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	10.3	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	307	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.53	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	431	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0086	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-3 N-SB-05-(60.0-67.1):APW-04 2:1-1							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-3 N-SB-05-(60.0-67.1):APW-04 2:1-1 Sampled By: CLIENT on 22-FEB-22 @ 10:00 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.089	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	5.9	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	210	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	1.3	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	123	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	0.314	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	8.7	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	287	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.74	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	343	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0075	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-4 N-SB-05-(60.0-67.1):APW-04 2:1-2							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-4 N-SB-05-(60.0-67.1):APW-04 2:1-2 Sampled By: CLIENT on 22-FEB-22 @ 10:15 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.095	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	5.8	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	212	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	123	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	0.332	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	8.5	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	282	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.71	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	345	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0073	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-5 N-SB-05-(60.0-67.1):APW-04 1:1-1							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-5 N-SB-05-(60.0-67.1):APW-04 1:1-1 Sampled By: CLIENT on 22-FEB-22 @ 10:30 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.081	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	7.2	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	225	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	1.6	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.13	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	155	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	0.308	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	9.1	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	288	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.77	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	414	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0074	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-6 N-SB-05-(60.0-67.1):APW-04 1:1-2							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-6 N-SB-05-(60.0-67.1):APW-04 1:1-2 Sampled By: CLIENT on 22-FEB-22 @ 10:45 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.078	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	7.4	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	230	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	1.1	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.14	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	138	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	0.321	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	8.9	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	296	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.72	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	401	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0085	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-7 N-SB-05-(60.0-67.1):APW-04 1:5-1							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-7 N-SB-05-(60.0-67.1):APW-04 1:5-1 Sampled By: CLIENT on 22-FEB-22 @ 11:00 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.092	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	8.6	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	208	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	0.800	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.17	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	186	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	0.310	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	0.173	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	9.1	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	305	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.65	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	433	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0083	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-8 N-SB-05-(60.0-67.1):APW-04 1:5-2							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-8 N-SB-05-(60.0-67.1):APW-04 1:5-2 Sampled By: CLIENT on 22-FEB-22 @ 11:15 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	0.011	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.087	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	9.6	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	231	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.24	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	183	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	0.282	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	9.2	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	303	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.63	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	449	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0082	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-9 N-SB-05-(60.0-67.1):APW-04 1:10-1							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-9 N-SB-05-(60.0-67.1):APW-04 1:10-1 Sampled By: CLIENT on 22-FEB-22 @ 11:30 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	0.017	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.107	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	10.3	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	235	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	1.3	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.26	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	198	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	0.300	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	9.8	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	314	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.64	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	466	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0083	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-10 N-SB-05-(60.0-67.1):APW-04 1:10-2							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-10 N-SB-05-(60.0-67.1):APW-04 1:10-2 Sampled By: CLIENT on 22-FEB-22 @ 11:45 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	0.019	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.103	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	9.6	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	229	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.25	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	188	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	0.315	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	9.6	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	306	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.60	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	446	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0080	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-11 N-SB-05-(60.0-67.1):APW-04 1:20-1							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-11 N-SB-05-(60.0-67.1):APW-04 1:20-1 Sampled By: CLIENT on 22-FEB-22 @ 12:00 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	0.041	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.098	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	9.2	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	214	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	1.5	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.24	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	186	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	0.260	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	10.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	305	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.56	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	450	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0092	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-12 N-SB-05-(60.0-67.1):APW-04 1:20-2							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-12 N-SB-05-(60.0-67.1):APW-04 1:20-2 Sampled By: CLIENT on 22-FEB-22 @ 12:15 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	0.034	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.127	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	8.9	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	213	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.23	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	183	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	0.296	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	9.7	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	302	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.58	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	446	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0092	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-13 APW-14-1							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-13 APW-14-1 Sampled By: CLIENT on 22-FEB-22 @ 09:30 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	0.109	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.064	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	9.2	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	130	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.25	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	68.3	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	0.271	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	9.5	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	544	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.60	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	409	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	0.25	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-14 APW-14-2							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-14 APW-14-2 Sampled By: CLIENT on 22-FEB-22 @ 09:45 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	0.113	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.064	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	10.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	129	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.25	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	68.5	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	0.256	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	9.4	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	544	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.60	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	395	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-15 N-SB-04-(12.0-18.0):APW-14 2:1-1							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-15 N-SB-04-(12.0-18.0):APW-14 2:1-1 Sampled By: CLIENT on 22-FEB-22 @ 10:00 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.023	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	5.6	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	172	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	133	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	3.73	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	0.0096	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	11.5	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	368	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.36	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	402	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0083	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-16 N-SB-04-(12.0-18.0):APW-14 2:1-2							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-16 N-SB-04-(12.0-18.0):APW-14 2:1-2 Sampled By: CLIENT on 22-FEB-22 @ 10:15 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.025	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	5.6	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	173	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	130	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	4.23	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	0.0125	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	11.9	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	375	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.36	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	415	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0081	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-17 N-SB-04-(12.0-18.0):APW-14 1:1-1							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-17 N-SB-04-(12.0-18.0):APW-14 1:1-1 Sampled By: CLIENT on 22-FEB-22 @ 10:30 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.028	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	7.2	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	160	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.15	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	108	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	4.76	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	0.0128	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	11.2	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	418	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.36	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	394	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0076	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-18 N-SB-04-(12.0-18.0):APW-14 1:1-2							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-18 N-SB-04-(12.0-18.0):APW-14 1:1-2 Sampled By: CLIENT on 22-FEB-22 @ 10:45 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.027	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	7.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	155	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.13	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	109	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	4.70	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	0.0126	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	11.5	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	432	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.36	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	403	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0082	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-19 N-SB-04-(12.0-18.0):APW-14 1:5-1							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-19 N-SB-04-(12.0-18.0):APW-14 1:5-1 Sampled By: CLIENT on 22-FEB-22 @ 11:00 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.029	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	10.2	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	163	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.26	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	94.2	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	2.48	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	0.0112	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	12.3	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	588	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.49	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	459	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0051	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-20 N-SB-04-(12.0-18.0):APW-14 1:5-2							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-20 N-SB-04-(12.0-18.0):APW-14 1:5-2 Sampled By: CLIENT on 22-FEB-22 @ 11:15 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729274
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.026	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	8.9	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	137	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.20	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	85.3	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	3.06	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	0.0117	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	10.6	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	524	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.42	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	400	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0048	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-21 N-SB-04-(12.0-18.0):APW-14 1:10-1							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-21 N-SB-04-(12.0-18.0):APW-14 1:10-1 Sampled By: CLIENT on 22-FEB-22 @ 11:30 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729279
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.025	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	9.7	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	132	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.22	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	77.8	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	2.13	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	0.0089	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	10.2	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	530	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.46	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	385	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0036	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-22 N-SB-04-(12.0-18.0):APW-14 1:10-2							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-22 N-SB-04-(12.0-18.0):APW-14 1:10-2 Sampled By: CLIENT on 22-FEB-22 @ 11:45 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729279
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.023	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	9.7	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	132	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.23	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	74.6	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	1.80	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	0.0081	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	9.8	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	492	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.45	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	379	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0037	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-23 N-SB-04-(12.0-18.0):APW-14 1:20-1							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-23 N-SB-04-(12.0-18.0):APW-14 1:20-1 Sampled By: CLIENT on 22-FEB-22 @ 12:00 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729279
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.027	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	9.8	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	133	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.26	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	71.7	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	1.69	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	0.0075	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	9.6	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	533	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.53	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	386	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0021	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
L2688199-24 N-SB-04-(12.0-18.0):APW-14 1:20-2							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2688199-24 N-SB-04-(12.0-18.0):APW-14 1:20-2 Sampled By: CLIENT on 22-FEB-22 @ 12:15 Matrix: WATER							
Dissolved Metals							
Dissolved Metals Filtration Location	FIELD					25-FEB-22	R5729279
Aluminum (Al)-Dissolved	<0.50	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Antimony (Sb)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Arsenic (As)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Barium (Ba)-Dissolved	0.024	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Beryllium (Be)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Bismuth (Bi)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Boron (B)-Dissolved	9.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-FEB-22	25-FEB-22	R5729521
Calcium (Ca)-Dissolved	129	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Cesium (Cs)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Chromium (Cr)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Cobalt (Co)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Copper (Cu)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Iron (Fe)-Dissolved	<1.0	DLHC	1.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Lead (Pb)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Lithium (Li)-Dissolved	0.24	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Magnesium (Mg)-Dissolved	72.7	DLHC	0.50	mg/L	25-FEB-22	25-FEB-22	R5729521
Manganese (Mn)-Dissolved	1.28	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Molybdenum (Mo)-Dissolved	0.0068	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Nickel (Ni)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Phosphorus (P)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Potassium (K)-Dissolved	<5.0	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Rubidium (Rb)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Selenium (Se)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Silicon (Si)-Dissolved	9.4	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Silver (Ag)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-FEB-22	25-FEB-22	R5729521
Sodium (Na)-Dissolved	507	DLHC	5.0	mg/L	25-FEB-22	25-FEB-22	R5729521
Strontium (Sr)-Dissolved	0.50	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Sulfur (S)-Dissolved	376	DLHC	50	mg/L	25-FEB-22	25-FEB-22	R5729521
Tellurium (Te)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521
Thallium (Tl)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Thorium (Th)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Tin (Sn)-Dissolved	0.013	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Titanium (Ti)-Dissolved	<0.030	DLHC	0.030	mg/L	25-FEB-22	25-FEB-22	R5729521
Tungsten (W)-Dissolved	<0.010	DLHC	0.010	mg/L	25-FEB-22	25-FEB-22	R5729521
Uranium (U)-Dissolved	0.0027	DLHC	0.0010	mg/L	25-FEB-22	25-FEB-22	R5729521
Vanadium (V)-Dissolved	<0.050	DLHC	0.050	mg/L	25-FEB-22	25-FEB-22	R5729521
Zinc (Zn)-Dissolved	<0.10	DLHC	0.10	mg/L	25-FEB-22	25-FEB-22	R5729521
Zirconium (Zr)-Dissolved	<0.020	DLHC	0.020	mg/L	25-FEB-22	25-FEB-22	R5729521

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Aluminum (Al)-Dissolved	MS-B	L2688199-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L2688199-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2688199-21, -22, -23, -24
Matrix Spike	Boron (B)-Dissolved	MS-B	L2688199-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L2688199-21, -22, -23, -24
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2688199-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2688199-21, -22, -23, -24
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2688199-21, -22, -23, -24
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2688199-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2688199-21, -22, -23, -24
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2688199-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2688199-21, -22, -23, -24
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2688199-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2688199-21, -22, -23, -24
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2688199-21, -22, -23, -24
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2688199-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2688199-21, -22, -23, -24
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2688199-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2688199-21, -22, -23, -24
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2688199-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2688199-21, -22, -23, -24
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2688199-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2688199-21, -22, -23, -24
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2688199-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2688199-21, -22, -23, -24

Sample Parameter Qualifier key listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MET-D-CCMS-WT	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Reference Information

Chain of Custody Numbers:

1 2

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2688199 Report Date: 28-FEB-22

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5729521								
WG3699775-4 DUP		**WG3699775-3**						
Aluminum (Al)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	25-FEB-22
Antimony (Sb)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-FEB-22
Arsenic (As)-Dissolved		0.196	0.195		mg/L	0.5	20	25-FEB-22
Barium (Ba)-Dissolved		0.012	0.013		mg/L	6.7	20	25-FEB-22
Beryllium (Be)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-FEB-22
Bismuth (Bi)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	25-FEB-22
Boron (B)-Dissolved		9.2	9.3		mg/L	1.1	20	25-FEB-22
Cadmium (Cd)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	25-FEB-22
Calcium (Ca)-Dissolved		212	219		mg/L	3.4	20	25-FEB-22
Cesium (Cs)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-FEB-22
Chromium (Cr)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-FEB-22
Cobalt (Co)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-FEB-22
Copper (Cu)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	25-FEB-22
Iron (Fe)-Dissolved		<1.0	<1.0	RPD-NA	mg/L	N/A	20	25-FEB-22
Lead (Pb)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	25-FEB-22
Lithium (Li)-Dissolved		0.26	0.28		mg/L	7.4	20	25-FEB-22
Magnesium (Mg)-Dissolved		188	189		mg/L	0.2	20	25-FEB-22
Manganese (Mn)-Dissolved		0.239	0.244		mg/L	2.0	20	25-FEB-22
Molybdenum (Mo)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	25-FEB-22
Nickel (Ni)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-FEB-22
Phosphorus (P)-Dissolved		<5.0	<5.0	RPD-NA	mg/L	N/A	20	25-FEB-22
Potassium (K)-Dissolved		<5.0	<5.0	RPD-NA	mg/L	N/A	20	25-FEB-22
Rubidium (Rb)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	25-FEB-22
Selenium (Se)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	25-FEB-22
Silicon (Si)-Dissolved		10.5	10.4		mg/L	0.9	20	25-FEB-22
Silver (Ag)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	25-FEB-22
Sodium (Na)-Dissolved		296	308		mg/L	4.0	20	25-FEB-22
Strontium (Sr)-Dissolved		0.55	0.56		mg/L	2.1	20	25-FEB-22
Sulfur (S)-Dissolved		433	428		mg/L	1.1	20	25-FEB-22
Tellurium (Te)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	25-FEB-22
Thallium (Tl)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-FEB-22
Thorium (Th)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-FEB-22
Tin (Sn)-Dissolved		<0.010	<0.010		mg/L			25-FEB-22

Quality Control Report

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5729521								
WG3699775-4 DUP		**WG3699775-3**						
Tin (Sn)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-FEB-22
Titanium (Ti)-Dissolved		<0.030	<0.030	RPD-NA	mg/L	N/A	20	25-FEB-22
Tungsten (W)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-FEB-22
Uranium (U)-Dissolved		0.0087	0.0085		mg/L	2.1	20	25-FEB-22
Vanadium (V)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-FEB-22
Zinc (Zn)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	25-FEB-22
Zirconium (Zr)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	25-FEB-22
WG3699776-4 DUP		**WG3699776-3**						
Aluminum (Al)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	25-FEB-22
Antimony (Sb)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-FEB-22
Arsenic (As)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-FEB-22
Barium (Ba)-Dissolved		0.025	0.025		mg/L	1.6	20	25-FEB-22
Beryllium (Be)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-FEB-22
Bismuth (Bi)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	25-FEB-22
Boron (B)-Dissolved		9.7	9.0		mg/L	7.2	20	25-FEB-22
Cadmium (Cd)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	25-FEB-22
Calcium (Ca)-Dissolved		132	135		mg/L	2.2	20	25-FEB-22
Cesium (Cs)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-FEB-22
Chromium (Cr)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-FEB-22
Cobalt (Co)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-FEB-22
Copper (Cu)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	25-FEB-22
Iron (Fe)-Dissolved		<1.0	<1.0	RPD-NA	mg/L	N/A	20	25-FEB-22
Lead (Pb)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	25-FEB-22
Lithium (Li)-Dissolved		0.22	0.24		mg/L	8.0	20	25-FEB-22
Magnesium (Mg)-Dissolved		77.8	77.5		mg/L	0.4	20	25-FEB-22
Manganese (Mn)-Dissolved		2.13	2.13		mg/L	0.2	20	25-FEB-22
Molybdenum (Mo)-Dissolved		0.0089	0.0094		mg/L	5.8	20	25-FEB-22
Nickel (Ni)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-FEB-22
Phosphorus (P)-Dissolved		<5.0	<5.0	RPD-NA	mg/L	N/A	20	25-FEB-22
Potassium (K)-Dissolved		<5.0	<5.0	RPD-NA	mg/L	N/A	20	25-FEB-22
Rubidium (Rb)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	25-FEB-22
Selenium (Se)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	25-FEB-22
Silicon (Si)-Dissolved		10.2	10.2		mg/L	0.0	20	25-FEB-22

Quality Control Report

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5729521								
WG3699776-4 DUP		**WG3699776-3**						
Silver (Ag)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	25-FEB-22
Sodium (Na)-Dissolved		530	533		mg/L	0.6	20	25-FEB-22
Strontium (Sr)-Dissolved		0.46	0.47		mg/L	2.3	20	25-FEB-22
Sulfur (S)-Dissolved		385	386		mg/L	0.4	20	25-FEB-22
Tellurium (Te)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	25-FEB-22
Thallium (Tl)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-FEB-22
Thorium (Th)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-FEB-22
Tin (Sn)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-FEB-22
Titanium (Ti)-Dissolved		<0.030	<0.030	RPD-NA	mg/L	N/A	20	25-FEB-22
Tungsten (W)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-FEB-22
Uranium (U)-Dissolved		0.0036	0.0035		mg/L	2.8	20	25-FEB-22
Vanadium (V)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-FEB-22
Zinc (Zn)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	25-FEB-22
Zirconium (Zr)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	25-FEB-22
WG3699775-2 LCS								
Aluminum (Al)-Dissolved			100.7		%		80-120	25-FEB-22
Antimony (Sb)-Dissolved			100.7		%		80-120	25-FEB-22
Arsenic (As)-Dissolved			101.0		%		80-120	25-FEB-22
Barium (Ba)-Dissolved			99.2		%		80-120	25-FEB-22
Beryllium (Be)-Dissolved			98.7		%		80-120	25-FEB-22
Bismuth (Bi)-Dissolved			96.3		%		80-120	25-FEB-22
Boron (B)-Dissolved			93.9		%		80-120	25-FEB-22
Cadmium (Cd)-Dissolved			93.2		%		80-120	25-FEB-22
Calcium (Ca)-Dissolved			97.4		%		80-120	25-FEB-22
Cesium (Cs)-Dissolved			100.9		%		80-120	25-FEB-22
Chromium (Cr)-Dissolved			99.8		%		80-120	25-FEB-22
Cobalt (Co)-Dissolved			95.4		%		80-120	25-FEB-22
Copper (Cu)-Dissolved			99.3		%		80-120	25-FEB-22
Iron (Fe)-Dissolved			99.6		%		80-120	25-FEB-22
Lead (Pb)-Dissolved			102.2		%		80-120	25-FEB-22
Lithium (Li)-Dissolved			97.9		%		80-120	25-FEB-22
Magnesium (Mg)-Dissolved			106.0		%		80-120	25-FEB-22
Manganese (Mn)-Dissolved			99.99		%		80-120	25-FEB-22

Quality Control Report

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5729521								
WG3699775-2 LCS								
Molybdenum (Mo)-Dissolved			94.9		%		80-120	25-FEB-22
Nickel (Ni)-Dissolved			99.4		%		80-120	25-FEB-22
Phosphorus (P)-Dissolved			106.8		%		80-120	25-FEB-22
Potassium (K)-Dissolved			107.9		%		80-120	25-FEB-22
Rubidium (Rb)-Dissolved			102.9		%		80-120	25-FEB-22
Selenium (Se)-Dissolved			98.0		%		80-120	25-FEB-22
Silicon (Si)-Dissolved			99.1		%		60-140	25-FEB-22
Silver (Ag)-Dissolved			100.1		%		80-120	25-FEB-22
Sodium (Na)-Dissolved			100.5		%		80-120	25-FEB-22
Strontium (Sr)-Dissolved			109.0		%		80-120	25-FEB-22
Sulfur (S)-Dissolved			96.1		%		80-120	25-FEB-22
Tellurium (Te)-Dissolved			97.7		%		80-120	25-FEB-22
Thallium (Tl)-Dissolved			98.2		%		80-120	25-FEB-22
Thorium (Th)-Dissolved			98.7		%		80-120	25-FEB-22
Tin (Sn)-Dissolved			94.1		%		80-120	25-FEB-22
Titanium (Ti)-Dissolved			99.1		%		80-120	25-FEB-22
Tungsten (W)-Dissolved			96.2		%		80-120	25-FEB-22
Uranium (U)-Dissolved			101.0		%		80-120	25-FEB-22
Vanadium (V)-Dissolved			101.5		%		80-120	25-FEB-22
Zinc (Zn)-Dissolved			100.7		%		80-120	25-FEB-22
Zirconium (Zr)-Dissolved			99.5		%		80-120	25-FEB-22
WG3699776-2 LCS								
Aluminum (Al)-Dissolved			101.2		%		80-120	25-FEB-22
Antimony (Sb)-Dissolved			96.0		%		80-120	25-FEB-22
Arsenic (As)-Dissolved			100.6		%		80-120	25-FEB-22
Barium (Ba)-Dissolved			99.2		%		80-120	25-FEB-22
Beryllium (Be)-Dissolved			99.5		%		80-120	25-FEB-22
Bismuth (Bi)-Dissolved			96.3		%		80-120	25-FEB-22
Boron (B)-Dissolved			95.7		%		80-120	25-FEB-22
Cadmium (Cd)-Dissolved			91.6		%		80-120	25-FEB-22
Calcium (Ca)-Dissolved			97.8		%		80-120	25-FEB-22
Cesium (Cs)-Dissolved			99.5		%		80-120	25-FEB-22
Chromium (Cr)-Dissolved			99.2		%		80-120	25-FEB-22
Cobalt (Co)-Dissolved			94.9		%		80-120	25-FEB-22

Quality Control Report

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5729521								
WG3699776-2 LCS								
Copper (Cu)-Dissolved			98.7		%		80-120	25-FEB-22
Iron (Fe)-Dissolved			99.9		%		80-120	25-FEB-22
Lead (Pb)-Dissolved			102.4		%		80-120	25-FEB-22
Lithium (Li)-Dissolved			111.8		%		80-120	25-FEB-22
Magnesium (Mg)-Dissolved			103.5		%		80-120	25-FEB-22
Manganese (Mn)-Dissolved			99.6		%		80-120	25-FEB-22
Molybdenum (Mo)-Dissolved			94.5		%		80-120	25-FEB-22
Nickel (Ni)-Dissolved			98.3		%		80-120	25-FEB-22
Phosphorus (P)-Dissolved			102.2		%		80-120	25-FEB-22
Potassium (K)-Dissolved			97.9		%		80-120	25-FEB-22
Rubidium (Rb)-Dissolved			102.0		%		80-120	25-FEB-22
Selenium (Se)-Dissolved			98.0		%		80-120	25-FEB-22
Silicon (Si)-Dissolved			98.2		%		60-140	25-FEB-22
Silver (Ag)-Dissolved			99.1		%		80-120	25-FEB-22
Sodium (Na)-Dissolved			102.9		%		80-120	25-FEB-22
Strontium (Sr)-Dissolved			104.9		%		80-120	25-FEB-22
Sulfur (S)-Dissolved			96.2		%		80-120	25-FEB-22
Tellurium (Te)-Dissolved			94.0		%		80-120	25-FEB-22
Thallium (Tl)-Dissolved			101.8		%		80-120	25-FEB-22
Thorium (Th)-Dissolved			98.9		%		80-120	25-FEB-22
Tin (Sn)-Dissolved			91.4		%		80-120	25-FEB-22
Titanium (Ti)-Dissolved			97.1		%		80-120	25-FEB-22
Tungsten (W)-Dissolved			96.6		%		80-120	25-FEB-22
Uranium (U)-Dissolved			99.8		%		80-120	25-FEB-22
Vanadium (V)-Dissolved			100.9		%		80-120	25-FEB-22
Zinc (Zn)-Dissolved			101.2		%		80-120	25-FEB-22
Zirconium (Zr)-Dissolved			99.4		%		80-120	25-FEB-22
WG3699775-1 MB								
Aluminum (Al)-Dissolved			<0.0050		mg/L		0.005	25-FEB-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-FEB-22

Quality Control Report

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5729521								
WG3699775-1 MB								
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-FEB-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	25-FEB-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-FEB-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	25-FEB-22
Chromium (Cr)-Dissolved			<0.00050		mg/L		0.0005	25-FEB-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-FEB-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-FEB-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-FEB-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-FEB-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-FEB-22
Manganese (Mn)-Dissolved			<0.00050		mg/L		0.0005	25-FEB-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-FEB-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-FEB-22
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	25-FEB-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-FEB-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	25-FEB-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-FEB-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-FEB-22
Silver (Ag)-Dissolved			<0.000050		mg/L		0.00005	25-FEB-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-FEB-22
Strontium (Sr)-Dissolved			<0.0010		mg/L		0.001	25-FEB-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	25-FEB-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	25-FEB-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-FEB-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-FEB-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-FEB-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-FEB-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-FEB-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	25-FEB-22
WG3699776-1 MB								

Quality Control Report

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5729521								
WG3699776-1 MB								
Aluminum (Al)-Dissolved			<0.0050		mg/L		0.005	25-FEB-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-FEB-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-FEB-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	25-FEB-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-FEB-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	25-FEB-22
Chromium (Cr)-Dissolved			<0.00050		mg/L		0.0005	25-FEB-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-FEB-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-FEB-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-FEB-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-FEB-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-FEB-22
Manganese (Mn)-Dissolved			<0.00050		mg/L		0.0005	25-FEB-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-FEB-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-FEB-22
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	25-FEB-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-FEB-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	25-FEB-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-FEB-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-FEB-22
Silver (Ag)-Dissolved			<0.000050		mg/L		0.00005	25-FEB-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-FEB-22
Strontium (Sr)-Dissolved			<0.0010		mg/L		0.001	25-FEB-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	25-FEB-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	25-FEB-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-FEB-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22

Quality Control Report

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5729521								
WG3699776-1 MB								
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-FEB-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	25-FEB-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-FEB-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-FEB-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-FEB-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	25-FEB-22
WG3699775-5 MS		**WG3699775-3**						
Aluminum (Al)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Antimony (Sb)-Dissolved			92.6		%		70-130	25-FEB-22
Arsenic (As)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Beryllium (Be)-Dissolved			98.8		%		70-130	25-FEB-22
Bismuth (Bi)-Dissolved			90.2		%		70-130	25-FEB-22
Boron (B)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Cadmium (Cd)-Dissolved			96.1		%		70-130	25-FEB-22
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Cesium (Cs)-Dissolved			92.6		%		70-130	25-FEB-22
Chromium (Cr)-Dissolved			90.0		%		70-130	25-FEB-22
Cobalt (Co)-Dissolved			88.4		%		70-130	25-FEB-22
Iron (Fe)-Dissolved			81.2		%		70-130	25-FEB-22
Lead (Pb)-Dissolved			98.0		%		70-130	25-FEB-22
Lithium (Li)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Molybdenum (Mo)-Dissolved			81.6		%		70-130	25-FEB-22
Nickel (Ni)-Dissolved			86.6		%		70-130	25-FEB-22
Phosphorus (P)-Dissolved			98.3		%		70-130	25-FEB-22
Rubidium (Rb)-Dissolved			84.6		%		70-130	25-FEB-22
Selenium (Se)-Dissolved			95.7		%		70-130	25-FEB-22
Silicon (Si)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Silver (Ag)-Dissolved			76.4		%		70-130	25-FEB-22
Sodium (Na)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Sulfur (S)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Tellurium (Te)-Dissolved			87.2		%		70-130	25-FEB-22

Quality Control Report

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5729521								
WG3699775-5 MS		**WG3699775-3**						
Thallium (Tl)-Dissolved			94.9		%		70-130	25-FEB-22
Thorium (Th)-Dissolved			94.4		%		70-130	25-FEB-22
Tin (Sn)-Dissolved			91.3		%		70-130	25-FEB-22
Titanium (Ti)-Dissolved			93.1		%		70-130	25-FEB-22
Tungsten (W)-Dissolved			94.0		%		70-130	25-FEB-22
Uranium (U)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Vanadium (V)-Dissolved			97.4		%		70-130	25-FEB-22
Zirconium (Zr)-Dissolved			91.5		%		70-130	25-FEB-22
WG3699776-5 MS		**WG3699776-3**						
Antimony (Sb)-Dissolved			100.9		%		70-130	25-FEB-22
Arsenic (As)-Dissolved			91.8		%		70-130	25-FEB-22
Barium (Ba)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Beryllium (Be)-Dissolved			94.0		%		70-130	25-FEB-22
Bismuth (Bi)-Dissolved			93.8		%		70-130	25-FEB-22
Boron (B)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Cadmium (Cd)-Dissolved			92.6		%		70-130	25-FEB-22
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Cesium (Cs)-Dissolved			97.0		%		70-130	25-FEB-22
Chromium (Cr)-Dissolved			91.1		%		70-130	25-FEB-22
Iron (Fe)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Lead (Pb)-Dissolved			102.1		%		70-130	25-FEB-22
Lithium (Li)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Nickel (Ni)-Dissolved			72.1		%		70-130	25-FEB-22
Phosphorus (P)-Dissolved			102.4		%		70-130	25-FEB-22
Potassium (K)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Rubidium (Rb)-Dissolved			91.5		%		70-130	25-FEB-22
Selenium (Se)-Dissolved			94.1		%		70-130	25-FEB-22
Silicon (Si)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Silver (Ag)-Dissolved			89.7		%		70-130	25-FEB-22
Sodium (Na)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Sulfur (S)-Dissolved			N/A	MS-B	%		-	25-FEB-22

Quality Control Report

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5729521								
WG3699776-5 MS		**WG3699776-3**						
Tellurium (Te)-Dissolved			91.8		%		70-130	25-FEB-22
Thallium (Tl)-Dissolved			91.2		%		70-130	25-FEB-22
Thorium (Th)-Dissolved			95.9		%		70-130	25-FEB-22
Tin (Sn)-Dissolved			93.5		%		70-130	25-FEB-22
Titanium (Ti)-Dissolved			87.2		%		70-130	25-FEB-22
Tungsten (W)-Dissolved			93.5		%		70-130	25-FEB-22
Uranium (U)-Dissolved			N/A	MS-B	%		-	25-FEB-22
Vanadium (V)-Dissolved			99.0		%		70-130	25-FEB-22
Zirconium (Zr)-Dissolved			91.8		%		70-130	25-FEB-22

Quality Control Report

Workorder: L2688199 Report Date: 28-FEB-22

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: Michael Healey

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

L2688199-COFC

COC Number: 16 -

Page 1 of 2

Report To		Report F
Company:	SiREM	Select Report Format:
Contact:	Rachel Hallman, Michael Healey	Quality Control (QC) Report with Report ☐ Yes ☐ No
Address:	130 Research Lane, Suite 2 Guelph, Ontario, Canada, N1G 5G3	☐ Criteria on Report - provide details below if box checked
Phone:	519-822-2265	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
		Email 1 or Fax rhallman@siremlab.com
		Email 2 mhealey@siremlab.com

Invoice To	Same as Report To ☐ Yes ☐ No	Invoice Distribution
	Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Company:	SiREM	Email 1 or Fax kbroersma@geosyntec.com
Contact:	Karen Broersma, kbroersma@geosyntec.com	Email 2

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	Newton MNA	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L2688199 | **ALS Contact:** | **Sampler:** Rachel Hallman

Turnaround Time (TAT) Below (Rush Turnaround Time (TAT) is not available for all tests)

- R ☐ Regular (Standard TAT if received by 3 pm - business days)
- P ☑ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
- E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
- E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge

Specify Date Required for E2,E or P:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	F/P	Dissolved Metals (incl. As, B, and Li)	Number of Containers
	APW-14-1	22-Feb-22	9:30	Water	P		1
	APW-14-2	22-Feb-22	9:45	Water	P		1
	N-SB-04-(12.0-18.0) :APW-14 2:1-1	22-Feb-22	10:00	Water	P		1
	N-SB-04-(12.0-18.0) :APW-14 2:1-2	22-Feb-22	10:15	Water	P		1
	N-SB-04-(12.0-18.0) :APW-14 1:1-1	22-Feb-22	10:30	Water	P		1
	N-SB-04-(12.0-18.0) :APW-14 1:1-2	22-Feb-22	10:45	Water	P		1
	N-SB-04-(12.0-18.0) :APW-14 1:5-1	22-Feb-22	11:00	Water	P		1
	N-SB-04-(12.0-18.0) :APW-14 1:5-2	22-Feb-22	11:15	Water	P		1
	N-SB-04-(12.0-18.0) :APW-14 1:10-1	22-Feb-22	11:30	Water	P		1
	N-SB-04-(12.0-18.0) :APW-14 1:10-2	22-Feb-22	11:45	Water	P		1
	N-SB-04-(12.0-18.0) :APW-14 1:20-1	22-Feb-22	12:00	Water	P		1
	N-SB-04-(12.0-18.0) :APW-14 1:20-2	22-Feb-22	12:15	Water	P		1

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☑ No

Are samples for human drinking water use? ☐ Yes ☑ No

Special Instructions / Specify Criteria to add on report (client Use)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			5.1		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date: 22 Feb 22	Time: 4:00pm	Received by:	Date:	Time:	Received by: Emma	Date: 24/2/22	Time: 2pm

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0326a v09 Front/04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

L2688199-COFC

COC Number: 16 -

Page 1 of 2

Report To		Report For		Turnaround Time (TAT) Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	SiREM	Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	TAT if received by 3 pm - business days)
Contact:	Rachel Hallman, Michael Healey	Quality Control (QC) Report with Report	☐ Yes ☐ No	P ☑ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	130 Research Lane, Suite 2 Guelph, Ontario, Canada, N1G 5G3	☐ Criteria on Report - provide details below if box checked		E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
		Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	519-822-2265	Email 1 or Fax	rhallman@siremlab.com	Specify Date Required for E2,E or P:
		Email 2	mhealey@siremlab.com	

Invoice To	Same as Report To ☐ Yes ☐ No	Invoice Distribution	
	Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Company:	SiREM	Email 1 or Fax	kbroersma@geosyntec.com
Contact:	Karen Broersma, kbroersma@geosyntec.com	Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	Newton MNA	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)	L2688199	ALS Contact:	Sampler: Rachel Hallman

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	F/P	Dissolved Metals (incl. As, B, and Li)	Number of Containers
	APW-04-1	22-Feb-22	9:30	Water	P		1
	APW-04-2	22-Feb-22	9:45	Water	P		1
	N-SB-05-(60.0-67.1) :APW-04 2:1-1	22-Feb-22	10:00	Water	P		1
	N-SB-05-(60.0-67.1) :APW-04 2:1-2	22-Feb-22	10:15	Water	P		1
	N-SB-05-(60.0-67.1) :APW-04 1:1-1	22-Feb-22	10:30	Water	P		1
	N-SB-05-(60.0-67.1) :APW-04 1:1-2	22-Feb-22	10:45	Water	P		1
	N-SB-05-(60.0-67.1) :APW-04 1:5-1	22-Feb-22	11:00	Water	P		1
	N-SB-05-(60.0-67.1) :APW-04 1:5-2	22-Feb-22	11:15	Water	P		1
	N-SB-05-(60.0-67.1) :APW-04 1:10-1	22-Feb-22	11:30	Water	P		1
	N-SB-05-(60.0-67.1) :APW-04 1:10-2	22-Feb-22	11:45	Water	P		1
	N-SB-05-(60.0-67.1) :APW-04 1:20-1	22-Feb-22	12:00	Water	P		1
	N-SB-05-(60.0-67.1) :APW-04 1:20-2	22-Feb-22	12:15	Water	P		1

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☑ No	
Are samples for human drinking water use? ☐ Yes ☑ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No ☐	
Ice packs	Yes ☐	No ☑	Custody seal intact	Yes ☐	No ☐
Cooling Initiated	☐				

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			5.1		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
	22 Feb 22	4:00pm.				Emma	2/24/22	8AM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0326e v09 Front104 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WT2201588**	Page	: 1 of 4
Client	: **SiREM**	Laboratory	: Waterloo - Environmental
Contact	: Michael Healey	Account Manager	: Gayle Braun
Address	: 130 Stone Road West Guelph ON Canada N1G 3Z2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 519 822 2265	Telephone	: +1 519 886 6910
Project	: Newton	Date Samples Received	: 22-Mar-2022 15:25
PO	: ----	Date Analysis Commenced	: 22-Mar-2022
C-O-C number	: ----	Issue Date	: 29-Mar-2022 10:08
Sampler	: Rachel Hallman		
Site	: ----		
Quote number	: 2022 SOA		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Greg Pokocky	Supervisor - Inorganic	Metals, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
mg/L	milligrams per litre

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLHC	*Detection Limit Raised: Dilution required due to high concentration of test analyte(s).*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	N-SB-02D (65.0-71.5): APW-05 Unamended-1a	N-SB-02D (65.0-71.5): APW-05 Unamended-1b	N-SB-02S (12.5-20.0):APW-05 Unamended-1a	N-SB-02S (12.5-20.0):APW-05 Unamended-1b	----
					Client sampling date / time	21-Mar-2022 13:00	21-Mar-2022 13:15	21-Mar-2022 13:30	21-Mar-2022 13:45	----
						WT2201588-001	WT2201588-002	WT2201588-003	WT2201588-004	--------
						Result	Result	Result	Result	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00180 DLHC	0.00153 DLHC	0.00707 DLHC	0.00588 DLHC	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.282 DLHC	0.300 DLHC	0.128 DLHC	0.102 DLHC	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000200 DLHC	<0.000200 DLHC	<0.000200 DLHC	<0.000200 DLHC	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.100 DLHC	<0.100 DLHC	<0.100 DLHC	<0.100 DLHC	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000500 DLHC	0.0000578 DLHC	<0.0000500 DLHC	<0.0000500 DLHC	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		60.5 DLHC	61.3 DLHC	55.7 DLHC	56.7 DLHC	----
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00163 DLHC	0.00150 DLHC	<0.00100 DLHC	<0.00100 DLHC	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00383 DLHC	0.00426 DLHC	<0.00200 DLHC	<0.00200 DLHC	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.100 DLHC	<0.100 DLHC	<0.100 DLHC	<0.100 DLHC	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		30.0 DLHC	30.4 DLHC	31.6 DLHC	32.2 DLHC	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.179 DLHC	0.187 DLHC	0.00214 DLHC	0.00188 DLHC	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0105 DLHC	0.0109 DLHC	0.0106 DLHC	0.0106 DLHC	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.500 DLHC	<0.500 DLHC	<0.500 DLHC	<0.500 DLHC	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L		1.71 DLHC	1.75 DLHC	1.97 DLHC	2.07 DLHC	----
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.00137 DLHC	0.00154 DLHC	<0.000500 DLHC	<0.000500 DLHC	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		6.22 DLHC	6.35 DLHC	6.52 DLHC	6.60 DLHC	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		136 DLHC	139 DLHC	142 DLHC	140 DLHC	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.366 DLHC	0.370 DLHC	0.351 DLHC	0.344 DLHC	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	N-SB-02D (65.0-71.5): APW-05 Unamended-1a	N-SB-02D (65.0-71.5): APW-05 Unamended-1b	N-SB-02S (12.5-20.0):APW-05 Unamended-1a	N-SB-02S (12.5-20.0):APW-05 Unamended-1b	----
					Client sampling date / time	21-Mar-2022 13:00	21-Mar-2022 13:15	21-Mar-2022 13:30	21-Mar-2022 13:45	----
						WT2201588-001	WT2201588-002	WT2201588-003	WT2201588-004	--------
						Result	Result	Result	Result	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		7.29 DLHC	7.12 DLHC	<5.00 DLHC	6.18 DLHC	----
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	----
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC	----
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000495 DLHC	0.000456 DLHC	0.000515 DLHC	0.000789 DLHC	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2201588**	Page	: 1 of 5
Client	: **SiREM**	Laboratory	: Waterloo - Environmental
Contact	: Michael Healey	Account Manager	: Gayle Braun
Address	: 130 Stone Road West Guelph ON Canada N1G 3Z2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 519 822 2265	Telephone	: +1 519 886 6910
Project	: Newton	Date Samples Received	: 22-Mar-2022 15:25
PO	: ----	Issue Date	: 29-Mar-2022 10:08
C-O-C number	: ----		
Sampler	: Rachel Hallman		
Site	: ----		
Quote number	: 2022 SOA		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
N-SB-02D (65.0-71.5): APW-05 Unamended-1a	E421	21-Mar-2022	22-Mar-2022	----	----		22-Mar-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
N-SB-02D (65.0-71.5): APW-05 Unamended-1b	E421	21-Mar-2022	22-Mar-2022	----	----		22-Mar-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
N-SB-02S (12.5-20.0):APW-05 Unamended-1a	E421	21-Mar-2022	22-Mar-2022	----	----		22-Mar-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
N-SB-02S (12.5-20.0):APW-05 Unamended-1b	E421	21-Mar-2022	22-Mar-2022	----	----		22-Mar-2022	180 days	1 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Dissolved Metals in Water by CRC ICPMS	E421	439609	1	4	25.0	5.0	✓
Laboratory Control Samples (LCS)							
Dissolved Metals in Water by CRC ICPMS	E421	439609	1	4	25.0	5.0	✓
Method Blanks (MB)							
Dissolved Metals in Water by CRC ICPMS	E421	439609	1	4	25.0	5.0	✓
Matrix Spikes (MS)							
Dissolved Metals in Water by CRC ICPMS	E421	439609	1	4	25.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Waterloo - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 Waterloo - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

QUALITY CONTROL REPORT

Work Order	: **WT2201588**	Page	: 1 of 10
Client	: SiREM	Laboratory	: Waterloo - Environmental
Contact	: Michael Healey	Account Manager	: Gayle Braun
Address	: 130 Stone Road West Guelph ON Canada N1G 3Z2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 519 822 2265	Telephone	: +1 519 886 6910
Project	: Newton	Date Samples Received	: 22-Mar-2022 15:25
PO	: ----	Date Analysis Commenced	: 22-Mar-2022
C-O-C number	: ----	Issue Date	: 29-Mar-2022 10:08
Sampler	: Rachel Hallman		
Site	: ----		
Quote number	: 2022 SOA		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Greg Pokocky	Supervisor - Inorganic	Metals, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 439609)											
WT2201588-001	N-SB-02D (65.0-71.5): APW-05 Unamended-1a	aluminum, dissolved	7429-90-5	E421	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00100	mg/L	0.00180	0.00159	0.00021	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00100	mg/L	0.282	0.290	2.63%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000200	mg/L	<0.000200	<0.000200	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000500	mg/L	<0.0000500	<0.0000500	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.500	mg/L	60.5	61.6	1.75%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00100	mg/L	0.00163	0.00162	0.000004	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00200	mg/L	0.00383	0.00387	0.00004	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0500	mg/L	30.0	30.7	2.37%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00100	mg/L	0.179	0.186	4.09%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000500	mg/L	0.0105	0.0109	3.72%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.500	mg/L	<0.500	<0.500	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.500	mg/L	1.71	1.73	0.020	Diff <2x LOR	----
		rubidium, dissolved	7440-17-7	E421	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000500	mg/L	0.00137	0.00155	0.000184	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.500	mg/L	6.22	6.39	2.68%	20%	----
		silver, dissolved	7440-22-4	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.500	mg/L	136	139	2.00%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00200	mg/L	0.366	0.370	1.06%	20%	----
		sulfur, dissolved	7704-34-9	E421	5.00	mg/L	7.29	7.50	0.21	Diff <2x LOR	----
		tellurium, dissolved	13494-80-9	E421	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 439609) - continued											
WT2201588-001	N-SB-02D (65.0-71.5): APW-05 Unamended-1a	thorium, dissolved	7440-29-1	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00300	mg/L	<0.00300	<0.00300	0	Diff <2x LOR	----
		tungsten, dissolved	7440-33-7	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000100	mg/L	0.000495	0.000493	0.000002	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00300	mg/L	<0.00300	<0.00300	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 439609)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 439609) - continued						
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 439609)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	0.1 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	0.05 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	0.05 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.0125 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.005 mg/L	97.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	0.05 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	0.05 mg/L	91.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.005 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	2.5 mg/L	99.0	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.0025 mg/L	104	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.0125 mg/L	99.0	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.0125 mg/L	98.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.0125 mg/L	99.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	0.05 mg/L	100	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.025 mg/L	105	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.0125 mg/L	96.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	2.5 mg/L	99.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.0125 mg/L	97.9	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.0125 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.025 mg/L	98.0	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	0.5 mg/L	99.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	2.5 mg/L	99.6	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.005 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	0.05 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	0.5 mg/L	97.8	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.005 mg/L	97.3	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	2.5 mg/L	100	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.0125 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	2.5 mg/L	95.2	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.005 mg/L	99.7	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	0.05 mg/L	104	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.005 mg/L	108	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.025 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.0125 mg/L	99.6	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 439609) - continued									
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.005 mg/L	104	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.00025 mg/L	110	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.025 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.025 mg/L	104	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.005 mg/L	99.2	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 439609)										
WT2201588-001	N-SB-02D (65.0-71.5): APW-05 Unamended-1a	aluminum, dissolved	7429-90-5	E421	0.977 mg/L	1 mg/L	97.7	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.492 mg/L	0.5 mg/L	98.3	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.496 mg/L	0.5 mg/L	99.3	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.125 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0476 mg/L	0.05 mg/L	95.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.475 mg/L	0.5 mg/L	95.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.444 mg/L	0.5 mg/L	88.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0493 mg/L	0.05 mg/L	98.6	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	25 mg/L	ND	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.0249 mg/L	0.025 mg/L	99.6	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.117 mg/L	0.125 mg/L	93.7	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.117 mg/L	0.125 mg/L	93.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.114 mg/L	0.125 mg/L	91.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	0.473 mg/L	0.5 mg/L	94.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.247 mg/L	0.25 mg/L	99.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.120 mg/L	0.125 mg/L	95.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	25 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.125 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.119 mg/L	0.125 mg/L	95.5	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.229 mg/L	0.25 mg/L	91.8	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	5.27 mg/L	5 mg/L	105	70.0	130	----
		potassium, dissolved	7440-09-7	E421	24.1 mg/L	25 mg/L	96.3	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0480 mg/L	0.05 mg/L	96.0	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.506 mg/L	0.5 mg/L	101	70.0	130	----
		silicon, dissolved	7440-21-3	E421	ND mg/L	5 mg/L	ND	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0453 mg/L	0.05 mg/L	90.6	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	25 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.125 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	24.5 mg/L	25 mg/L	98.2	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0501 mg/L	0.05 mg/L	100	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.492 mg/L	0.5 mg/L	98.3	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0512 mg/L	0.05 mg/L	102	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 439609) - continued										
WT2201588-001	N-SB-02D (65.0-71.5): APW-05 Unamended-1a	tin, dissolved	7440-31-5	E421	0.250 mg/L	0.25 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.117 mg/L	0.125 mg/L	93.7	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0491 mg/L	0.05 mg/L	98.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00264 mg/L	0.0025 mg/L	105	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.241 mg/L	0.25 mg/L	96.3	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.240 mg/L	0.25 mg/L	96.1	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0474 mg/L	0.05 mg/L	94.7	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 1

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Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report
Company:	SIREM
Contact:	Rachel Hallman, Michael Healey
Phone:	519 822 2265
	Company address below will appear on the final report
Street:	130 Stone Rd
City/Province:	Guelph, ON
Postal Code:	
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	SiREM a Division of Geosyntec
Contact:	Karen Broersma, kbroersma@geosyntec.com

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: rhallman@siremlab.com

Email 2: mhealey@siremlab.com

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: accountspayablecan@siremlab.com

Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:	
Job #:	Newton
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only): WT2201588

ALS Contact: Gayle

Sampler: Rachel Hallman

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	F/P	Dissolved Metals (incl. As, B and Li)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	N-SB-02D (65.0-71.5):APW-05 Unamended-1a	21-Mar-22	13:00	Water	1	R				
	N-SB-02D (65.0-71.5):APW-05 Unamended-2a	21-Mar-22	13:15	Water	1	R				
	N-SB-02S (12.5-20.0):APW-05 Unamended-1a	21-Mar-22	13:30	Water	1	R				
	N-SB-02S (12.5-20.0):APW-05 Unamended-2a	21-Mar-22	13:45	Water	1	R				

Environmental Division
Waterloo
Work Order Reference
WT2201588

Telephone : +1 519 886 6910

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
	7.8

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
Rachel Hallman	21-Mar-22	14:00

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
HD	22/03/22	14 15

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WT2201892-AA**	Page	: 1 of 8
Amendment	: **1**		
Client	: **SiREM**	Laboratory	: Waterloo - Environmental
Contact	: Rachel Hallman	Account Manager	: Gayle Braun
Address	: 130 Stone Road West Guelph ON Canada N1G 3Z2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 519 822 2265	Telephone	: +1 519 886 6910
Project	: Newton	Date Samples Received	: 31-Mar-2022 14:00
PO	: ----	Date Analysis Commenced	: 01-Apr-2022
C-O-C number	: ----	Issue Date	: 27-Jul-2022 10:05
Sampler	: ----		
Site	: ----		
Quote number	: 2022 SOA		
No. of samples received	: 12		
No. of samples analysed	: 12		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Greg Pokocky	Supervisor - Inorganic	Metals, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
mg/L	milligrams per litre

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLHC	*Detection Limit Raised: Dilution required due to high concentration of test analyte(s).*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	N-SB-02S (65.0-71.5) APW-05 UNAMENDED-1	N-SB-02S (65.0-71.5) APW-05 UNAMENDED-2	N-SB-02S (65.0-71.5) APW-05 OXYGEN-1	N-SB-02S (65.0-71.5) APW-05 OXYGEN-2	N-SB-02S (65.0-71.5) APW-05 HYDROGEN-1
					Client sampling date / time	28-Mar-2022 12:00	28-Mar-2022 12:15	28-Mar-2022 12:30	28-Mar-2022 12:45	28-Mar-2022 13:00
						WT2201892-001	WT2201892-002	WT2201892-003	WT2201892-004	WT2201892-005
						Result	Result	Result	Result	Result
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00132 DLHC	<0.00100 DLHC	0.00103 DLHC	<0.00100 DLHC	0.00143 DLHC
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.292 DLHC	0.288 DLHC	0.287 DLHC	0.267 DLHC	0.286 DLHC
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000200 DLHC	<0.000200 DLHC	<0.000200 DLHC	<0.000200 DLHC	<0.000200 DLHC
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.100 DLHC	<0.100 DLHC	<0.100 DLHC	<0.100 DLHC	<0.100 DLHC
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000529 DLHC	0.0000684 DLHC	0.0000594 DLHC	<0.0000500 DLHC	0.0000966 DLHC
calcium, dissolved	7440-70-2	E421	0.050	mg/L		65.0 DLHC	62.3 DLHC	61.2 DLHC	61.0 DLHC	61.6 DLHC
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00240 DLHC	0.00225 DLHC	0.00120 DLHC	0.00141 DLHC	0.00276 DLHC
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00200 DLHC	0.00252 DLHC	0.00346 DLHC	0.00302 DLHC	0.00250 DLHC
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.100 DLHC	<0.100 DLHC	<0.100 DLHC	<0.100 DLHC	<0.100 DLHC
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC	0.0331 DLHC	<0.0100 DLHC
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		29.0 DLHC	29.3 DLHC	28.3 DLHC	28.6 DLHC	29.3 DLHC
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.422 DLHC	0.393 DLHC	0.313 DLHC	0.329 DLHC	0.474 DLHC
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0106 DLHC	0.0108 DLHC	0.0113 DLHC	0.0116 DLHC	0.0104 DLHC
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00814 DLHC	0.00720 DLHC	0.00515 DLHC	0.00544 DLHC	0.00872 DLHC
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.500 DLHC	<0.500 DLHC	<0.500 DLHC	<0.500 DLHC	<0.500 DLHC
potassium, dissolved	7440-09-7	E421	0.050	mg/L		1.68 DLHC	1.67 DLHC	1.65 DLHC	1.65 DLHC	1.68 DLHC
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000546 DLHC	0.000681 DLHC	0.00118 DLHC	0.00181 DLHC	0.00141 DLHC
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.95 DLHC	4.74 DLHC	4.56 DLHC	4.54 DLHC	4.88 DLHC
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC
sodium, dissolved	7440-23-5	E421	0.050	mg/L		129 DLHC	128 DLHC	127 DLHC	124 DLHC	127 DLHC
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.369 DLHC	0.355 DLHC	0.350 DLHC	0.358 DLHC	0.362 DLHC

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	N-SB-02S (65.0-71.5) APW-05 UNAMENDED-1	N-SB-02S (65.0-71.5) APW-05 UNAMENDED-2	N-SB-02S (65.0-71.5) APW-05 OXYGEN-1	N-SB-02S (65.0-71.5) APW-05 OXYGEN-2	N-SB-02S (65.0-71.5) APW-05 HYDROGEN-1
					Client sampling date / time	28-Mar-2022 12:00	28-Mar-2022 12:15	28-Mar-2022 12:30	28-Mar-2022 12:45	28-Mar-2022 13:00
						WT2201892-001	WT2201892-002	WT2201892-003	WT2201892-004	WT2201892-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		7.42 DLHC	7.60 DLHC	6.09 DLHC	7.83 DLHC	7.11 DLHC
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00108 DLHC	0.00108 DLHC	0.00125 DLHC	0.00129 DLHC	0.00110 DLHC
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	N-SB-02S (65.0-71.5) APW-05 HYDROGEN-2	N-SB-02S (12.5-20.0) APW-05 UNAMENDED-1	N-SB-02S (12.5-20.0) APW-05 UNAMENDED-2	N-SB-02S (12.5-20.0) APW-05 OXYGEN-1	N-SB-02S (12.5-20.0) APW-05 OXYGEN-2
					Client sampling date / time	28-Mar-2022 13:15	28-Mar-2022 13:30	28-Mar-2022 13:45	28-Mar-2022 14:00	28-Mar-2022 14:15
						WT2201892-006	WT2201892-007	WT2201892-008	WT2201892-009	WT2201892-010
						Result	Result	Result	Result	Result
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00168 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.286 DLHC	0.0625 DLHC	0.0514 DLHC	0.0419 DLHC	0.0459 DLHC
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000200 DLHC	<0.000200 DLHC	<0.000200 DLHC	<0.000200 DLHC	<0.000200 DLHC
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.100 DLHC	<0.100 DLHC	<0.100 DLHC	<0.100 DLHC	<0.100 DLHC
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000614 DLHC	<0.0000500 DLHC	<0.0000500 DLHC	<0.0000500 DLHC	<0.0000500 DLHC
calcium, dissolved	7440-70-2	E421	0.050	mg/L		66.7 DLHC	66.2 DLHC	101 DLHC	71.2 DLHC	87.4 DLHC
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00274 DLHC	<0.00100 DLHC	0.00105 DLHC	<0.00100 DLHC	<0.00100 DLHC
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.100 DLHC	<0.100 DLHC	<0.100 DLHC	<0.100 DLHC	<0.100 DLHC
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0100 DLHC	0.0159 DLHC	0.0152 DLHC	0.0142 DLHC	0.0162 DLHC
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		29.4 DLHC	39.0 DLHC	43.8 DLHC	39.0 DLHC	41.4 DLHC
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.457 DLHC	0.0968 DLHC	0.158 DLHC	<0.00100 DLHC	<0.00100 DLHC
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0100 DLHC	0.00833 DLHC	0.00813 DLHC	0.00976 DLHC	0.0104 DLHC
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00814 DLHC	<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.500 DLHC	<0.500 DLHC	<0.500 DLHC	<0.500 DLHC	<0.500 DLHC
potassium, dissolved	7440-09-7	E421	0.050	mg/L		1.66 DLHC	3.18 DLHC	3.20 DLHC	3.08 DLHC	3.16 DLHC
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000635 DLHC	<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC	<0.000500 DLHC
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.97 DLHC	6.83 DLHC	6.59 DLHC	6.53 DLHC	6.46 DLHC
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC
sodium, dissolved	7440-23-5	E421	0.050	mg/L		129 DLHC	130 DLHC	129 DLHC	132 DLHC	132 DLHC
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.372 DLHC	0.296 DLHC	0.362 DLHC	0.303 DLHC	0.321 DLHC
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		8.50 DLHC	22.9 DLHC	61.0 DLHC	33.8 DLHC	48.1 DLHC

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	N-SB-02S (65.0-71.5) APW-05 HYDROGEN-2	N-SB-02S (12.5-20.0) APW-05 UNAMENDED-1	N-SB-02S (12.5-20.0) APW-05 UNAMENDED-2	N-SB-02S (12.5-20.0) APW-05 OXYGEN-1	N-SB-02S (12.5-20.0) APW-05 OXYGEN-2
					Client sampling date / time	28-Mar-2022 13:15	28-Mar-2022 13:30	28-Mar-2022 13:45	28-Mar-2022 14:00	28-Mar-2022 14:15
						WT2201892-006	WT2201892-007	WT2201892-008	WT2201892-009	WT2201892-010
						Result	Result	Result	Result	Result
Dissolved Metals										
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC	<0.00200 DLHC
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC	<0.000100 DLHC
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC	<0.00100 DLHC
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00112 DLHC	0.00439 DLHC	0.00501 DLHC	0.00506 DLHC	0.00431 DLHC
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC	<0.00500 DLHC
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC	<0.0100 DLHC
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC	<0.00300 DLHC
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	N-SB-02S (12.5-20.0) APW-05 HYDROGEN-1	N-SB-02S (12.5-20.0) APW-05 HYDROGEN-2	----	----	----
					Client sampling date / time	28-Mar-2022 14:30	28-Mar-2022 14:45	----	----	----
						WT2201892-011	WT2201892-012	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0114 DLHC	0.0459 DLHC	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0390 DLHC	0.0349 DLHC	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000200 DLHC	<0.000200 DLHC	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000500 DLHC	<0.000500 DLHC	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.100 DLHC	<0.100 DLHC	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000500 DLHC	<0.0000500 DLHC	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		99.0 DLHC	102 DLHC	----	----	----
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000100 DLHC	<0.000100 DLHC	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00500 DLHC	<0.00500 DLHC	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00189 DLHC	0.00178 DLHC	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00200 DLHC	<0.00200 DLHC	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.100 DLHC	<0.100 DLHC	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000500 DLHC	<0.000500 DLHC	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0162 DLHC	0.0163 DLHC	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		42.6 DLHC	42.2 DLHC	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.376 DLHC	0.253 DLHC	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00737 DLHC	0.00806 DLHC	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00500 DLHC	<0.00500 DLHC	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.500 DLHC	<0.500 DLHC	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L		3.10 DLHC	3.18 DLHC	----	----	----
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		<0.00200 DLHC	<0.00200 DLHC	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000500 DLHC	<0.000500 DLHC	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		6.80 DLHC	6.72 DLHC	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000100 DLHC	<0.000100 DLHC	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		128 DLHC	125 DLHC	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.344 DLHC	0.333 DLHC	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		55.4 DLHC	60.1 DLHC	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	N-SB-02S (12.5-20.0) APW-05 HYDROGEN-1	N-SB-02S (12.5-20.0) APW-05 HYDROGEN-2	----	----	----
					Client sampling date / time	28-Mar-2022 14:30	28-Mar-2022 14:45	----	----	----
						WT2201892-011	WT2201892-012	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00200 DLHC	<0.00200 DLHC	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000100 DLHC	<0.000100 DLHC	----	----	----
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00300 DLHC	<0.00300 DLHC	----	----	----
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00100 DLHC	<0.00100 DLHC	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00536 DLHC	0.00478 DLHC	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00500 DLHC	<0.00500 DLHC	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0100 DLHC	<0.0100 DLHC	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00300 DLHC	<0.00300 DLHC	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **WT2201892-AA**	Page	: 1 of 10
Amendment	: **1**		
Client	: SiREM	Laboratory	: Waterloo - Environmental
Contact	: Rachel Hallman	Account Manager	: Gayle Braun
Address	: 130 Stone Road West Guelph ON Canada N1G 3Z2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 519 822 2265	Telephone	: +1 519 886 6910
Project	: Newton	Date Samples Received	: 31-Mar-2022 14:00
PO	: ----	Date Analysis Commenced	: 01-Apr-2022
C-O-C number	: ----	Issue Date	: 27-Jul-2022 10:05
Sampler	: ----		
Site	: ----		
Quote number	: 2022 SOA		
No. of samples received	: 12		
No. of samples analysed	: 12		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Greg Pokocky	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 447926)											
WT2201883-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0100	mg/L	0.283	0.268	5.45%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00100	mg/L	0.207	0.205	1.21%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000200	mg/L	<0.000200	<0.000200	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.100	mg/L	0.364	0.368	0.003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000500	mg/L	0.0200	0.0190	4.86%	20%	----
		calcium, dissolved	7440-70-2	E421	0.500	mg/L	<0.500	<0.500	0	Diff <2x LOR	----
		cesium, dissolved	7440-46-2	E421	0.000100	mg/L	0.000282	0.000282	0.0000006	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0500	mg/L	<0.0500	<0.0500	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00500	mg/L	0.0487	0.0482	0.00053	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.500	mg/L	<0.500	<0.500	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.500	mg/L	<0.500	<0.500	0	Diff <2x LOR	----
		rubidium, dissolved	7440-17-7	E421	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.500	mg/L	<0.500	<0.500	0	Diff <2x LOR	----
		silver, dissolved	7440-22-4	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.500	mg/L	212	210	0.794%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00200	mg/L	0.00224	0.00208	0.00016	Diff <2x LOR	----
		sulfur, dissolved	7704-34-9	E421	5.00	mg/L	131	126	3.68%	20%	----
		tellurium, dissolved	13494-80-9	E421	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		thorium, dissolved	7440-29-1	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 447926) - continued											
WT2201883-001	Anonymous	tin, dissolved	7440-31-5	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00300	mg/L	<0.00300	<0.00300	0	Diff <2x LOR	----
		tungsten, dissolved	7440-33-7	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00300	mg/L	<0.00300	<0.00300	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 447926)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 447926) - continued						
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 447926)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	0.1 mg/L	98.4	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	0.05 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	0.05 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.0125 mg/L	104	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.005 mg/L	96.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	0.05 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	0.05 mg/L	87.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.005 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	2.5 mg/L	97.5	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.0025 mg/L	100.0	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.0125 mg/L	96.4	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.0125 mg/L	95.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.0125 mg/L	95.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	0.05 mg/L	96.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.025 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.0125 mg/L	98.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	2.5 mg/L	95.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.0125 mg/L	96.7	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.0125 mg/L	98.5	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.025 mg/L	95.3	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	0.5 mg/L	95.9	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	2.5 mg/L	96.2	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.005 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	0.05 mg/L	95.4	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	0.5 mg/L	90.2	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.005 mg/L	88.0	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	2.5 mg/L	94.3	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.0125 mg/L	100	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	2.5 mg/L	91.0	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.005 mg/L	95.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	0.05 mg/L	101	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.005 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.025 mg/L	97.8	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.0125 mg/L	95.6	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 447926) - continued									
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.005 mg/L	99.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.00025 mg/L	108	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.025 mg/L	98.4	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.025 mg/L	98.1	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.005 mg/L	92.5	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 447926)										
WT2201883-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.918 mg/L	1 mg/L	91.8	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.506 mg/L	0.5 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.488 mg/L	0.5 mg/L	97.7	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.125 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0465 mg/L	0.05 mg/L	93.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.483 mg/L	0.5 mg/L	96.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.416 mg/L	0.5 mg/L	83.2	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0474 mg/L	0.05 mg/L	94.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	23.4 mg/L	25 mg/L	93.6	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.0249 mg/L	0.025 mg/L	99.5	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.114 mg/L	0.125 mg/L	91.3	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.114 mg/L	0.125 mg/L	91.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.116 mg/L	0.125 mg/L	92.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	0.454 mg/L	0.5 mg/L	90.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.246 mg/L	0.25 mg/L	98.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.121 mg/L	0.125 mg/L	96.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	23.0 mg/L	25 mg/L	92.0	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.117 mg/L	0.125 mg/L	93.5	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.126 mg/L	0.125 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.228 mg/L	0.25 mg/L	91.0	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	4.70 mg/L	5 mg/L	94.1	70.0	130	----
		potassium, dissolved	7440-09-7	E421	22.6 mg/L	25 mg/L	90.2	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0485 mg/L	0.05 mg/L	97.0	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.450 mg/L	0.5 mg/L	90.1	70.0	130	----
		silicon, dissolved	7440-21-3	E421	4.30 mg/L	5 mg/L	86.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0432 mg/L	0.05 mg/L	86.4	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	25 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.125 mg/L	0.125 mg/L	99.7	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	25 mg/L	ND	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0476 mg/L	0.05 mg/L	95.2	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.486 mg/L	0.5 mg/L	97.2	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0495 mg/L	0.05 mg/L	99.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.247 mg/L	0.25 mg/L	98.8	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 447926) - continued										
WT2201883-001	Anonymous	titanium, dissolved	7440-32-6	E421	0.114 mg/L	0.125 mg/L	90.9	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0481 mg/L	0.05 mg/L	96.2	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00254 mg/L	0.0025 mg/L	102	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.238 mg/L	0.25 mg/L	95.4	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.237 mg/L	0.25 mg/L	94.7	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0479 mg/L	0.05 mg/L	95.9	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 1

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	SIREM
Contact:	Rachel Hallman, Michael Healey
Phone:	519 822 2265
	Company address below will appear on the final report
Street:	130 Stone Rd
City/Province:	Guelph, ON
Postal Code:	
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	SiREM a Division of Geosyntec
Contact:	Karen Broersma, kbroersma@geosyntec.com

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: rhallman@siremlab.com

Email 2: mhealey@siremlab.com

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: accountspayablecan@siremlab.com

Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:

Job #: Newton

PO / AFE:

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (ALS use only): MLP

ALS Contact: Gayle Sampler: Rachel Hallman

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	F/P	Dissolved Metals (incl. As, B and Li)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	N-SB-02D (65.0-71.5):APW-05 Unamended-1	28-Mar-22	12:00	Water	1	R				
	N-SB-02D (65.0-71.5):APW-05 Unamended-2	28-Mar-22	12:15	Water	1	R				
	N-SB-02D (65.0-71.5):APW-05 Oxygen-1	28-Mar-22	12:30	Water	1	R				
	N-SB-02D (65.0-71.5):APW-05 Oxygen-2	28-Mar-22	12:45	Water	1	R				
	N-SB-02D (65.0-71.5):APW-05 Hydrogen-1	28-Mar-22	13:00	Water	1	R				
	N-SB-02D (65.0-71.5):APW-05 Hydrogen-2	28-Mar-22	13:15	Water	1	R				
	N-SB-02S (12.5-20.0):APW-05 Unamended-1	28-Mar-22	13:30	Water	1	R				
	N-SB-02S (12.5-20.0):APW-05 Unamended-2	28-Mar-22	13:45	Water	1	R				
	N-SB-02S (12.5-20.0):APW-05 Oxygen-1	28-Mar-22	14:00	Water	1	R				
	N-SB-02S (12.5-20.0):APW-05 Oxygen-2	28-Mar-22	14:15	Water	1	R				
	N-SB-02S (12.5-20.0):APW-05 Hydrogen-1	28-Mar-22	14:30	Water	1	R				
	N-SB-02S (12.5-20.0):APW-05 Hydrogen-2	28-Mar-22	14:45	Water	1	R				

Environmental Division
Waterloo
Work Order Reference
WT2201892

Telephone : +1 519 886 6910

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ YES ☑ NO

Are samples for human consumption/ use?
☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				0.1			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
	28-Mar-22	15:00

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

APPENDIX C:
SGS Geologic Material Total Metals and TOC Laboratory Report

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

15-October-2021

SiREM Laboratory
Attn : Michael Healey

130 Stone Road W
Guelph, ON
N1G 3Z2, Canada

Phone: 519-822-2265
Fax:519-822-3151

Date Rec. : 23 September 2021
LR Report: **CA13849-SEP21**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: N-SB-05 (18.0-20.0)	6: N-SB-05 (60.0-67.1)	7: N-SB-18 (77.5-80.0)	8: N-SB-02 (12.5-20.0)
Sample Date & Time					21-Sep-21 14:15	21-Sep-21 14:45	21-Sep-21 15:15	21-Sep-21 16:00
Ag [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	< 0.5	< 0.5	< 0.5	< 0.5
Al [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	7300	6400	22000	46000
As [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	5.0	3.3	14	8.4
Ba [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	24	33	170	300
Be [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	0.30	0.33	0.54	1
Bi [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	< 0.09	< 0.09	< 0.09	0.13
Ca [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	49000	73000	100000	55000
Cd [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	0.09	0.18	0.26	0.19
Co [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	6	6	7	10
Cr [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	11	10	18	50
Cu [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	11	16	12	18
Fe [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	12000	20000	20000	23000
K [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	1500	1400	11000	17000
Li [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	10	8.0	9.3	29
Mg [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	18000	14000	37000	24000
Mn [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	370	480	820	540
Mo [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	1.0	0.5	1.8	2.0
Na [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	150	170	4900	6600
Ni [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	15	15	16	28
P [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	290	380	320	330
Pb [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	6	8	11	13
Sb [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	< 0.8	< 0.8	< 0.8	< 0.8
Se [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	< 0.7	< 0.7	< 0.7	< 0.7
Sn [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	< 6	< 6	< 6	< 6
Sr [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	50	94	130	130
Ti [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	210	190	660	2900
Tl [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	0.09	0.08	0.20	0.39
U [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	0.57	0.64	1.23	1.75
V [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	18	20	26	59
Y [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	7.6	9.5	11	17
Zn [µg/g]	29-Sep-21	13:16	01-Oct-21	12:51	36	47	49	60
TOC [%]	30-Sep-21	19:22	01-Oct-21	09:42	0.176	0.091	0.307	0.242
SO4 [%]	29-Sep-21	07:47	30-Sep-21	08:25	< 0.1	< 0.1	< 0.1	< 0.1

OnLine LIMS

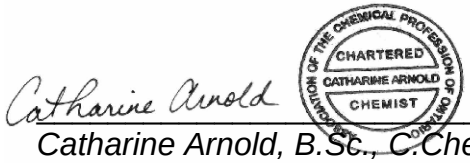
0002677973

Data reported represents the sample submitted to SGS. Reproduction of this analytical report in full or in part is prohibited without prior written approval. Please refer to SGS General Conditions of Services located at https://www.sgs.ca/en/terms-and-conditions (Printed copies are available upon request.)
Test method information available upon request. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
SGS Canada Inc. Environment-Health & Safety statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : **CA13849-SEP21**

Analysis	9: N-SB-02 (65.0-71.5)	10: N-SB-14	N-SB-04 (12.0-18.0)	11:	12: N-SB-04	13: N-SB-XPW04 (10.0-15.0)	14: N-SB-XPW01 (10.0-12.7)
Sample Date & Time	21-Sep-21 17:00	22-Sep-21 09:30	22-Sep-21 10:30		22-Sep-21 11:00	22-Sep-21 13:30	22-Sep-21 14:30
Ag [µg/g]	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5
Al [µg/g]	20000	45000	55000		37000	84000	41000
As [µg/g]	5.1	6.9	13		11	17	8.1
Ba [µg/g]	200	290	350		290	4300	470
Be [µg/g]	0.48	1	1		0.89	3	1
Bi [µg/g]	< 0.09	0.13	0.16		< 0.09	0.79	0.18
Ca [µg/g]	81000	64000	56000		59000	140000	4400
Cd [µg/g]	0.19	0.18	0.21		0.19	1	0.13
Co [µg/g]	5	11	16		9	25	10
Cr [µg/g]	19	49	34		20	76	30
Cu [µg/g]	8.5	20	24		18	170	15
Fe [µg/g]	18000	29000	39000		25000	37000	22000
K [µg/g]	11000	15000	17000		13000	4200	14000
Li [µg/g]	8.5	25	32		15	37	17
Mg [µg/g]	30000	18000	14000		16000	24000	2600
Mn [µg/g]	630	650	740		670	210	780
Mo [µg/g]	1.2	3.1	3.0		2.8	10	3.8
Na [µg/g]	5000	8400	7800		9700	14000	14000
Ni [µg/g]	12	27	41		20	66	18
P [µg/g]	220	520	490		460	4000	350
Pb [µg/g]	9	13	15		12	32	19
Sb [µg/g]	< 0.8	< 0.8	< 0.8		< 0.8	1.6	< 0.8
Se [µg/g]	< 0.7	< 0.7	< 0.7		< 0.7	4.9	0.9
Sn [µg/g]	< 6	< 6	< 6		< 6	< 6	< 6
Sr [µg/g]	130	180	160		190	2700	120
Ti [µg/g]	1000	2900	3000		2300	8300	3400
Tl [µg/g]	0.18	0.36	0.46		0.30	0.63	0.47
U [µg/g]	0.87	1.91	1.93		1.40	6.81	2.23
V [µg/g]	22	57	72		43	170	60
Y [µg/g]	9.4	18	23		16	46	15
Zn [µg/g]	29	65	80		59	128	44
TOC [%]	0.445	0.450	< 0.025		0.248	0.960	0.692
SO4 [%]	< 0.1	< 0.1	< 0.1		< 0.1	1.6	0.6



Catharine Arnold, B.Sc., C.Chem
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0002677973

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Test method information available upon request. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
SGS Canada Inc. Environment-Health & Safety statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : PO 800003210A - Newton MNA

21-December-2021

SiREM Laboratory
Attn : Michael Healey

130 Stone Road W, Guelph
Canada, N1G 3Z2
Phone: 519-822-2265, Fax:519-822-3151

Date Rec. : 16 November 2021
LR Report: **CA14795-NOV21**
Reference: PO 800003210A - Newton MNA

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Sample ID	Sample Date & Time	B g/t
5: N-SB-05 (18.0-20.0)	21-Sep-21 14:15	< 40
6: N-SB-05 (60.0-67.1)	21-Sep-21 14:45	< 40
7: N-SB-18 (77.5-80.0)	21-Sep-21 15:15	< 40
8: N-SB-02 (12.5-20.0)	21-Sep-21 16:00	< 40
9: N-SB-02 (65.0-71.5)	21-Sep-21 17:00	< 40
10: N-SB-14	22-Sep-21 09:30	< 40
11: N-SB-04 (12.0-18.0)	22-Sep-21 10:30	< 40
12: N-SB-04	22-Sep-21 11:00	< 40
14: N-SB-XPW01 (10.0-12.7)	22-Sep-21 14:30	< 40

Catharine Arnold

Catharine Arnold, B.Sc., C.Chem
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0002751350

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Test method information available upon request. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples. SGS Canada Inc. Environment-Health & Safety statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

APPENDIX D:
SGS Geologic Material CEC Laboratory Report

Analysis Report
GS21-04224

F402001 SGS LAKEFIELD RESEARCH
PO BOX 4300
185 CONCESSION STREET
LAKEFIELD, ONTARIO ON K0L 2H0
CANADA

Received : 28-Sep-2021
Completed : 06-Oct-2021
Order Reference : Catharine/Lisa - CA13853-SEP21 Soil CEC

Laboratory ID:	GS21-04224.001	GS21-04224.002	GS21-04224.003	GS21-04224.004
Client Sample #:	N-SB-05 18.0-20.0	N-SB-05 60.0-67.1	N-SB-18 77.5-80.0	N-SB-02 12.5-20.0
Description:	CA13853-SEP21 Soil			
CEC Actual (meq/100g)	9.45	4.37	2.34	12.83

NOTE:
The analysis report above refers to the time and place of testing, and strictly to the supplied sample(s) only, without reference to any other matter. This report does not evidence or refer to any consignment or shipment or/and SGS sampling and inspection.

Report File Reference Number: 0000192983

Signed and dated in Guelph, ON
On 06-Oct-2021

For and on behalf of SGS Canada Inc., Agriculture and Food

Tim Wright
Soil Lab Manager

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Analysis Report
GS21-04224

F402001 SGS LAKEFIELD RESEARCH
PO BOX 4300
185 CONCESSION STREET
LAKEFIELD, ONTARIO ON K0L 2H0
CANADA

Received : 28-Sep-2021
Completed : 06-Oct-2021
Order Reference : Catharine/Lisa - CA13853-SEP21 Soil CEC

Laboratory ID:	GS21-04224.005	GS21-04224.006	GS21-04224.007	GS21-04224.008
Client Sample #:	N-SB-02 65.0-71.5	N-SB-14	N-SB-04 12.0-18.0	N-SB-04
Description:				
CEC Actual (meq/100g)	1.57	12.43	22.81	5.70

NOTE:
The analysis report above refers to the time and place of testing, and strictly to the supplied sample(s) only, without reference to any other matter. This report does not evidence or refer to any consignment or shipment or/and SGS sampling and inspection.

Report File Reference Number: 0000192983

Signed and dated in Guelph, ON
On 06-Oct-2021

For and on behalf of SGS Canada Inc., Agriculture and Food

Tim Wright
Soil Lab Manager

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Analysis Report
GS21-04224

F402001 SGS LAKEFIELD RESEARCH
PO BOX 4300
185 CONCESSION STREET
LAKEFIELD, ONTARIO ON K0L 2H0
CANADA

Received : 28-Sep-2021
Completed : 06-Oct-2021
Order Reference : Catharine/Lisa - CA13853-SEP21 Soil CEC

Laboratory ID:	GS21-04224.009	GS21-04224.010
Client Sample #:	N-SB-XPW04 10.0-15.0	N-SB-XPW01 10.0-12.7
Description:		
CEC Actual (meq/100g)	20.99	22.27

NOTE:
The analysis report above refers to the time and place of testing, and strictly to the supplied sample(s) only, without reference to any other matter. This report does not evidence or refer to any consignment or shipment or/and SGS sampling and inspection.

Report File Reference Number: 0000192983

Signed and dated in Guelph, ON
On 06-Oct-2021

For and on behalf of SGS Canada Inc., Agriculture and Food

Tim Wright
Soil Lab Manager

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APPENDIX E:
SGS Geologic Material XRD and LOI Laboratory Report

Quantitative X-Ray Diffraction by Rietveld Refinement

Report Prepared for:	*Environmental Services*
Project Number/ LIMS No.	*Custom XRD/MI4503-OCT21*
Sample Receipt:	*October 4, 2021*
Sample Analysis:	*October 8, 2021*
Reporting Date:	*November 2, 2021*

Instrument:	BRUKER AXS D8 Advance Diffractometer
Test Conditions:	Co radiation, 35 kV, 40 mA Regular Scanning: Step: 0.02°, Step time: 1s, 2θ range: 3-80°
Interpretations :	PDF2/PDF4 powder diffraction databases issued by the International Center for Diffraction Data (ICDD). DiffracPlus Eva and Topas software.
Detection Limit :	0.5-2%. Strongly dependent on crystallinity.

Contents:

1) Method Summary
2) Quantitative XRD Results
3) XRD Pattern(s)

Kim Gibbs, H.B.Sc., P.Geo.
Senior Mineralogist

Huyun Zhou, Ph.D., P.Geo.
Senior Mineralogist

ACCREDITATION: SGS Minerals Services Lakefield is accredited to the requirements of ISO/IEC 17025 for specific tests as listed on our scope of accreditation, including geochemical, mineralogical and trade mineral tests. To view a list of the accredited methods, please visit the following website and search SGS Canada - Minerals Services - Lakefield: http://palcan.scc.ca/SpecsSearch/GLSearchForm.do.

Method Summary

The Rietveld Method of Mineral Identification by XRD (ME-LR-MIN-MET-MN-D05) method used by SGS Minerals Services is accredited to the requirements of ISO/IEC 17025.

Mineral Identification and Interpretation:

Mineral identification and interpretation involves matching the diffraction pattern of an unknown material to patterns of single-phase reference materials. The reference patterns are compiled by the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD) database and released on software as Powder Diffraction Files (PDF).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds, except when internal standards have been added by request. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data or other additional tests.

Quantitative Rietveld Analysis:

Quantitative Rietveld Analysis is performed by using Topas 4.2 (Bruker AXS), a graphics based profile analysis program built around a non-linear least squares fitting system, to determine the amount of different phases present in a multicomponent sample. Whole pattern analyses are predicated by the fact that the X-ray diffraction pattern is a total sum of both instrumental and specimen factors. Unlike other peak intensity-based methods, the Rietveld method uses a least squares approach to refine a theoretical line profile until it matches the obtained experimental patterns.

Rietveld refinement is completed with a set of minerals specifically identified for the sample. Zero values indicate that the mineral was included in the refinement calculations, but the calculated concentration was less than 0.05wt%. Minerals not identified by the analyst are not included in refinement calculations for specific samples and are indicated with a dash.

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WARNING: The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

Summary of Rietveld Quantitative Analysis X-Ray Diffraction Results

Mineral/Compound	N-SB-05 (18.0-20.0) OCT4503-01 (wt %)	N-SB-05 (60.0-67.1) OCT4503-02 (wt %)	N-SB-18 (77.5-80.0) OCT4503-03 (wt %)	N-SB-02 (12.5-20.0) OCT4503-04 (wt %)	N-SB-02 (65.0-71.5) OCT4503-05 (wt %)	N-SB-14 OCT4503-06 (wt %)	N-SB-04 (12.0-18.0) OCT4503-07 (wt %)	N-SB-04 OCT4503-08 (wt %)	N-SB-XPW04 (10.0-15.0) OCT4503-09 (wt %)	N-SB-XPW01 (10.0-12.7) OCT4503-10 (wt %)
Quartz	46.0	41.3	32.7	48.9	47.6	48.0	47.3	51.7	22.6	68.7
Albite	8.2	8.8	4.1	8.4	5.2	13.6	9.1	12.7	14.5	10.0
Calcite	20.7	12.9	13.3	3.6	4.9	9.3	11.1	9.7	13.2	0.1
Dolomite	9.5	18.5	27.3	12.7	26.1	6.8	5.0	6.0	-	0.1
Ankerite	3.3	2.3	8.3	2.2	2.6	2.6	4.1	4.4	-	0.0
Microcline	4.5	4.5	4.2	7.6	5.1	6.2	5.4	4.2	-	8.8
Muscovite	5.0	1.6	1.2	8.7	1.0	5.5	10.5	3.1	-	8.5
Diopside	0.9	2.9	2.0	1.7	1.5	2.5	1.0	1.4	15.2	1.4
Biotite	1.8	1.8	0.8	3.5	1.5	1.8	2.4	2.1	-	2.5
Actinolite	-	2.9	2.1	-	-	-	-	2.3	-	-
Chlorite	-	2.6	1.9	2.8	2.7	3.8	4.2	2.3	-	-
Fluorapatite	-	-	2.0	-	1.8	-	-	-	-	-
Perovskite	-	-	-	-	-	-	-	-	8.7	-
Periclase	-	-	-	-	-	-	-	-	1.6	-
Hematite	-	-	-	-	-	-	-	-	3.4	-
Magnetite	-	-	-	-	-	-	-	-	0.1	-
Gehlenite	-	-	-	-	-	-	-	-	13.9	-
Mullite	-	-	-	-	-	-	-	-	3.7	-
Ganophyllite	-	-	-	-	-	-	-	-	3.1	-
TOTAL	100	100	100	100	100	100	100	100	100	100

Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

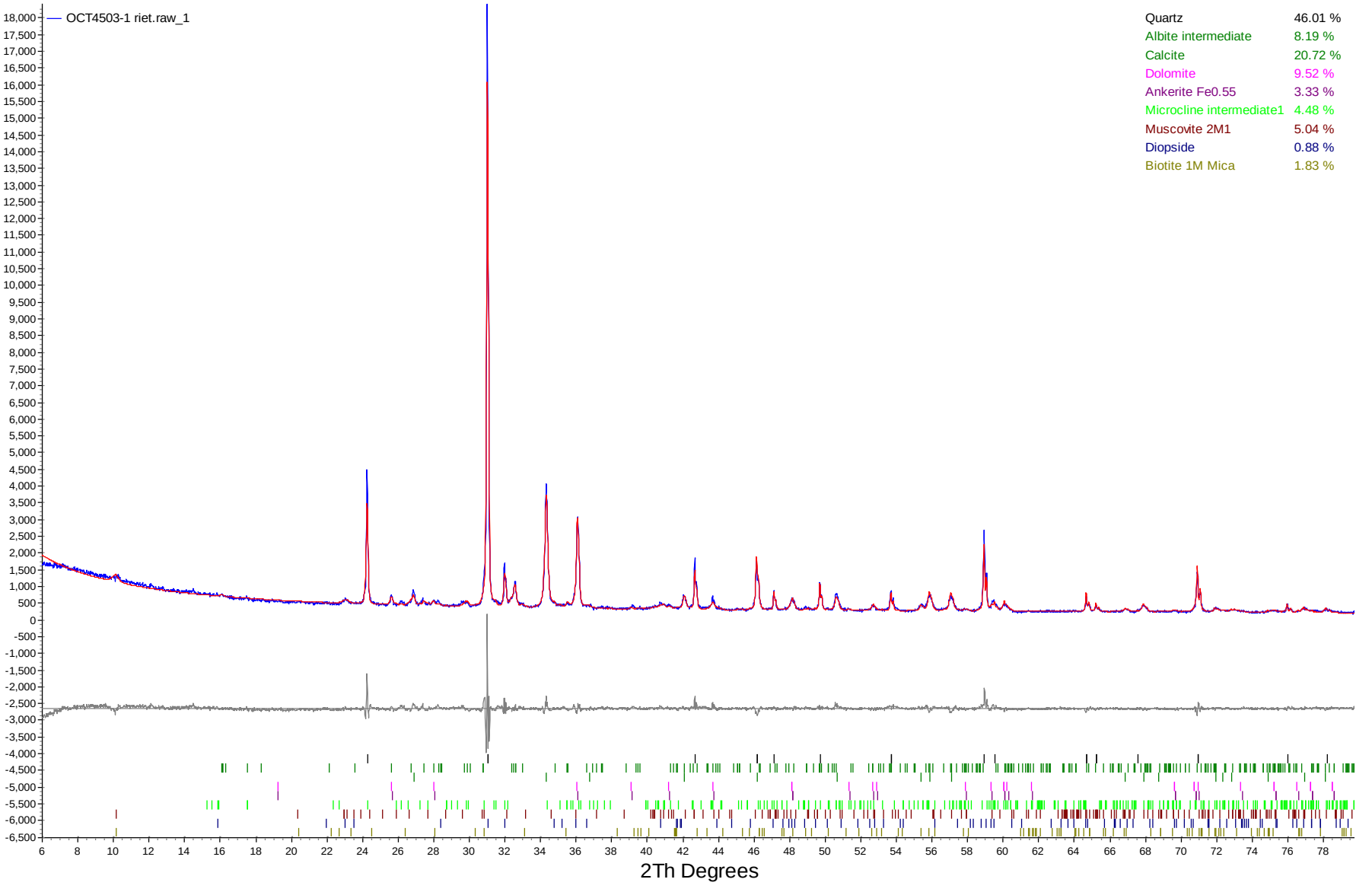
Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

The weight percent quantities indicated have been normalized to a sum of 100%. The quantity of amorphous material has not been determined.

Mineral List

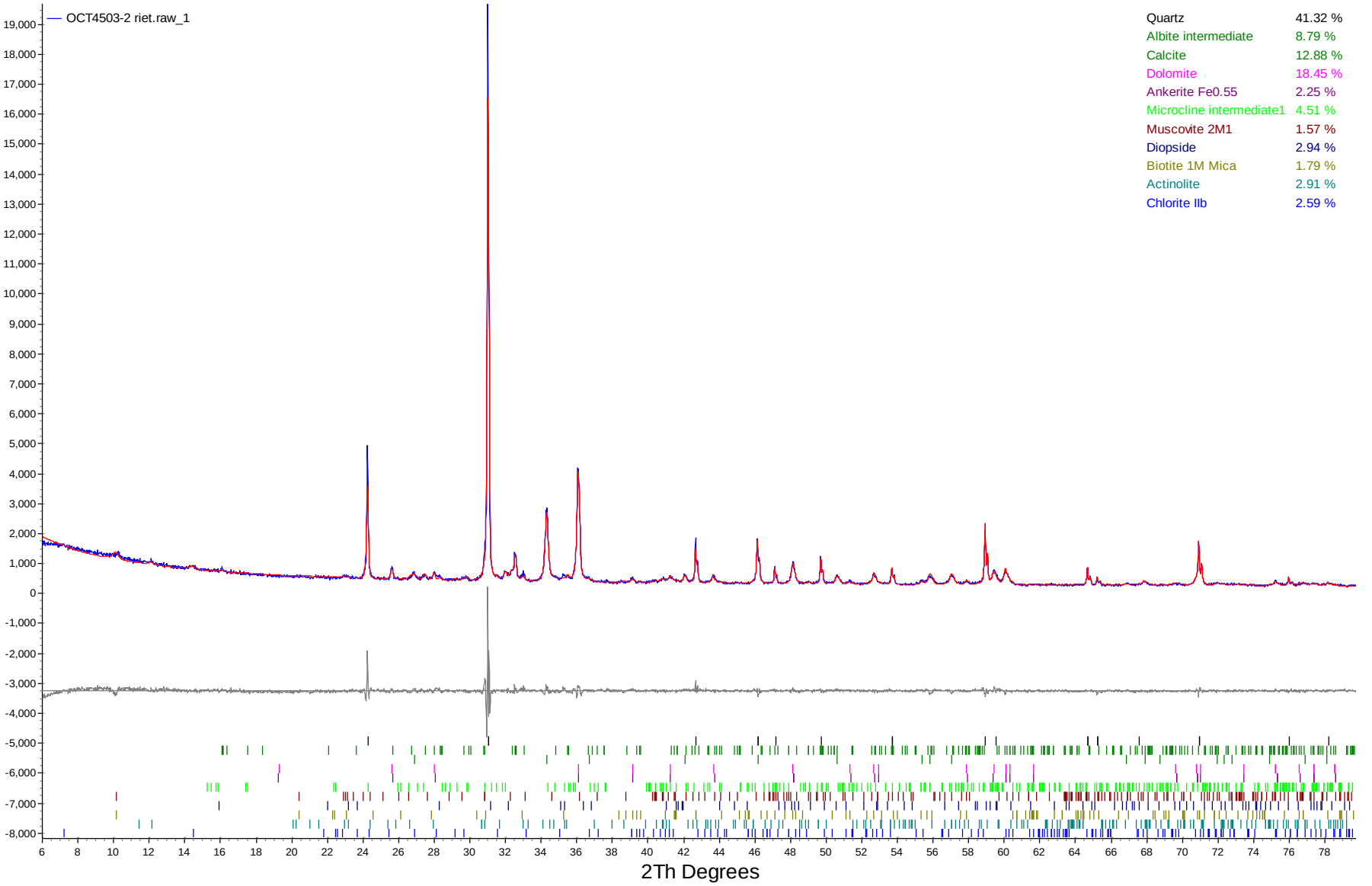
Mineral/Compound	Formula
Quartz	SiO_2
Albite	$NaAlSi_3O_8$
Calcite	$CaCO_3$
Dolomite	$CaMg(CO_3)_2$
Ankerite	$CaFe(CO_3)_2$
Microcline	$KAlSi_3O_8$
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$
Diopside	$CaMgSi_2O_6$
Biotite	$K(Mg,Fe)_3(AlSi_3O_{10})(OH)_2$
Actinolite	$Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$
Chlorite	$(Fe,(Mg,Mn)_5,Al)(Si_3Al)O_{10}(OH)_8$
Fluorapatite	$Ca_5(PO_4)_3F$
Perovskite	$CaTiO_3$
Periclase	MgO
Hematite	Fe2O3
Magnetite	Fe_3O_4
Gehlenite	$Ca_2(Mg_{0.25}Al_{0.75})(Si_{1.25}Al_{0.75}O_7)$
Mullite	$\sim Al_6Si_3O_{15}$
Ganophyllite	$K_{2.16}Mn_{16}Si_{26.9}O_{67.8}(OH)_8$

N-SB-05 (18.0-20.0)



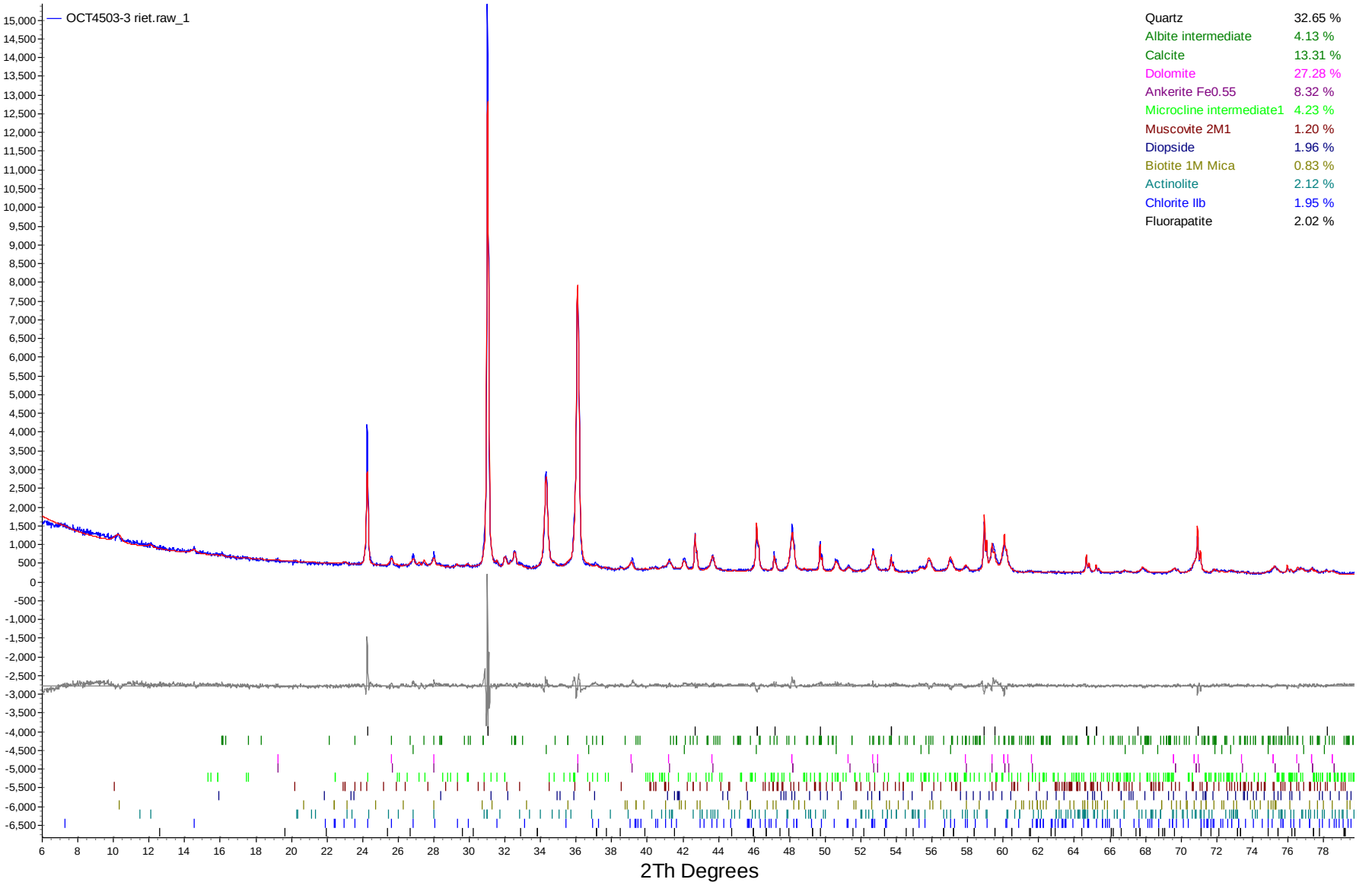
Quartz	46.01 %
Albite intermediate	8.19 %
Calcite	20.72 %
Dolomite	9.52 %
Ankerite Fe0.55	3.33 %
Microcline intermediate1	4.48 %
Muscovite 2M1	5.04 %
Diopside	0.88 %
Biotite 1M Mica	1.83 %

N-SB-05 (60.0-67.1)



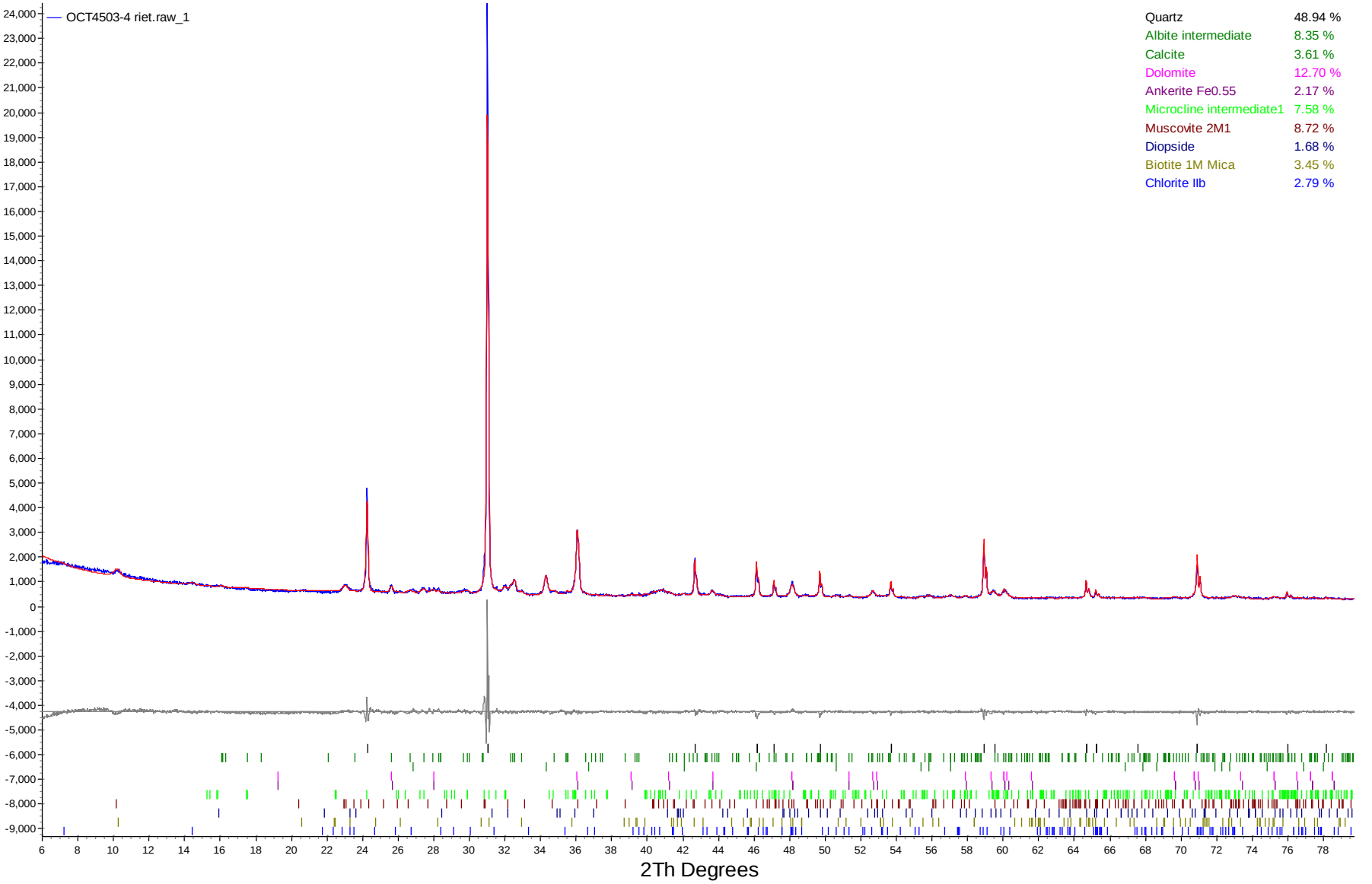
Quartz	41.32 %
Albite intermediate	8.79 %
Calcite	12.88 %
Dolomite	18.45 %
Ankerite Fe0.55	2.25 %
Microcline intermediate1	4.51 %
Muscovite 2M1	1.57 %
Diopside	2.94 %
Biotite 1M Mica	1.79 %
Actinolite	2.91 %
Chlorite IIb	2.59 %

N-SB-18 (77.5-80.0)



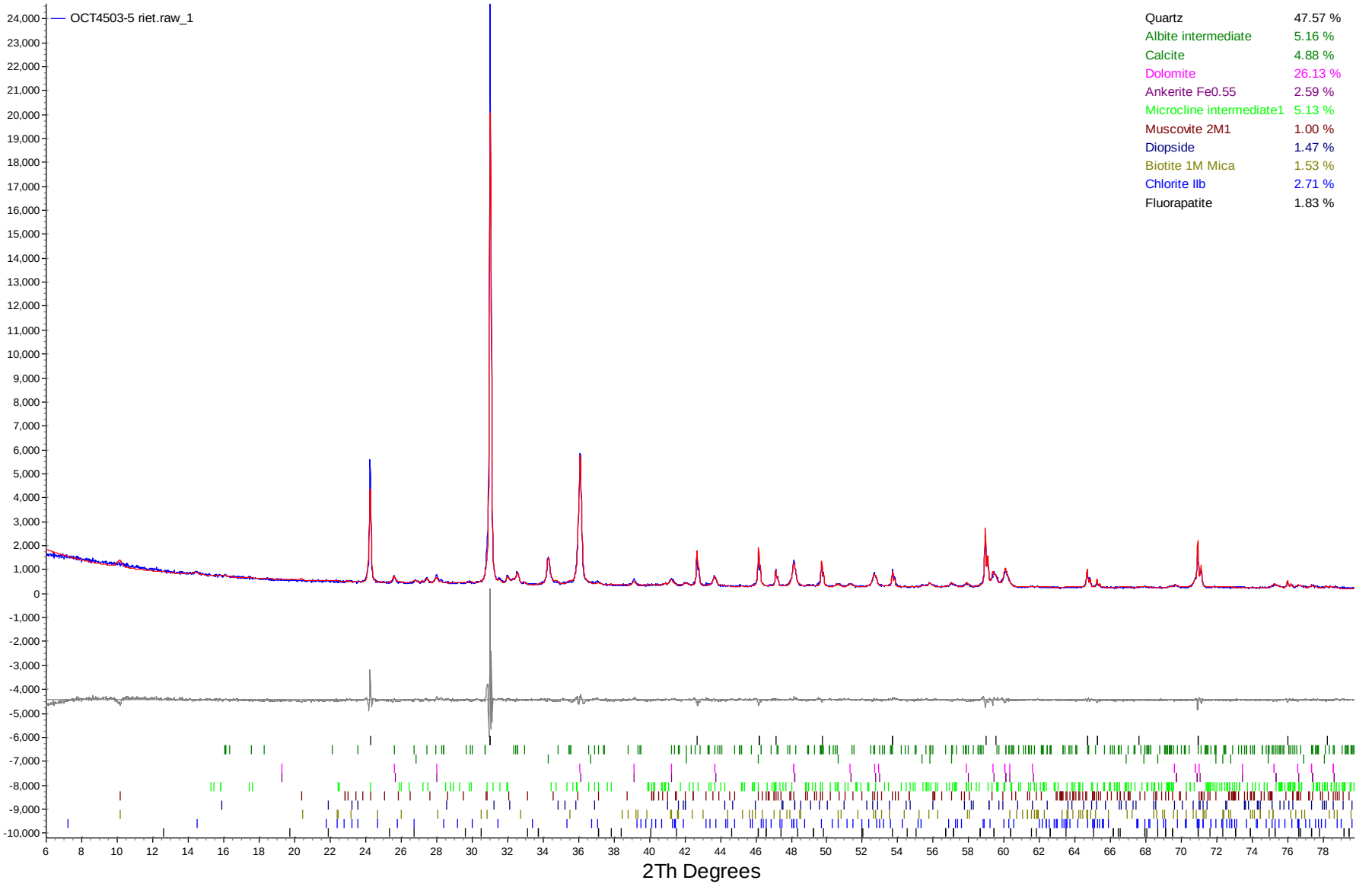
Quartz	32.65 %
Albite intermediate	4.13 %
Calcite	13.31 %
Dolomite	27.28 %
Ankerite Fe0.55	8.32 %
Microcline intermediate1	4.23 %
Muscovite 2M1	1.20 %
Diopside	1.96 %
Biotite 1M Mica	0.83 %
Actinolite	2.12 %
Chlorite IIb	1.95 %
Fluorapatite	2.02 %

N-SB-02 (12.5-20.0)



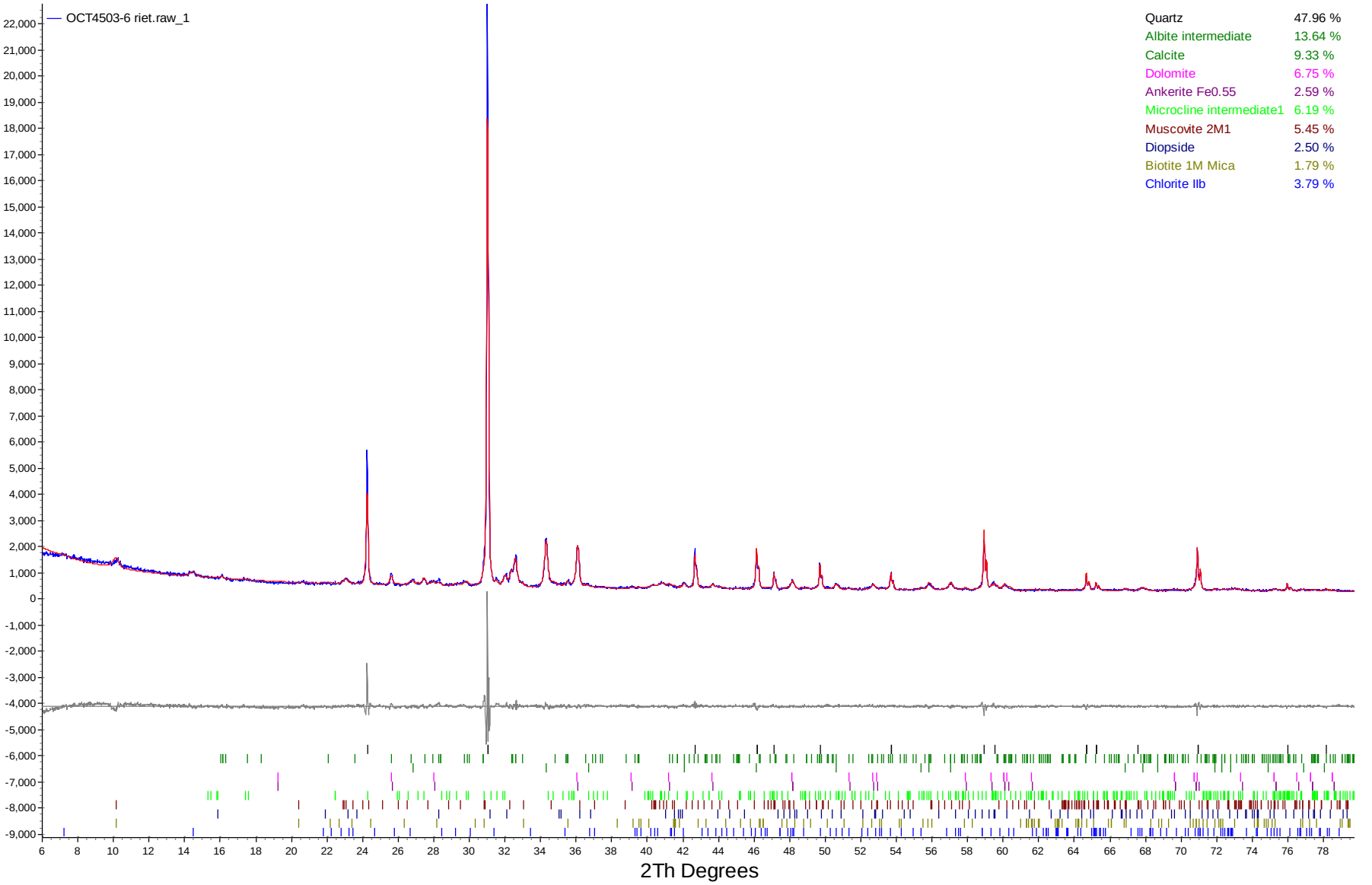
Quartz	48.94 %
Albite intermediate	8.35 %
Calcite	3.61 %
Dolomite	12.70 %
Ankerite Fe0.55	2.17 %
Microcline intermediate1	7.58 %
Muscovite 2M1	8.72 %
Diopside	1.68 %
Biotite 1M Mica	3.45 %
Chlorite IIb	2.79 %

N-SB-02 (65.0-71.5)



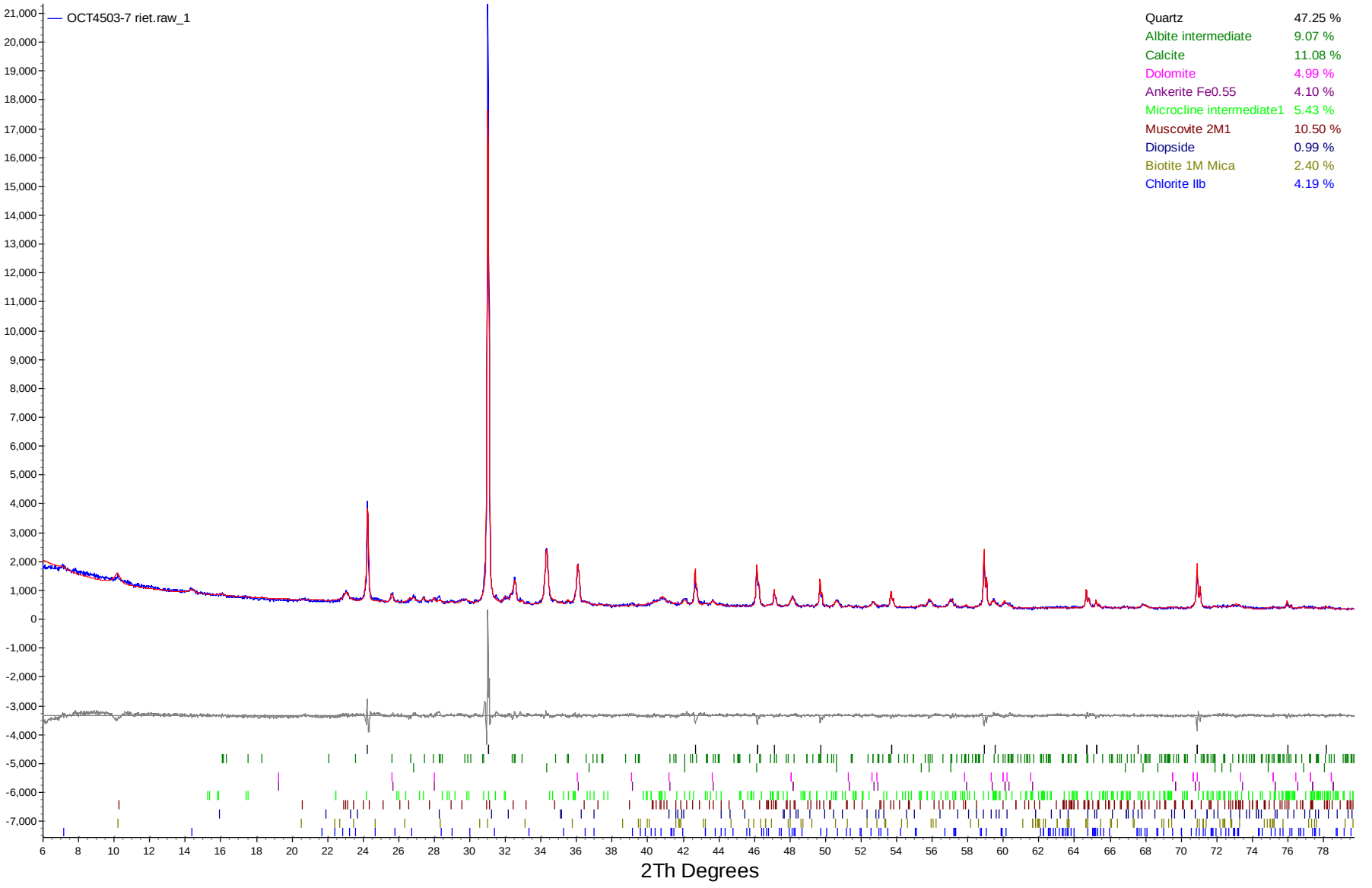
Quartz	47.57 %
Albite intermediate	5.16 %
Calcite	4.88 %
Dolomite	26.13 %
Ankerite Fe0.55	2.59 %
Microcline intermediate1	5.13 %
Muscovite 2M1	1.00 %
Diopside	1.47 %
Biotite 1M Mica	1.53 %
Chlorite IIb	2.71 %
Fluorapatite	1.83 %

N-SB-14



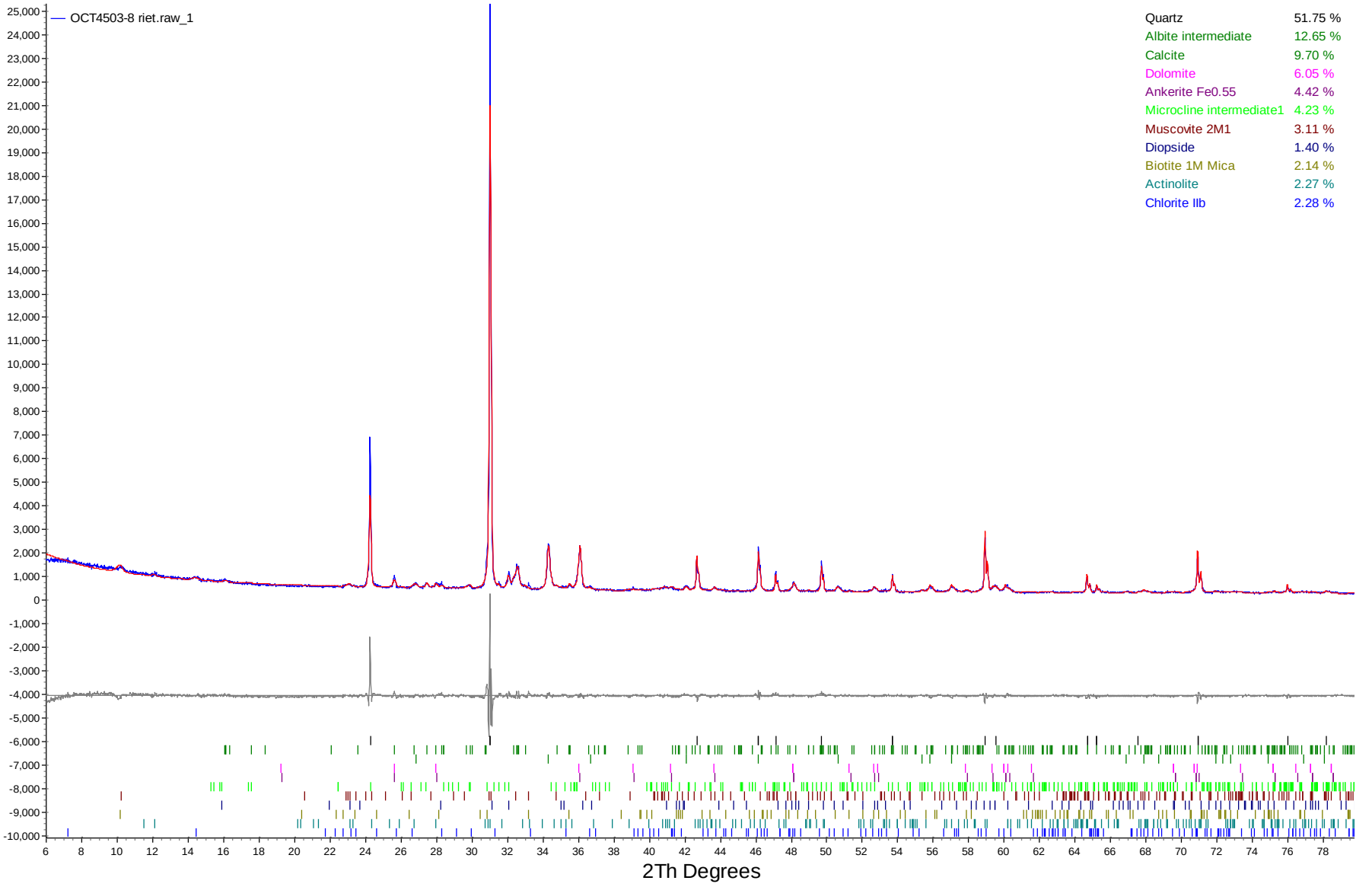
Quartz	47.96 %
Albite intermediate	13.64 %
Calcite	9.33 %
Dolomite	6.75 %
Ankerite Fe0.55	2.59 %
Microcline intermediate1	6.19 %
Muscovite 2M1	5.45 %
Diopside	2.50 %
Biotite 1M Mica	1.79 %
Chlorite IIb	3.79 %

N-SB-04 (12.0-18.0)



Quartz	47.25 %
Albite intermediate	9.07 %
Calcite	11.08 %
Dolomite	4.99 %
Ankerite Fe0.55	4.10 %
Microcline intermediate1	5.43 %
Muscovite 2M1	10.50 %
Diopside	0.99 %
Biotite 1M Mica	2.40 %
Chlorite IIb	4.19 %

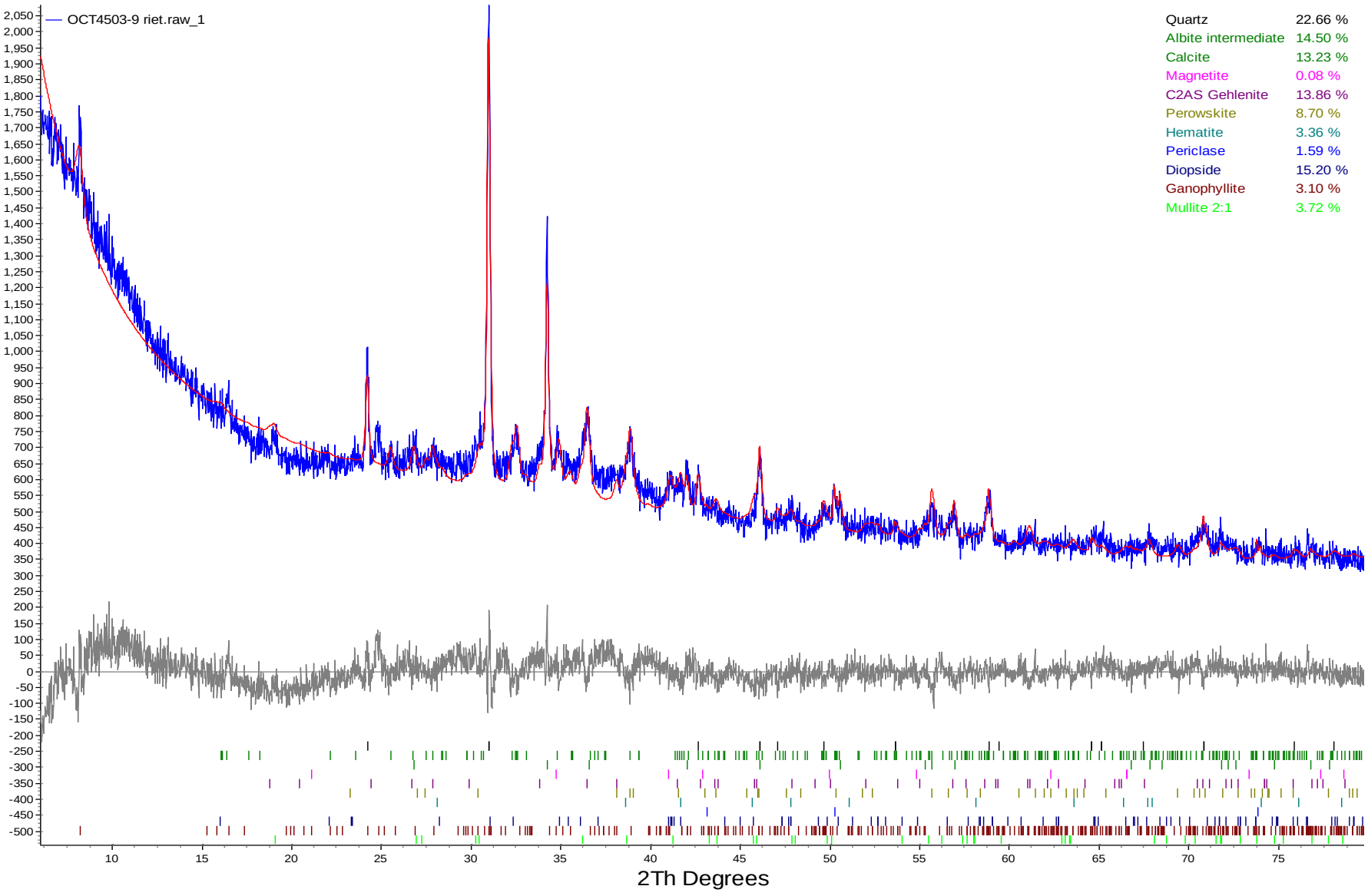
N-SB-04



Quartz	51.75 %
Albite intermediate	12.65 %
Calcite	9.70 %
Dolomite	6.05 %
Ankerite Fe0.55	4.42 %
Microcline intermediate1	4.23 %
Muscovite 2M1	3.11 %
Diopside	1.40 %
Biotite 1M Mica	2.14 %
Actinolite	2.27 %
Chlorite IIb	2.28 %

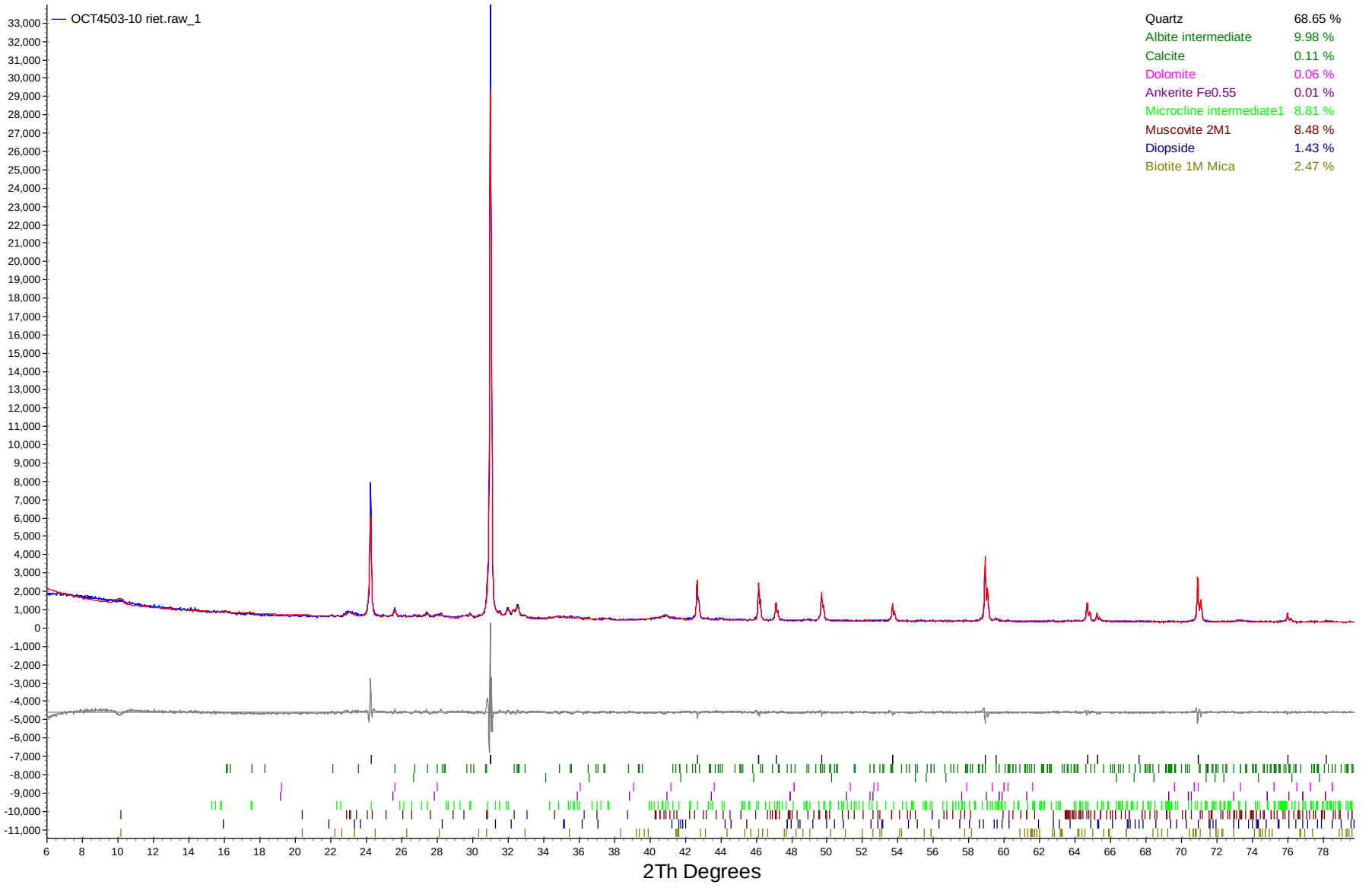
Environmental Services
Custom XRD/MI4503-OCT21
11/02/2021

N-SB-XPW04 (10.0-15.0)



Quartz	22.66 %
Albite intermediate	14.50 %
Calcite	13.23 %
Magnetite	0.08 %
C2AS Gehlenite	13.86 %
Perowskite	8.70 %
Hematite	3.36 %
Periclase	1.59 %
Diopside	15.20 %
Ganophyllite	3.10 %
Mullite 2:1	3.72 %

N-SB-XPW01 (10.0-12.7)



Quartz	68.65 %
Albite intermediate	9.98 %
Calcite	0.11 %
Dolomite	0.06 %
Ankerite Fe0.55	0.01 %
Microcline intermediate1	8.81 %
Muscovite 2M1	8.48 %
Diopside	1.43 %
Biotite 1M Mica	2.47 %

APPENDIX F:
ALS Geologic Material SPLP Laboratory Report

SIREM
ATTN: MICHAEL HEALEY
130 Stone Road West
Guelph ON N1G 3Z2

Date Received: 03-MAR-22
Report Date: 11-MAR-22 08:03 (MT)
Version: FINAL REV. 2

Client Phone: 519-822-2265

Certificate of Analysis

Lab Work Order #: L2690024

Project P.O. #: NOT SUBMITTED
Job Reference: NEWTON MNA
C of C Numbers:
Legal Site Desc:

Comments:

11-MAR-2022 No changes

Gayle Braun
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2690024-1 N-SB-XPW01 (10.0-12.7) Sampled By: CLIENT on 01-MAR-22 @ 16:00 Matrix: SOIL							
Sample Preparation							
Initial pH	10.03		0.10	pH units		05-MAR-22	R5733977
Final pH	9.64		0.10	pH units		05-MAR-22	R5733977
SPLP Metals							
Antimony (Sb)	<5.0		5.0	ug/L		07-MAR-22	R5734784
Arsenic (As)	34.9		5.0	ug/L		07-MAR-22	R5734784
Barium (Ba)	260		100	ug/L		07-MAR-22	R5734784
Beryllium (Be)	2.4		2.0	ug/L		07-MAR-22	R5734784
Boron (B)	810		500	ug/L		07-MAR-22	R5734784
Cadmium (Cd)	0.35		0.10	ug/L		07-MAR-22	R5734784
Chromium (Cr)	39.2		5.0	ug/L		07-MAR-22	R5734784
Cobalt (Co)	11.0		2.0	ug/L		07-MAR-22	R5734784
Copper (Cu)	54		10	ug/L		07-MAR-22	R5734784
Lead (Pb)	45.8		2.0	ug/L		07-MAR-22	R5734784
Molybdenum (Mo)	56		10	ug/L		07-MAR-22	R5734784
Nickel (Ni)	22		20	ug/L		07-MAR-22	R5734784
Selenium (Se)	4.4		1.0	ug/L		07-MAR-22	R5734784
Silver (Ag)	<0.25		0.25	ug/L		07-MAR-22	R5734784
Thallium (Tl)	<0.80		0.80	ug/L		07-MAR-22	R5734784
Uranium (U)	<15		15	ug/L		07-MAR-22	R5734784
Vanadium (V)	139		5.0	ug/L		07-MAR-22	R5734784
Zinc (Zn)	80		30	ug/L		07-MAR-22	R5734784
L2690024-2 N-SB-XPW04 (10.0-15.0) Sampled By: CLIENT on 01-MAR-22 @ 16:00 Matrix: SOIL							
Sample Preparation							
Initial pH	11.17		0.10	pH units		05-MAR-22	R5733977
Final pH	11.39		0.10	pH units		05-MAR-22	R5733977
SPLP Metals							
Antimony (Sb)	<5.0		5.0	ug/L		07-MAR-22	R5734784
Arsenic (As)	<5.0		5.0	ug/L		07-MAR-22	R5734784
Barium (Ba)	<100		100	ug/L		07-MAR-22	R5734784
Beryllium (Be)	<2.0		2.0	ug/L		07-MAR-22	R5734784
Boron (B)	620		500	ug/L		07-MAR-22	R5734784
Cadmium (Cd)	<0.10		0.10	ug/L		07-MAR-22	R5734784
Chromium (Cr)	<5.0		5.0	ug/L		07-MAR-22	R5734784
Cobalt (Co)	<2.0		2.0	ug/L		07-MAR-22	R5734784
Copper (Cu)	<10		10	ug/L		07-MAR-22	R5734784
Lead (Pb)	<2.0		2.0	ug/L		07-MAR-22	R5734784
Molybdenum (Mo)	40		10	ug/L		07-MAR-22	R5734784
Nickel (Ni)	<20		20	ug/L		07-MAR-22	R5734784
Selenium (Se)	18.4		1.0	ug/L		07-MAR-22	R5734784
Silver (Ag)	<0.25		0.25	ug/L		07-MAR-22	R5734784

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2690024-2 N-SB-XPW04 (10.0-15.0) Sampled By: CLIENT on 01-MAR-22 @ 16:00 Matrix: SOIL							
SPLP Metals							
Thallium (Tl)	<0.80		0.80	ug/L		07-MAR-22	R5734784
Uranium (U)	<15		15	ug/L		07-MAR-22	R5734784
Vanadium (V)	151		5.0	ug/L		07-MAR-22	R5734784
Zinc (Zn)	<30		30	ug/L		07-MAR-22	R5734784

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
LEACH-MSPLP-WT	Waste	Modified SPLP Extraction	E9003

A Sample (100g) of soil is leached for 18 +/- 2 hours with 2.0 liters of splp leaching fluid #2 (pH = 5). For the analysis of metals, the leachate is filtered through a 0.45um filter using a metals free filtering system prior to digestion and analysis.

MET-SPLP-WT	Waste	SPLP Leachable Metals	EPA 200.8

An extract produced by the Synthetic Precipitation Leaching Procedure (SPLP) as per EPA 1312 or Ontario MECP E9003 is analyzed by Collision/Reaction Cell ICPMS. The extract is filtered through a 0.6 to 0.8 micron glass fibre filter for Method 1312 or through a 0.45um filter for Method E9003.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2690024 Report Date: 11-MAR-22

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: MICHAEL HEALEY

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-SPLP-WT	**Waste**							
Batch R5734784								
WG3702947-4 DUP		**WG3702947-3**						
Antimony (Sb)		<5.0	<5.0	RPD-NA	ug/L	N/A	25	07-MAR-22
Arsenic (As)		<5.0	<5.0	RPD-NA	ug/L	N/A	25	07-MAR-22
Barium (Ba)		<100	<100	RPD-NA	ug/L	N/A	25	07-MAR-22
Beryllium (Be)		<2.0	<2.0	RPD-NA	ug/L	N/A	25	07-MAR-22
Boron (B)		620	630		ug/L	2.1	25	07-MAR-22
Cadmium (Cd)		<0.10	<0.10	RPD-NA	ug/L	N/A	25	07-MAR-22
Chromium (Cr)		<5.0	<5.0	RPD-NA	ug/L	N/A	25	07-MAR-22
Cobalt (Co)		<2.0	<2.0	RPD-NA	ug/L	N/A	25	07-MAR-22
Copper (Cu)		<10	<10	RPD-NA	ug/L	N/A	25	07-MAR-22
Lead (Pb)		<2.0	<2.0	RPD-NA	ug/L	N/A	25	07-MAR-22
Molybdenum (Mo)		40	41		ug/L	2.7	25	07-MAR-22
Nickel (Ni)		<20	<20	RPD-NA	ug/L	N/A	25	07-MAR-22
Selenium (Se)		18.4	18.4		ug/L	0.4	25	07-MAR-22
Silver (Ag)		<0.25	<0.25	RPD-NA	ug/L	N/A	25	07-MAR-22
Thallium (Tl)		<0.80	<0.80	RPD-NA	ug/L	N/A	25	07-MAR-22
Uranium (U)		<15	<15	RPD-NA	ug/L	N/A	25	07-MAR-22
Vanadium (V)		151	153		ug/L	0.8	25	07-MAR-22
Zinc (Zn)		<30	<30	RPD-NA	ug/L	N/A	25	07-MAR-22
WG3702947-2 LCS								
Antimony (Sb)			102.6		%		70-130	07-MAR-22
Arsenic (As)			103.4		%		70-130	07-MAR-22
Barium (Ba)			104.4		%		70-130	07-MAR-22
Beryllium (Be)			100.7		%		70-130	07-MAR-22
Boron (B)			98.7		%		70-130	07-MAR-22
Cadmium (Cd)			102.5		%		70-130	07-MAR-22
Chromium (Cr)			102.9		%		70-130	07-MAR-22
Cobalt (Co)			105.1		%		70-130	07-MAR-22
Copper (Cu)			103.7		%		70-130	07-MAR-22
Lead (Pb)			104.0		%		70-130	07-MAR-22
Molybdenum (Mo)			99.7		%		70-130	07-MAR-22
Nickel (Ni)			103.3		%		70-130	07-MAR-22
Selenium (Se)			99.7		%		70-130	07-MAR-22
Silver (Ag)			97.3		%		70-130	07-MAR-22

Quality Control Report

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: MICHAEL HEALEY

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-SPLP-WT	**Waste**							
Batch R5734784								
WG3702947-2 LCS								
Thallium (Tl)			103.3		%		70-130	07-MAR-22
Uranium (U)			104.3		%		70-130	07-MAR-22
Vanadium (V)			104.5		%		70-130	07-MAR-22
Zinc (Zn)			103.5		%		70-130	07-MAR-22
WG3702947-1 MB								
Antimony (Sb)			<5.0		ug/L		5	07-MAR-22
Arsenic (As)			<5.0		ug/L		5	07-MAR-22
Barium (Ba)			<100		ug/L		100	07-MAR-22
Beryllium (Be)			<2.0		ug/L		2	07-MAR-22
Boron (B)			<500		ug/L		500	07-MAR-22
Cadmium (Cd)			<0.10		ug/L		0.1	07-MAR-22
Chromium (Cr)			<5.0		ug/L		5	07-MAR-22
Cobalt (Co)			<2.0		ug/L		2	07-MAR-22
Copper (Cu)			<10		ug/L		10	07-MAR-22
Lead (Pb)			<2.0		ug/L		2	07-MAR-22
Molybdenum (Mo)			<10		ug/L		10	07-MAR-22
Nickel (Ni)			<20		ug/L		20	07-MAR-22
Selenium (Se)			<1.0		ug/L		1	07-MAR-22
Silver (Ag)			<0.25		ug/L		0.25	07-MAR-22
Thallium (Tl)			<0.80		ug/L		0.8	07-MAR-22
Uranium (U)			<15		ug/L		15	07-MAR-22
Vanadium (V)			<5.0		ug/L		5	07-MAR-22
Zinc (Zn)			<30		ug/L		30	07-MAR-22
WG3702947-5 MS		**WG3702947-3**						
Antimony (Sb)			99.8		%		50-140	07-MAR-22
Arsenic (As)			102.4		%		50-140	07-MAR-22
Barium (Ba)			100.4		%		50-140	07-MAR-22
Beryllium (Be)			94.1		%		50-140	07-MAR-22
Boron (B)			100.0		%		50-140	07-MAR-22
Cadmium (Cd)			103.3		%		50-140	07-MAR-22
Chromium (Cr)			99.7		%		50-140	07-MAR-22
Cobalt (Co)			97.4		%		50-140	07-MAR-22
Copper (Cu)			99.0		%		50-140	07-MAR-22
Lead (Pb)			99.8		%		50-140	07-MAR-22

Quality Control Report

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: MICHAEL HEALEY

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-SPLP-WT	**Waste**							
Batch R5734784								
WG3702947-5 MS		**WG3702947-3**						
Molybdenum (Mo)			99.0		%		50-140	07-MAR-22
Nickel (Ni)			98.4		%		50-140	07-MAR-22
Selenium (Se)			99.6		%		50-140	07-MAR-22
Silver (Ag)			122.5		%		50-140	07-MAR-22
Thallium (Tl)			99.6		%		50-140	07-MAR-22
Uranium (U)			99.99		%		70-130	07-MAR-22
Vanadium (V)			100.8		%		50-140	07-MAR-22
Zinc (Zn)			100.1		%		50-140	07-MAR-22

Quality Control Report

Workorder: L2690024 Report Date: 11-MAR-22

Client: SIREM
130 Stone Road West
Guelph ON N1G 3Z2
Contact: MICHAEL HEALEY

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2690024-COFC

COC Number: 16 -

Page 1 of 1

Report To		Report Format	
Company:	SiREM	Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Contact:	Rachel Hallman, Michael Healey	Quality Control (QC) Report with Report	☐ Yes ☐ No
Address:	130 Research Lane, Suite 2 Guelph, Ontario, Canada, N1G 5G3	☐ Criteria on Report - provide details below if box checked	
Phone:	519-822-2265	Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
		Email 1 or Fax	rhallman@siremlab.com
		Email 2	mhealey@siremlab.com

Invoice To	Same as Report To ☐ Yes ☐ No	Invoice Distribution	
	Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Company:	SiREM	Email 1 or Fax	kbroersma@geosyntec.com
Contact:	Karen Broersma, kbroersma@geosyntec.com	Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	Newton MNA	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L2690024 **ALS Contact:** **Sampler:** Rachel Hallman

Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)

- R ☐ Regular (Standard TAT if received by 3 pm - business days)
- P ☑ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
- E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
- E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge

Specify Date Required for E2, E or P:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	SPLP (Incl. B and Li)	Number of Containers
	N-SB-XPW01 (10.0-12.7)	1-Mar-21	4:00	Soil	P	1
	N-SB-XPW04 (10.0-15.0)	1-Mar-22	4:30	Soil	P	1

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☑ No

Are samples for human drinking water use? ☐ Yes ☑ No

Special Instructions / Specify Criteria to add on report (client Use)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice packs Yes ☑ No ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
				7.9	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
	1 Mar 22	5:00pm					Mar 3/22	2:45

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

ALS-FM-03264 v09 Front/04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

APPENDIX G:
Sorption Coefficient Calculations

The site-specific sorption coefficients (linear, Langmuir, and Freundlich) presented Table 11 were calculated as follows below.

To calculate the site-specific sorption coefficients, the equilibrium concentrations of each analyte in the groundwater and geologic material must be known. Equilibrium aqueous concentrations were measured directly after the reaction period. Equilibrium geologic material concentrations were calculated using the baseline geologic material concentrations, the time zero aqueous concentrations and the equilibrium aqueous concentrations as follows:

$$q_e = \frac{q_{t=0} \cdot m_s + (C_{t=0} - C_e) \cdot v_{aq}}{m_s}$$

Where,

q_e is the concentration of a given analyte in the geologic material in g/kg at equilibrium

$q_{t=0}$ is the concentration of a given analyte in the geologic material in g/kg at baseline

C_e is the concentration of a given analyte in the aqueous phase in g/L at equilibrium

$C_{t=0}$ is the concentration of a given analyte in the aqueous phase in g/L at the start of the reaction period, after spiking

m_s is the dry mass of the geologic material in a given reactor, in kg

v_{aq} is the volume of groundwater in a given reactor, in L

Linear Sorption Coefficient:

The concentration of a given analyte in the geologic material is plotted against the concentration of the analyte in the aqueous phase. The slope of the linear trendline is the linear sorption coefficient (K_D).

$$q_e = C_e \cdot K_D + b$$

Where,

q_e is the concentration of a given analyte in the geologic material in g/kg at equilibrium

C_e is the concentration of a given analyte in the aqueous phase in g/L at equilibrium

K_D is the linear sorption coefficient

b is the y-intercept of the plot

Langmuir Sorption Coefficient:

The Langmuir model of sorption can be expressed as follows:

$$q_e = \frac{q_m \cdot K_L \cdot C_e}{1 + K_L \cdot C_e}$$

Where,

q_e is the concentration of a given analyte in the geologic material in g/kg

C_e is the concentration of a given analyte in the aqueous phase in g/L

K_L is the Langmuir sorption coefficient

q_m is the maximum concentration possible to be sorbed to the geologic material in g/kg

This relationship can be linearized as follows:

$$\frac{C_e}{q_e} = \frac{1}{K_L \cdot q_m} + \frac{C_e}{q_m}$$

Therefore, the equilibrium aqueous phase concentration divided by the equilibrium geologic material concentration (C_e/q_e) can be plotted against the equilibrium aqueous phase concentration (C_e) and:

$$K_L = \frac{1}{y - intercept \cdot q_m}$$

$$q_m = \frac{1}{slope}$$

Freundlich Sorption Coefficient

The Freundlich model of sorption can be expressed as follows:

$$q_e = K_F \cdot (C_e)^{\frac{1}{n}}$$

Where,

q_e is the concentration of a given analyte in the geologic material in g/kg

C_e is the concentration of a given analyte in the aqueous phase in g/L

K_F is the Freundlich sorption coefficient

n is a Site-specific sorption constant

This relationship can be linearized as follows:

$$\log q_e = \frac{\log K_F + 1}{n \cdot \log C_e}$$

Therefore, the logarithm of the equilibrium geologic material concentration ($\log(q_e)$) can be plotted against the logarithm of the equilibrium aqueous phase concentration ($\log(C_e)$) and:

$$K_F = e^{intercept}$$

$$n = \frac{1}{slope}$$

Intended for
Illinois Power Generating Company
6725 North 500th Street
Newton, Illinois, 62448

Date
April 1, 2025

Project No.
1940110241-002

NATURE AND EXTENT REPORT ADDENDUM

NEWTON POWER PLANT, PRIMARY ASH POND, IEPA ID NO. W0798070001-01

RAMBOLL Bright ideas. Sustainable change.

NATURE AND EXTENT REPORT ADDENDUM
NEWTON POWER PLANT, PRIMARY ASH POND, IEPA ID NO. W0798070001-01

Project name	**Newton Power Plant Primary Ash Pond**
Project no.	**1940110241-002**
Recipient	**Illinois Power Generating Company**
Document type	**Nature and Extent Report**
Revision	**FINAL**
Date	**April 1, 2025**
Prepared by	**Alison O'Connor and Nathaniel Keller**
Checked by	**Lauren Cook**
Approved by	**Brian G. Hennings, PG**

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Project Officer, Hydrogeology

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FIGURES (ATTACHED)

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Figure 3-1 GWPS Exceedance Map Uppermost Aquifer
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APPENDICES

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Appendix C Solids Sampling Lab Reports

ACRONYMS AND ABBREVIATIONS

%	percent
35 I.A.C.	Title 35 of the Illinois Administrative Code
ASD	Alternative Source Demonstration
bgs	below ground surface
CCR	coal combustion residuals
CEC	Cation Exchange Capacity
cm/s	centimeters per second
CSM	conceptual site model
GCSM	geochemical conceptual site model
GWPS	groundwater protection standard
IEPA	Illinois Environmental Protection Agency
IPCB	Illinois Pollution Control Board
LCU	lower confining unit
LOI	loss-on-ignition
mg/L	milligrams per liter
NAVD88	North American Vertical Datum 1988
NPP	Newton Power Plant
PAP	Primary Ash Pond
PMP	potential migration pathway
SEP	sequential extraction procedure
SI	surface impoundment
TDS	total dissolved solids
UA	uppermost aquifer
UCU	upper confining unit
UD	upper drift
XRD	x-ray diffraction

1. INTRODUCTION

Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845.650(d)(1) requires the owner or operator of a coal combustion residuals (CCR) surface impoundment (SI) to characterize the nature and extent of a release and relevant site conditions that may affect the remedy ultimately selected for a CCR SI if any constituent regulated under 35 I.A.C. § 845 is found to exceed the groundwater protection standard (GWPS). A report documenting the nature and extent of constituents detected above the GWPS that are attributable to the Newton Power Plant (NPP) Primary Ash Pond (PAP) was prepared and submitted to the Illinois Environmental Protection Agency (IEPA) dated April 3, 2024 [1]. Additional investigation to further characterize the nature and extent as described in the Nature and Extent Report was collected in June 2024 following the submittal of the Report.

The additional investigation included the following (**Figure 1-1**):

- Installation and development of two monitoring wells (APW19S and APW20S) downgradient of APW02, to further define the nature and extent of lithium, sulfate and total dissolved solids (TDS)
- Installation and development of one monitoring well pair (APW23 and APW23S) downgradient of APW04, to define the nature and extent of sulfate in the uppermost aquifer (UA), and sulfate and TDS in the Upper Drift (UD)
- Installation and development of two monitoring wells (APW21S and APW22S) west and northeast of APW05S to define the nature and extent of sulfate and TDS in the UD
- Collection of soil samples from the screened interval of each additional well and from the material just above the screen interval to characterize soils that interact with groundwater in support of groundwater polishing evaluations.

Documentation of site investigation activities described above and other well maintenance activities performed during the June 2024 field work is included as **Appendix A.** Groundwater elevations were measured and samples were collected following installation of the wells. This report supplements the existing Nature and Extent Report with the results from the additional investigation and initial groundwater monitoring completed in 2024.

2. ADDITIONAL INVESTIGATION RESULTS

2.1 Geology

As previously described in the Nature and Extent Report [1], materials at the site have been categorized into five hydrostratigraphic units at the PAP based on stratigraphic relationships, geologic composition, and common hydrogeologic properties. The units, listed from surface downward, are summarized as follows:

- **Upper Drift (UD)/Potential Migration Pathway (PMP):** The UD is composed of the low permeability silts and clays of the Peoria Silt and Sangamon Soil and the sandier soils of the Hagarstown Member (*i.e.,* PMP).
  - **Hagarstown Member/PMP:** The Hagarstown Member consists of discontinuous sandier deposits of the UD, where present, and overlies the Vandalia Till.
- **Upper Confining Unit (UCU):** This unit consists of the low permeability clay and silt of the Vandalia Till Member (Vandalia Till).
- **Uppermost Aquifer (UA):** This unit is composed of the Mulberry Grove Formation, which has been classified onsite as poorly graded sand, silty sand, clayey sand, and gravel.
- **Lower Confining Unit (LCU):** This unit is comprised of low permeability silt and clay of the Smithboro Till Member (Smithboro Till) and the Banner Formation.
- **Bedrock Unit:** Shale bedrock of the Pennsylvanian-age Mattoon Formation was encountered at the NPP during recent and historical investigations. Measured bedrock elevations indicate the bedrock surface is highest in the southeast [2].

CCR consists of fly and bottom ash within the PAP and may be present from the surface (approximately 545 to 555 feet[1]) to a minimum elevation of approximately 485 feet. CCR material is lowest in elevation along a historic drainage feature that runs approximately through the center of the PAP.

Borings and monitoring wells installed to further define the nature and extent of exceedances[2] (**Figure 1-1**, APW19S – APW23S and APW23; nature and extent wells) indicate consistent geologic materials and stratigraphic relationships. The Nature and Extent wells encountered the following units:

Upper Drift (UD)/Potential Migration Pathway (PMP): The UD was encountered in all borings advanced in 2024. PMP deposits were identified in APW19S, APW21S, and APW22S.

Upper Confining Unit (UCU): All borings were advanced to the UCU below the UD or PMP materials, while monitoring well APW23 penetrated the entire thickness of the UCU (26 feet, **Appendix A**).

[1] All elevations in this report are referenced to North American Vertical Datum of 1988 (NAVD88) unless otherwise noted.
[2] Throughout this document, "exceedance" or "exceedances" is intended to refer only to potential exceedances of proposed applicable background statistics or GWPSs as described in the proposed groundwater monitoring program, which was submitted to the IEPA on October 25, 2021 as part of IPGC's operating permit application for the NPP PAP. That operating permit application, including the proposed groundwater monitoring program, remains under review by the IEPA and, therefore, IPGC has not identified any actual exceedances.

Uppermost Aquifer (UA): The UA was encountered at a depth of 34.5 feet below ground surface (bgs) in APW23 (elevation ~481 feet) and was approximately 7 feet thick, which is consistent with previous borings advanced in the vicinity of APW23 [1].

Lower Confining Unit (LCU): The LCU was encountered at a depth of 41.5 ft bgs (elevation ~474 feet) in APW23, which is also consistent with the Nature and Extent Report.

2.2 Hydrogeology

Groundwater elevations and flow directions within in the UD/PMP are consistent with historical measurements occurring at elevations between approximately 410 and 440 feet. Based on the October 2024 measurements, groundwater within the UD/PMP flows from the northern portion of the PAP to the southeast toward APW12, and southwest towards G105 (**Figure 2-1**).

Consistent with previous reporting [1] groundwater flow in the UA is generally from the north near background wells APW05 and APW06 to the southwest toward a historic drainage feature and southeast toward Newton Lake. Specifically, groundwater flow is north to south beneath the center of the PAP (from APW05/APW06 toward APW09/APW15). Beneath the western portion of the PAP, flow is west to southwest converging towards a former surface drainage feature located west of the PAP (**Figure 2-2**) and an area where the UA is lowest in elevation and has the highest hydraulic conductivity. Beneath the eastern portion of the PAP, groundwater flows east to southeast (from APW05 toward APW11-APW14, and APW23).

Vertical gradients measured between wells APW23S and APW23 are downward which is consistent with those reported in the Nature and Extent Report [1].

3. UPDATES TO THE OCCURRENCE AND DISTRIBUTION OF GROUNDWATER EXCEEDANCES (EXTENT)

Field sampling forms and laboratory reports for additional sampling containing groundwater data from additional sampling locations are presented in **Appendix B** (laboratory reports from sampling the existing monitoring network are posted quarterly[3]). A summary of all exceedance parameters is provided in **Table 3-1** and groundwater data at exceedance locations is summarized in **Table 3-2.** As discussed in the Nature and Extent Report, an alternative source demonstration (ASD) was completed for the chloride exceedance at UA monitoring well APW15. The IEPA did not concur with the ASD. The non-concurrence was appealed, and the Illinois Pollution Control Board (IPCB) granted a stay on January 18, 2024. The nature and extent of chloride concentrations in the UA are not included in this report.

3.1 Extent in the Uppermost Aquifer

The Nature and Extent Report [1] identified only sulfate at well APW10 as an exceedance in the UA. No additional exceedances have been determined in the UA since submittal of that report. Monitoring well APW23, installed in 2024, has been sampled twice and the sulfate results were compared directly to the GWPS to determine whether an exceedance is present. Based on these initial results, there are no exceedances at APW23.

3.1.1 Sulfate

Sulfate exceedances in the UA continue to be limited to APW10. The extent of concentrations above the GWPS are defined laterally in the UA to the southwest by monitoring well APW13 and the recently installed APW23 (**Figure 3-1**). As discussed in the Nature and Extent Report, the UA is not present northeast of APW10, and exceedances are not expected to extend a significant distance in this direction due to the groundwater flow directions and the absence of UA materials observed at APW12. Newton Lake is located approximately 100 feet downgradient of APW10 and comparison of water elevations indicates that groundwater migrates toward Newton Lake. The extent of sulfate is defined downgradient by surface water samples collected near APW10 (Appendix A of the Nature and Extent Report [1] to which this addendum is attached), which indicate concentrations of sulfate are 39 milligrams per liter (mg/L), which are comparable to concentrations measured for sulfate in ambient portions of the lake distant from the PAP.

Downward migration of sulfate in the UA at APW10 is inhibited by the underlying Smithboro Till, which has a thickness of greater than 10 feet and vertical conductivity less than 2.7×10^{-7} centimeters per second (cm/s). This is very low relative to the horizontal hydraulic conductivity measured within APW10 (5.5×10^{-4} cm/s). The significant contrast in permeability (greater than two orders of magnitude) indicates groundwater will preferentially migrate horizontally toward Newton Lake and the elevated sulfate concentrations will not extend into the underlying till and shale bedrock.

3.2 Extents in Upper Drift /Potential Migration Pathways

Exceedances reported for the UD/PMP in the Nature and Extent Report included the following constituents and locations:

[3] https://www.luminant.com/ccr/illinois-ccr/?dir=il-ccr%2FNewton

- Sulfate – APW02, APW04, and APW05S
- Lithium – APW02
- TDS – APW02, APW04, and APW05S

Additional exceedances either detected during compliance monitoring since the submittal of the Nature and Extent Report or from samples collected from Nature and Extent monitoring wells installed in 2024 resulted in the following additional exceedances:

- Sulfate – APW19S, APW20S, APW21S, APW22S, and APW23S
- Lithium – APW19S
- TDS – APW12, APW19S, APW22S, and APW23S

The exceedances are summarized in **Table 3-1,** and groundwater data is summarized in **Table 3-2.**

3.2.1 Sulfate

Concentrations of sulfate measured in UD/PMP compliance wells, and the additional wells added to define the nature and extent, exceed the GWPS (400 mg/L) at APW02, APW04, APW05S, APW19S, APW20S, APW21S, APW22S, and APW23S (**Figure 3-2**). Monitoring wells APW19S through APW23S, installed in 2024, have only one or two sample events so individual sulfate results have been compared directly to the GWPS to determine whether the concentration exceeds at those locations.

NE wells installed to define exceedances provided additional information about sulfate distribution in the UD/PMP, although it did not fully bound the extent of sulfate in the UD/PMP. However, the extent is still ultimately defined by Newton Lake as described in the Nature and Extent Report to which this addendum is attached [1]. Notably, the concentrations of sulfate in the Nature and Extent wells are generally lower than the nearby compliance wells, except at APW23S. Concentrations of sulfate at APW23S (1,240 and 1,370 mg/L) are higher than those measured at APW04 (760 to 990 mg/L). In instances where concentrations are lower as distance from the unit increases, these observations provide some evidence for attenuation of sulfate concentrations.

The presence of elevated sulfate concentrations north of APW05S observed at APW22S, which is also located upgradient of APW05S (**Figure 2-1),** indicates that there may be another source of sulfate to the UD/PMP unit. Additional evaluation is ongoing to evaluate the potential source of sulfate concentrations in this area of the NPP.

3.2.2 Lithium

Concentrations of lithium exceed the GWPS (0.04 mg/L) in monitoring well APW02 and APW19S, located near the southwest corner of the PAP (**Figure 3-2**). To the west, the extent of lithium exceedances in groundwater is defined by APW20S and the downgradient extent of lithium concentrations near APW19S is limited by Newton Lake. As discussed in the Nature and Extent Report [1], concentrations of lithium were not detected in Newton Lake near this location.

3.2.3 Total Dissolved Solids

Concentrations of TDS measured in UD/PMP compliance wells, and the additional wells added to define the nature and extent, exceed the GWPS (400 mg/L) at APW02, APW04, APW05S, APW12,

APW19S, APW22S, and APW23S (**Figure 3-2**). Typically, major ions (such as sulfate) represent the primary contributors to TDS. TDS exceedances are coincident with sulfate exceedances at all wells with the exception of APW12. The extent of TDS exceedances near APW02 was further defined to the west by the addition of APW20S, which did not observe elevated TDS concentrations. TDS concentrations were also further delineated to the west of APW05S by APW21S which observed concentrations below the GWPS.

4. UPDATES TO THE GEOCHEMICAL CONCEPTUAL SITE MODEL (NATURE)

A geochemical conceptual site model (GCSM) was developed to describe the conditions of the groundwater in the vicinity of the NPP PAP and is summarized here (full analysis originally presented in Appendix C of the Nature and Extent report to which this addendum is attached). The GCSM describes the geochemical processes that contribute to the mobilization, distribution, and attenuation of chemicals in the environment. Only parameters that have exceeded the GWPS in PAP groundwater and to be addressed in the corrective action plan are included in the GCSM. As discussed in previous sections, the exceedances discussed herein include sulfate, TDS, and lithium. The effects of additional observed exceedances (*i.e.*, TDS at APW12) and additional and ongoing data collection on the GCSM are described below.

4.1 Solids Characterization

Table 4-1 serves as an update to Table 3-1 in the original GCSM document and summarizes boring identifiers and collection depths; adjacent groundwater monitoring well names, used in this section to refer to the solid phase samples for easier comparison with groundwater results; and methods of analysis. Analyses of samples collected as part of the Nature and Extent investigation included cation exchange capacity (CEC), loss on ignition (LOI), sequential extraction procedure (SEP), and X-ray diffraction (XRD) (method details provided in Section 3.1 of the original GCSM document). All laboratory reports for additional solids phase characterization are presented in **Appendix C**.

Table 4-2 summarizes the CEC, LOI, and SEP analysis results most relevant to the GCSM. The CEC of the additional investigation samples collected were similar to previous results in both UD and UA samples. The LOI of the additional UD investigation samples were higher than the values previously reported for UD samples. The additional investigation SEP results (analyzed by Eurofins) are compared to the SEP results previously generated by Eurofins for consistency (see Section 3.1 of the original GCSM document for details regarding SEP analytical methods). The aluminum and iron SEP results for the additional investigation samples were similar to those measured previously, although a few individual samples exhibited higher or lower concentrations. The lithium SEP results for the additional UA sample were consistent with previous results. The lithium SEP results for the additional investigation UD samples were largely consistent with previous results, with the exception of the metal hydroxide and organic fractions: higher lithium concentrations were associated with the metal hydroxide fraction and lower concentrations were associated with the organic fraction in the additional UD samples relative to previous results. This may indicate that lithium mobility within the UD has somewhat more dependence on redox conditions than previously assessed.

Similar to previous results[4], XRD of the additional investigation samples showed abundant carbonate minerals (*i.e.*, calcite and dolomite), tectosilicate minerals (*i.e.*, feldspars), and phyllosilicate minerals (*i.e.*, mica, chlorite/vermiculite, and kaolinite) (**Figure 4-1**). The phyllosilicate minerals, also known as clay-forming minerals, were typically more abundant in the clay size fraction than in the whole sample. The measurement of chlorite/vermiculite, K-feldspar, and kaolinite are particularly relevant to understanding the potential for lithium attenuation at

[4] The precise parameters of the XRD scan can favor the detection of certain minerals. To better understand the role of clay minerals at the site, different analytical parameters were used in the additional investigation analysis. Therefore, results to previous XRD results are qualitative.

the site. Kaolinite is the secondary clay formed from K-feldspar weathering or from chemical alteration of chlorite/vermiculite. Incorporation into actively forming kaolinite secondary clays (or pre-crystalline precursors) strongly retains lithium in aquifers (*e.g.*, [3] [4]), and this binding can be 60 percent (%) to 90% irreversible under changing geochemical conditions (*e.g.*, [5] [6] [7]). The occurrence of both kaolinite and its parent minerals suggests that actively forming kaolinite may be a sink for lithium at the site.

4.2 Aqueous Characterization

As described in **Section 3.2**, a TDS exceedance was observed at APW12. Similar to other UD/PMP locations with TDS exceedances, the dominant contributor to TDS at APW12 is sulfate. Geochemical data from APW12 are presented in the original GCSM document figures and tables. These data are consistent with the other UD/PMP locations that have sulfate-driven TDS exceedances. Therefore, the existing GCSM is applicable to the TDS exceedance at APW12.

Major controls on chemical fate and transport include pH, oxidation reduction potential, iron, and manganese. The data collected from the additional investigation wells are largely consistent with previous observations (**Figure 4-2**). One exception is manganese at 22S, which is an order of magnitude higher than at any other location.

The CCR materials are the primary source of constituent loading to the CCR porewater. Over an extended period (*e.g.*, months to years), the CCR porewater (*i.e.*, water contained within the interstitial pore spaces of the CCR that can be sampled by low-flow groundwater sampling methods) reaches equilibrium with the CCR materials. The porewater is therefore representative of the mobile phase constituents capable of migrating into the underlying materials and potentially downgradient in groundwater [8]. The GCSM proposed that the 1:2 correlation between sulfate and sodium in porewater, which largely persists into groundwater, suggests that a source of sodium sulfate to the CCR porewater is the primary source of sulfate to the groundwater. **Figure 4-3** shows the correlation between sulfate and sodium including data from the additional investigation locations. The additional investigation results plot with the other UD samples slightly above the 1:2 line, consistent with the GCSM observation that sulfate is primarily from the unit but there may be a secondary geogenic source of sulfate. One exception is APW21S, which has higher sulfate than expected given the sodium concentration. This may indicate a different source of sulfate contributing to the groundwater signature at APW21S.

Figure 4-4 shows a Piper diagram with the most recent three samples from all locations. The overall signature (main diamond of the plot) of the additional investigation samples is consistent with other wells in the same hydrostratigraphic unit. Relative to other locations with elevated sulfate in the same hydrostratigraphic unit, the anion signature at APW22S indicates a more chloride-dominant signature, and the cation signature at APW21S a more calcium-dominant signature.

4.3 GCSM Conclusions

The additional investigation into the nature and extent of the exceedances at NEW PAP found solid phase and aqueous results largely consistent with the existing GCSM. Additional mineralogical data indicates kaolinite formation from weathering at the site, providing additional support for lithium immobilization in the solid phase. Differences of note include a greater proportion of lithium associated with metal hydroxides in the solid phase than previously

assessed, and distinct groundwater signatures at APW21S and APW22S. The groundwater signatures at APW21S and APW22S suggest influence from sources other than the NEW PAP.

The GCSM includes two hydrostratigraphic units: the shallow UD/PMP and the deeper UA. The UA is shallowest (*i.e.*, in closest proximity to the upper drift/primary migration pathway) on the east side of the PAP. Groundwater in the UD/PMP and eastern UA wells tend to be geochemically similar: groundwater from these locations tends to be more oxidizing, exhibit lower pH, and have a cation signature dominated by calcium and magnesium. Groundwater in the rest of the UA tends to be more reducing (exhibiting higher dissolved iron concentrations), have higher pH, and have a greater contribution of sodium and potassium to the cation signature. These results suggest some degree of hydraulic connection between the UD/PMP and UA east of the PAP.

Sulfate is the major contributor to TDS in the PAP groundwater. Therefore, processes that control sulfate concentrations also control TDS. Elevated sulfate concentrations were observed in shallow groundwater wells (screened in the upper drift/primary migration pathway) and UA wells located east of the PMP. Sulfate in CCR porewater and the UD/PMP groundwater is correlated with sodium, indicating that dissolution of sodium sulfate from the CCR material is the primary source of sulfate to the CCR porewater. Sulfate exceedances in the UA, which occur exclusively on the east side of the PAP, are consistent with water migration from the UD/PMP. Potential sulfate attenuation mechanisms at the NPP PAP include sorption to solid-phase iron oxides. Based on results from laboratory batch testing, sulfate sorption may be more likely in the UA.

Lithium concentrations in groundwater are highest in UD/PMP and eastern UA groundwater. Although lithium was identified in solid samples located both upgradient and downgradient of the PAP, the similar distributions of lithium and sulfate suggest that CCR porewater is the primary source of lithium to the groundwater. The difference in groundwater lithium concentrations may be due to variability in porewater concentration or in attenuation to aquifer solids. Lithium in groundwater may be attenuated by sorption to exchangeable sites (readily reversible) or incorporation in clay mineral matrices (poorly reversible). Poorly reversible sorption of lithium to aquifer solids is supported by the occurrence of both the secondary clay kaolinite and its parent minerals (suggesting active formation) and laboratory batch testing results.

5. COMBINED GEOCHEMICAL AND HYDROGEOLOGIC CONCEPTUAL SITE MODELS

5.1 Sulfate and TDS Conceptual Site Model

The conceptual site model (CSM) describing current conditions at the PAP combining the hydrogeologic and geochemical CSMs for sulfate and TDS remain largely unchanged from the Nature and Extent Report. Porewater (*i.e.*, water contained within the interstitial pore spaces of the CCR that can be sampled by low-flow groundwater sampling methods) containing elevated concentrations of sulfate mixes with groundwater of the UD. Groundwater within the UD/PMP in the vicinity of the PAP travels horizontally outward from the PAP, ultimately migrating toward Newton Lake, or vertically into the clay of the UCU that separates the UD from the UA. Sulfate concentrations are attenuated physically through dilution and dispersion; and may be geochemically attenuated by sorption to iron oxides. The limit of sulfate exceedances is defined by wells in the UA with concentrations below the GWPS and Newton Lake, where sulfate concentrations near APW10 are low. The sulfate concentrations in Newton Lake were evaluated and they do not present unacceptable risk [9]. Sulfate exceedances of the GWPS have been observed in eight of 10 UD wells and one of 14 UA wells. The presence or absence of exceedances can be attributed to variability in both sulfate concentration within the CCR of the PAP and the extent of water migration between the UD/PMP and UA. Water quality signatures at upgradient UD wells APW21S and APW22S suggest an influence other than the PAP.

5.2 Lithium Conceptual Site Model

The CSM describing current conditions at the PAP combining the hydrogeologic and geochemical CSMs for lithium is as follows. Surface water within the PAP comes into contact with CCR and once it enters the pore spaces within the CCR we characterize it as porewater within the unlined CCR unit. Porewater containing elevated concentrations of lithium mixes with groundwater of the UD/PMP. Groundwater within the UD in the vicinity of the PAP travels horizontally outward from the PAP, ultimately migrating toward Newton Lake, or vertically into the clay of the UCU that separates the UD from the UA. Lithium concentrations are attenuated physically through dilution and dispersion and geochemically attenuated by sorption to and incorporation into clay minerals. The lithium exceedances are limited to the UD wells at the southwest corner of the unit (APW02 and APW19S) and are bounded in extent by lower concentrations at APW20S to the west and Newton Lake, where concentrations in surface water were less than 0.02 mg/L. The lithium concentrations in Newton Lake were evaluated and they do not present unacceptable risk [9]. Lithium exceedances of the GWPS observed in UD wells APW02 and APW19S are only located along the western side of the PAP, which is the same side of the PAP where the highest concentrations of lithium were observed in porewater (XPW01), indicating exceedances may be a result of proximity to portions of the PAP where CCR porewater contains relatively higher concentrations of lithium.

6. CONCLUSIONS AND FUTURE ACTIVITIES

In accordance with 35 I.A.C. § 845.650(d)(1), the nature and extent of GWPS exceedances of sulfate, TDS, and lithium have been described in sufficient detail to support a complete and accurate assessment of the corrective measures necessary to effectively clean up all releases from the PAP.

The lateral extents of exceedances are illustrated in **Figures 3-1 and 3-2**. Sulfate was selected for modeling source control presented in the Final Closure Plan and was identified as a surrogate for the exceedances of lithium and TDS, as described in the Groundwater Modeling Report[5]. For modeling purposes, it was assumed that sulfate would not significantly sorb or chemically react with aquifer solids (soil adsorption coefficient was set to 0 milliliters per gram), which is a conservative estimate for predicting contaminant transport times in the model. Additional geochemical modeling was completed to evaluate how sorption to solid phases may affect sulfate and lithium mobility and therefore the time to reach the GWPS for these parameters.[6]

[5] The Groundwater Modeling Technical Memorandum is provided as Appendix B to the Corrective Action Alternatives Analysis Supporting Information Report. The Corrective Action Alternatives Analysis Supporting Information Report is provided as Appendix B to the Corrective Action Alternatives Analysis to which this report is also attached.

[6] Presented in the Groundwater Polishing Evaluation Report provided as Appendix E to the Corrective Action Alternatives Analysis to which this Nature and Extent Report is also attached.

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TABLES

Table 3-1. Exeedance Parameter Statistical Results
Nature and Extent Report Addendum
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Location	Parameter	Unit	GWPS	2023 Q2	2023 Q3	2023 Q4	2024 Q1	2024 Q2	2024 Q3
APW02	Lithium, total	mg/L	0.04	0.0888	0.0944	0.0954	0.0977	0.0972	0.098
APW02	Sulfate, total	mg/L	400	2,900	2,860	2,860	2,900	2,900	2,900
APW02	Total Dissolved Solids	mg/L	1,200	5,180	5,000	5,000	5,000	4,900	4,900
APW04	Sulfate, total	mg/L	400	844	837	832	587	607	621
APW04	Total Dissolved Solids	mg/L	1,200	1,710	1,720	1,720	1,700	1,700	1,700
APW05S	Sulfate, total	mg/L	400	640	640	640	640	1,690	1,690
APW05S	Total Dissolved Solids	mg/L	1,200	3,450	3,390	3,360	3,280	3,280	3,310
APW10	Sulfate, total	mg/L	400	410	410	410	410	410	410
APW12	Total Dissolved Solids	mg/L	1,200	1,160	1,170	1,190	1,220	1,240	1,570
APW19S	Lithium, total	mg/L	0	NA	NA	NA	NA	NA	0.0672
APW19S	Sulfate, total	mg/L	400	NA	NA	NA	NA	NA	2,360
APW19S	Total Dissolved Solids	mg/L	1,200	NA	NA	NA	NA	NA	3,520
APW21S	Sulfate, total	mg/L	400	NA	NA	NA	NA	NA	567
APW22S	Sulfate, total	mg/L	400	NA	NA	NA	NA	NA	1,870
APW22S	Total Dissolved Solids	mg/L	1,200	NA	NA	NA	NA	NA	3,300
APW23S	Sulfate, total	mg/L	400	NA	NA	NA	NA	NA	1,370
APW23S	Total Dissolved Solids	mg/L	1,200	NA	NA	NA	NA	NA	2,380

Table 3-1. Exeedance Parameter Statistical Results
Nature and Extent Report Addendum
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Location	HSU	Event	Parameter	Unit	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Exceedance
APW02	UD	2023 Q2	Lithium, total	mg/L	02/17/21 - 04/27/23	10	0	CI around geomean	0.0888	0.04	MCL/HBL	YES
APW02	UD	2023 Q3	Lithium, total	mg/L	02/17/21 - 08/17/23	11	0	CI around geomean	0.0944	0.04	MCL/HBL	YES
APW02	UD	2023 Q4	Lithium, total	mg/L	02/17/21 - 10/10/23	12	0	CI around geomean	0.0954	0.04	MCL/HBL	YES
APW02	UD	2024 Q1	Lithium, total	mg/L	02/17/21 - 01/18/24	13	0	CI around geomean	0.0977	0.04	MCL/HBL	YES
APW02	UD	2024 Q2	Lithium, total	mg/L	02/17/21 - 04/09/24	14	0	CI around geomean	0.0972	0.04	MCL/HBL	YES
APW02	UD	2024 Q3	Lithium, total	mg/L	02/17/21 - 08/07/24	15	0	CI around median	0.098	0.04	MCL/HBL	YES
APW02	UD	2023 Q2	Sulfate, total	mg/L	02/17/21 - 04/27/23	10	0	CI around median	2900	400	MCL/HBL	YES
APW02	UD	2023 Q3	Sulfate, total	mg/L	02/17/21 - 08/17/23	11	0	CI around median	2860	400	MCL/HBL	YES
APW02	UD	2023 Q4	Sulfate, total	mg/L	02/17/21 - 10/10/23	12	0	CI around median	2860	400	MCL/HBL	YES
APW02	UD	2024 Q1	Sulfate, total	mg/L	02/17/21 - 01/18/24	13	0	CI around median	2900	400	MCL/HBL	YES
APW02	UD	2024 Q2	Sulfate, total	mg/L	02/17/21 - 04/09/24	14	0	CI around median	2900	400	MCL/HBL	YES
APW02	UD	2024 Q3	Sulfate, total	mg/L	02/17/21 - 08/07/24	15	0	CI around median	2900	400	MCL/HBL	YES
APW02	UD	2023 Q2	Total Dissolved Solids	mg/L	02/17/21 - 04/27/23	16	0	CB around linear reg	5180	1200	MCL/HBL	YES
APW02	UD	2023 Q3	Total Dissolved Solids	mg/L	02/17/21 - 08/17/23	17	0	CI around median	5000	1200	MCL/HBL	YES
APW02	UD	2023 Q4	Total Dissolved Solids	mg/L	02/17/21 - 10/10/23	18	0	CI around median	5000	1200	MCL/HBL	YES
APW02	UD	2024 Q1	Total Dissolved Solids	mg/L	02/17/21 - 01/18/24	19	0	CI around median	5000	1200	MCL/HBL	YES
APW02	UD	2024 Q2	Total Dissolved Solids	mg/L	02/17/21 - 04/09/24	20	0	CI around median	4900	1200	MCL/HBL	YES
APW02	UD	2024 Q3	Total Dissolved Solids	mg/L	02/17/21 - 08/07/24	21	0	CI around median	4900	1200	MCL/HBL	YES
APW04	UD	2023 Q2	Sulfate, total	mg/L	02/18/21 - 04/25/23	10	0	CI around mean	844	400	MCL/HBL	YES
APW04	UD	2023 Q3	Sulfate, total	mg/L	02/18/21 - 07/31/23	11	0	CI around mean	837	400	MCL/HBL	YES
APW04	UD	2023 Q4	Sulfate, total	mg/L	02/18/21 - 10/10/23	12	0	CI around mean	832	400	MCL/HBL	YES
APW04	UD	2024 Q1	Sulfate, total	mg/L	02/18/21 - 01/23/24	13	0	CB around linear reg	587	400	MCL/HBL	YES
APW04	UD	2024 Q2	Sulfate, total	mg/L	02/18/21 - 04/09/24	14	0	CB around linear reg	607	400	MCL/HBL	YES
APW04	UD	2024 Q3	Sulfate, total	mg/L	02/18/21 - 07/08/24	15	0	CB around linear reg	621	400	MCL/HBL	YES
APW04	UD	2023 Q2	Total Dissolved Solids	mg/L	02/18/21 - 04/25/23	16	0	CI around mean	1710	1200	MCL/HBL	YES
APW04	UD	2023 Q3	Total Dissolved Solids	mg/L	02/18/21 - 07/31/23	17	0	CI around mean	1720	1200	MCL/HBL	YES
APW04	UD	2023 Q4	Total Dissolved Solids	mg/L	02/18/21 - 10/10/23	18	0	CI around mean	1720	1200	MCL/HBL	YES
APW04	UD	2024 Q1	Total Dissolved Solids	mg/L	02/18/21 - 01/23/24	19	0	CI around median	1700	1200	MCL/HBL	YES
APW04	UD	2024 Q2	Total Dissolved Solids	mg/L	02/18/21 - 04/09/24	20	0	CI around median	1700	1200	MCL/HBL	YES
APW04	UD	2024 Q3	Total Dissolved Solids	mg/L	02/18/21 - 07/08/24	21	0	CI around median	1700	1200	MCL/HBL	YES
APW05S	UD	2023 Q2	Sulfate, total	mg/L	02/17/21 - 04/26/23	9	0	CI around median	640	400	MCL/HBL	YES
APW05S	UD	2023 Q3	Sulfate, total	mg/L	02/17/21 - 07/25/23	10	0	CI around median	640	400	MCL/HBL	YES
APW05S	UD	2023 Q4	Sulfate, total	mg/L	02/17/21 - 10/10/23	11	0	CI around median	640	400	MCL/HBL	YES
APW05S	UD	2024 Q1	Sulfate, total	mg/L	02/17/21 - 01/23/24	12	0	CI around median	640	400	MCL/HBL	YES
APW05S	UD	2024 Q2	Sulfate, total	mg/L	02/17/21 - 04/02/24	13	0	CI around median	1690	400	MCL/HBL	YES
APW05S	UD	2024 Q3	Sulfate, total	mg/L	02/17/21 - 08/07/24	14	0	CI around median	1690	400	MCL/HBL	YES
APW05S	UD	2023 Q2	Total Dissolved Solids	mg/L	02/17/21 - 04/26/23	9	0	CI around mean	3450	1200	MCL/HBL	YES
APW05S	UD	2023 Q3	Total Dissolved Solids	mg/L	02/17/21 - 07/25/23	10	0	CI around mean	3390	1200	MCL/HBL	YES
APW05S	UD	2023 Q4	Total Dissolved Solids	mg/L	02/17/21 - 10/10/23	11	0	CI around mean	3360	1200	MCL/HBL	YES
APW05S	UD	2024 Q1	Total Dissolved Solids	mg/L	02/17/21 - 01/23/24	12	0	CI around mean	3280	1200	MCL/HBL	YES
APW05S	UD	2024 Q2	Total Dissolved Solids	mg/L	02/17/21 - 04/02/24	13	0	CI around mean	3280	1200	MCL/HBL	YES

Table 3-1. Exeedance Parameter Statistical Results
Nature and Extent Report Addendum
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Location	HSU	Event	Parameter	Unit	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Exceedance
APW05S	UD	2024 Q3	Total Dissolved Solids	mg/L	02/17/21 - 08/07/24	14	0	CI around mean	3310	1200	MCL/HBL	YES
APW10	UA	2023 Q2	Sulfate, total	mg/L	12/16/15 - 04/27/23	25	0	CI around median	410	400	MCL/HBL	YES
APW10	UA	2023 Q3	Sulfate, total	mg/L	12/16/15 - 07/31/23	27	0	CI around median	410	400	MCL/HBL	YES
APW10	UA	2023 Q4	Sulfate, total	mg/L	12/16/15 - 10/10/23	28	0	CI around median	410	400	MCL/HBL	YES
APW10	UA	2024 Q1	Sulfate, total	mg/L	12/16/15 - 01/23/24	29	0	CI around median	410	400	MCL/HBL	YES
APW10	UA	2024 Q2	Sulfate, total	mg/L	12/16/15 - 04/08/24	30	0	CI around median	410	400	MCL/HBL	YES
APW10	UA	2024 Q3	Sulfate, total	mg/L	12/16/15 - 07/02/24	31	0	CI around median	410	400	MCL/HBL	YES
APW12	UD	2024 Q1	Total Dissolved Solids	mg/L	02/17/21 - 01/16/24	13	0	CI around mean	1220	1200	MCL/HBL	YES
APW12	UD	2024 Q2	Total Dissolved Solids	mg/L	02/17/21 - 04/04/24	14	0	CI around mean	1240	1200	MCL/HBL	YES
APW12	UD	2024 Q3	Total Dissolved Solids	mg/L	02/17/21 - 07/02/24	15	0	CB around linear reg	1570	1200	MCL/HBL	YES
APW19S	UD	2024 Q3	Lithium, total	mg/L	08/07/24 - 08/07/24	1	0	Most recent sample	0.0672	0.04	MCL/HBL	YES
APW19S	UD	2024 Q3	Sulfate, total	mg/L	08/07/24 - 08/07/24	1	0	Most recent sample	2360	400	MCL/HBL	YES
APW19S	UD	2024 Q3	Total Dissolved Solids	mg/L	08/07/24 - 08/07/24	1	0	Most recent sample	3520	1200	MCL/HBL	YES
APW21S	UD	2024 Q3	Sulfate, total	mg/L	08/07/24 - 08/07/24	1	0	Most recent sample	567	400	MCL/HBL	YES
APW22S	UD	2024 Q3	Sulfate, total	mg/L	08/08/24 - 08/08/24	1	0	Most recent sample	1870	400	MCL/HBL	YES
APW22S	UD	2024 Q3	Total Dissolved Solids	mg/L	08/08/24 - 08/08/24	1	0	Most recent sample	3300	1200	MCL/HBL	YES
APW23S	UD	2024 Q3	Sulfate, total	mg/L	08/08/24 - 08/08/24	1	0	Most recent sample	1370	400	MCL/HBL	YES
APW23S	UD	2024 Q3	Total Dissolved Solids	mg/L	08/08/24 - 08/08/24	1	0	Most recent sample	2380	1200	MCL/HBL	YES

Table 3-2. Summary of Groundwater Data
Nature and Extent Report Addendum
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Well Type	Parameter	Unit	Sample Count	Non-Detect Results	Percent Non-Detect Results	First Sample	Last Sample	Minimum	Median	Mean	Maximum
UA	APW10	C	Sulfate, total	mg/L	31	0	0	12/16/2015	10/01/2024	390	410	430	785
UA	APW10	C	Total Dissolved Solids	mg/L	32	0	0	12/16/2015	10/01/2024	840	1000	1000	1,690
UA	APW23	NE	Sulfate, total	mg/L	2	0	0	08/08/2024	10/02/2024	304	320	320	339
UA	APW23	NE	Total Dissolved Solids	mg/L	2	0	0	08/08/2024	10/02/2024	935	950	950	966
UD	APW02	C	Sulfate, total	mg/L	16	0	0	02/17/2021	10/02/2024	1,500	3100	3000	3,520
UD	APW02	C	Total Dissolved Solids	mg/L	40	0	0	11/30/2010	10/02/2024	1,910	5000	4900	5,500
UD	APW02	C	Lithium, total	mg/L	16	0	0	02/17/2021	10/02/2024	0.0790	0.11	0.13	0.300
UD	APW04	C	Sulfate, total	mg/L	16	0	0	02/18/2021	10/07/2024	543	850	860	990
UD	APW04	C	Total Dissolved Solids	mg/L	40	0	0	11/30/2010	10/07/2024	1,060	1800	2000	3,100
UD	APW04	C	Lithium, total	mg/L	16	1	6	02/18/2021	10/07/2024	0.0180	0.021	0.023	0.0450
UD	APW05S	C	Sulfate, total	mg/L	15	0	0	02/17/2021	10/02/2024	200	1900	1700	2,200
UD	APW05S	C	Total Dissolved Solids	mg/L	15	0	0	02/17/2021	10/02/2024	2,920	3600	3500	4,000
UD	APW05S	C	Lithium, total	mg/L	15	0	0	02/17/2021	10/02/2024	0.0328	0.039	0.044	0.0910
UD	APW12	C	Sulfate, total	mg/L	16	0	0	02/17/2021	10/01/2024	56.0	460	510	835
UD	APW12	C	Total Dissolved Solids	mg/L	16	0	0	02/17/2021	10/01/2024	990	1400	1500	1,960
UD	APW12	C	Lithium, total	mg/L	16	0	0	02/17/2021	10/01/2024	0.0240	0.030	0.033	0.0460
UD	APW19S	NE	Sulfate, total	mg/L	2	0	0	08/07/2024	10/07/2024	2,360	2400	2400	2,440
UD	APW19S	NE	Total Dissolved Solids	mg/L	2	0	0	08/07/2024	10/07/2024	3,520	3600	3600	3,780
UD	APW19S	NE	Lithium, total	mg/L	2	0	0	08/07/2024	10/07/2024	0.0672	0.078	0.078	0.0897
UD	APW20S	NE	Sulfate, total	mg/L	1	0	0	10/02/2024	10/02/2024	1,920	1,920	1900	1,920
UD	APW20S	NE	Total Dissolved Solids	mg/L	1	0	0	10/02/2024	10/02/2024	3,080	3,080	3100	3,080
UD	APW20S	NE	Lithium, total	mg/L	1	0	0	10/02/2024	10/02/2024	0.0323	0.0323	0.032	0.0323
UD	APW21S	NE	Sulfate, total	mg/L	2	0	0	08/07/2024	10/02/2024	437	500	500	567
UD	APW21S	NE	Total Dissolved Solids	mg/L	2	0	0	08/07/2024	10/02/2024	996	1000	1000	1,100
UD	APW21S	NE	Lithium, total	mg/L	2	0	0	08/07/2024	10/02/2024	0.0127	0.014	0.014	0.0147
UD	APW22S	NE	Sulfate, total	mg/L	2	0	0	08/08/2024	10/02/2024	1,870	2000	2000	2,030
UD	APW22S	NE	Total Dissolved Solids	mg/L	2	0	0	08/08/2024	10/02/2024	1,880	2600	2600	3,300
UD	APW22S	NE	Lithium, total	mg/L	2	0	0	08/08/2024	10/02/2024	0.0219	0.022	0.022	0.0228
UD	APW23S	NE	Sulfate, total	mg/L	2	0	0	08/08/2024	10/02/2024	1,240	1300	1300	1,370
UD	APW23S	NE	Total Dissolved Solids	mg/L	2	0	0	08/08/2024	10/02/2024	2,270	2300	2300	2,380
UD	APW23S	NE	Lithium, total	mg/L	2	0	0	08/08/2024	10/02/2024	0.0210	0.021	0.021	0.0217

NOTES:
C = compliance
HSU = hydrostratigraphic unit
mg/L = milligrams per liter
NE = nature and extent
UA = uppermost aquifer
UD = upper drift

Table 4-1. Summary of Solids Samples
Nature and Extent Report Addendum
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

HSU	Location	Depth Range	CEC	LOI	SEP	XRD	XRF	TIMA
CCR	XPW01	10-12.7	2021 (SGS)	2021 (SGS)	2021 (Eurofins)	2021 (SGS)		
CCR	XPW04	10-15	2021 (SGS)		2021 (Eurofins)	2021 (SGS)		
UD	APW02	10-13			2023 (SGS)	2023 (SGS)	2023 (SGS)	2023 (SGS)
UD	APW02	12.5-20	2021 (SGS)	2021 (SGS)	2021 (Eurofins)	2021 (SGS) 2024 (Eurofins)		
UD	APW04	12-18	2021 (SGS)	2021 (SGS)	2021 (Eurofins) 2023 (SGS)	2021 (SGS) 2023 (SGS) 2024 (Eurofins)	2023 (SGS)	2023 (SGS)
UD	APW05S	10-16.6			2023 (SGS)	2023 (SGS)	2023 (SGS)	2023 (SGS)
UD	APW05S	10.1-16.6				2024 (Eurofins)		
UD	APW05S	18-20	2021 (SGS)	2021 (SGS)	2021 (Eurofins)	2021 (SGS)		
UD	APW19S	7.5-8.2	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)		
UD	APW19S	16-18	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)		
UD	APW20S	14-16	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)		
UD	APW20S	20-22	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)		
UD	APW21S	8-10	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)		
UD	APW21S	14-16	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)		
UD	APW22S	9-11	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)		
UD	APW22S	20.5-22	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)		
UD	APW23S	12-16	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)		
UA	APW05	60-67	2021 (SGS)	2021 (SGS)		2021 (SGS)		
UA	APW05	60-67.1			2021 (Eurofins)			
UA	APW10	38.7-45.4			2021 (Eurofins)			
UA	APW10	40-45	2021 (SGS)	2021 (SGS)	2023 (SGS)	2021 (SGS) 2023 (SGS)	2023 (SGS)	
UA	APW14	44.2-52			2021 (Eurofins)			
UA	APW14	50-52	2021 (SGS)	2021 (SGS)	2023 (SGS)	2021 (SGS) 2023 (SGS)	2023 (SGS)	
UA	APW17	65-71.5	2021 (SGS)	2021 (SGS)	2021 (Eurofins)	2021 (SGS)		
UA	APW18	77.5-80	2021 (SGS)	2021 (SGS)	2021 (Eurofins)	2021 (SGS)		
UA	APW23	37-39	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)	2024 (Eurofins)		

Table 4-2. Solid Sample Data Comparison
Nature and Extent Report Addendum
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Analytical Method	Fraction	Parameter	Upper Drift		Uppermost Aquifer	
			Previous results	Additional investigation samples	Previous results	Additional investigation samples
CEC	NA	Cation Exchange Capacity	9.45 - 22.8	4.77 - 28.8	1.57 - 12.4	8.02
LOI	NA	Loss on Ignition	9.4 - 12.8	14 - 26	11.6 - 20	23
SEP	Exchangeable	Aluminum	0	0	0	0
SEP	Carbonates	Aluminum	10 - 16	10 - 43	11 - 33	11
SEP	Non-Crystalline Materials	Aluminum	52 - 120	45 - 290	45 - 340	57
SEP	Metal Hydroxides	Aluminum	370 - 600	270 - 3,400	77 - 470	310
SEP	Organics	Aluminum	140 - 210	64 - 200	46 - 160	110
SEP	Acid/Sulfides	Aluminum	2,300 - 5,400	1,600 - 8,500	1,200 - 3,000	2,600
SEP	Residual	Aluminum	25,000 - 34,000	18,000 - 29,000	18,000 - 31,000	28,000
SEP	Total	Aluminum	26,000 - 48,000	9,100 - 50,000	13,000 - 30,000	22,000
SEP	Sum	Aluminum	27,900 - 40,300	21,000 - 38,000	19,400 - 34,400	31,100
SEP	Exchangeable	Iron	0	0	0	0
SEP	Carbonates	Iron	0 - 36	0 - 930	40 - 440	37
SEP	Non-Crystalline Materials	Iron	240 - 330	180 - 3,300	180 - 4,100	220
SEP	Metal Hydroxides	Iron	3,900 - 8,000	2,700 - 20,000	2,200 - 5,600	3,300
SEP	Organics	Iron	0	0	0	0
SEP	Acid/Sulfides	Iron	4,500 - 19,000	3,500 - 16,000	3,400 - 12,000	9,500
SEP	Residual	Iron	2,800 - 5,200	2,400 - 5,800	2,500 - 5,800	3,700
SEP	Total	Iron	10,000 - 34,000	8,500 - 22,000	13,000 - 19,000	18,000
SEP	Sum	Iron	11,500 - 32,500	9,280 - 42,000	11,500 - 23,600	16,800
SEP	Exchangeable	Lithium	0	0	0	0
SEP	Carbonates	Lithium	0	0	0	0
SEP	Non-Crystalline Materials	Lithium	0	0 - 0.24	0	0
SEP	Metal Hydroxides	Lithium	0.99 - 1.7	0.71 - 5.2	0.83 - 1.6	1.1
SEP	Organics	Lithium	8.4 - 14	0 - 2.8	7.6 - 14	0
SEP	Acid/Sulfides	Lithium	3.9 - 8.5	3 - 8.6	3.6 - 5.4	5.6
SEP	Residual	Lithium	6.9 - 16	4.8 - 17	5.9 - 11	7.6
SEP	Total	Lithium	12 - 28	7.5 - 29	7.6 - 15	17
SEP	Sum	Lithium	25.8 - 34.6	8.51 - 30.7	21.1 - 24.6	14.3

FIGURES

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- MONITORING WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, LAKE
- LEACHATE WELL
- CLOSED POREWATER WELL
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE

NOTES:
1.ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

0 400 800
Feet

SITE MAP

NATURE AND EXTENT SITE WORK MEMORANDUM
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 1-1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\12285\MXD\Nature_and_Extent\NEW\Nature_and_Extent_AddendumNE_Addendum.aprx\Figure 1-1, Site Map

PROJECT: 169000XXXX | DATED: 12/20/2024 | DESIGNER: GALARNMC

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- MONITORING WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, RIVER
- LEACHATE WELL
- CLOSED POREWATER WELL
- GROUNDWATER ELEVATION CONTOUR (5-FT CONTOUR INTERVAL, NAVD88)
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE

NOTES:
1.ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

0 400 800
Feet

UPPER DRIFT POTENTIOMETRIC SURFACE MAP OCTOBER 1 AND 2, 2024

NATURE AND EXTENT SITE WORK MEMORANDUM
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: 1690000XXXX | DATED: 12/20/2024 | DESIGNER: GALARNMC

Y:\Mapping\Projects\22\2285\MXD\Nature_and_Extent\NEW\Nature_and_Extent_Addendum\NE_Addendum.aprx\Figure 2-1: NEW 501 PAP Pot Surface 20241001 UD

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- MONITORING WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, LAKE
- LEACHATE WELL
- CLOSED POREWATER WELL
- GROUNDWATER ELEVATION CONTOUR (5-FT CONTOUR INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE

NOTES:
1.ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

0 400 800 Feet

POTENTIOMETRIC SURFACE MAP OCTOBER 1 AND 2, 2024

NATURE AND EXTENT SITE WORK MEMORANDUM
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-2

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\222285\MXD\Nature_and_Extent\NEW\Nature_and_Extent_Addendum\NE_Addendum.aprx\Figure 2-2. NEW 501 PAP Pot Surface 20241001
PROJECT: 169000XXXX | DATED: 12/20/2024 | DESIGNER: GALARNMC

Y:\Mapping\Projects\222285\MXD\Nature_and_Extent\NEW\Nature_and_Extent_Addendum\NE_Addendum.aprx

TOTAL SULFATE EXCEEDANCE

COMPLIANCE WELL WITHOUT EXCEEDANCE

REGULATED UNIT (SUBJECT UNIT)

SITE FEATURE

0 400 800 Feet

GWPS EXCEEDANCE MAP
UPPERMOST AQUIFER

NATURE AND EXTENT SITE WORK
MEMORANDUM
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 3-1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: 169000XXXX | DATED: 12/20/2024 | DESIGNER: GALARNMC

TOTAL CHLORIDE EXCEEDANCE
TOTAL LITHIUM EXCEEDANCE
TOTAL SULFATE EXCEEDANCE
TOTAL DISSOLVED SOLIDS EXCEEDANCE
COMPLIANCE WELL WITHOUT EXCEEDANCE
REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE

NOTE:
*EXCEEDANCES PRESENTED AT LOCATION ARE DIRECT COMPARISON TO GWPS, BECAUSE INSUFFICIENT DATA EXISTS FOR STATISTICAL CALCULATIONS

0 400 800
Feet

GWPS EXCEEDANCE MAP UPPER DRIFT AND POTENTIAL MIGRATION PATHWAYS

NATURE AND EXTENT SITE WORK MEMORANDUM
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

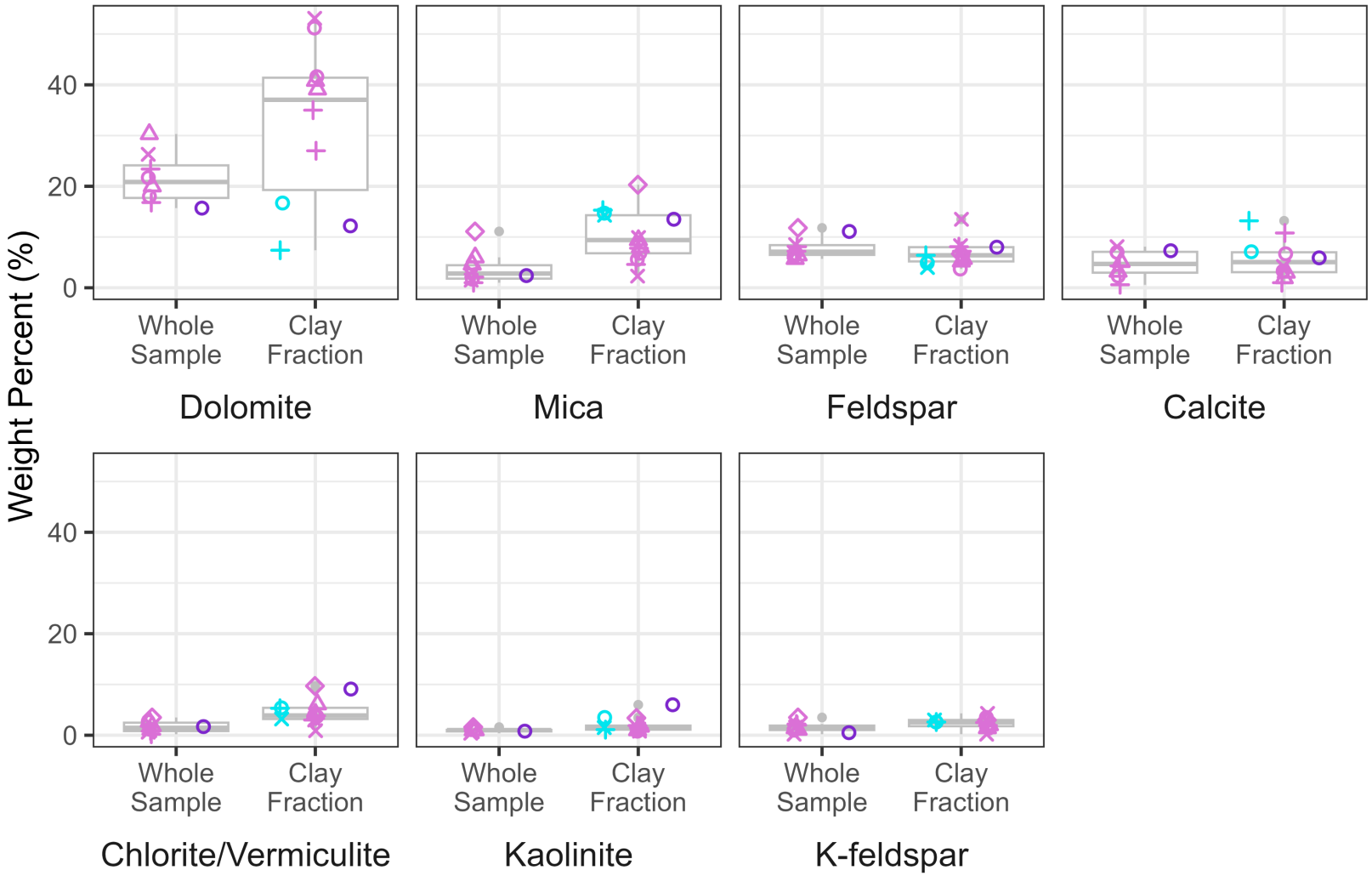
FIGURE 3-2

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\222285\MXD\Nature_and_Extent\NEW\Nature_and_Extent_Addendum\NE_Addendum.aprx

PROJECT: 169000XXXX | DATED: 12/20/2024 | DESIGNER: GALARNMC



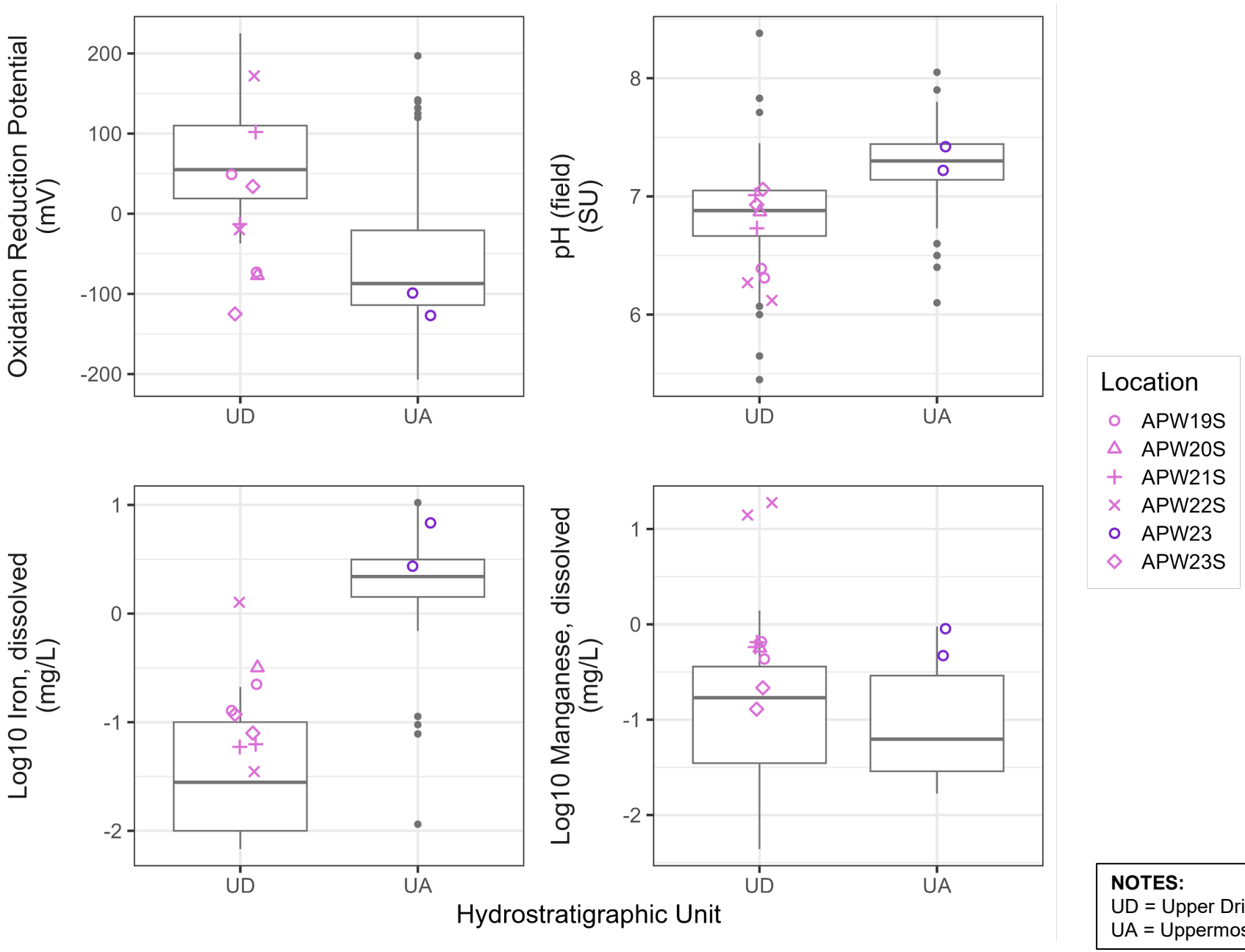
NOTES:
C = Compliance
NE = Nature and Extent
UD = Upper Drift
UA = Uppermost Aquifer

RAMBOLL

DRAFTED BY: AO | 12/20/2024

XRD Results From Additional Investigation
Nature and Extent Report Addendum
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 4-1



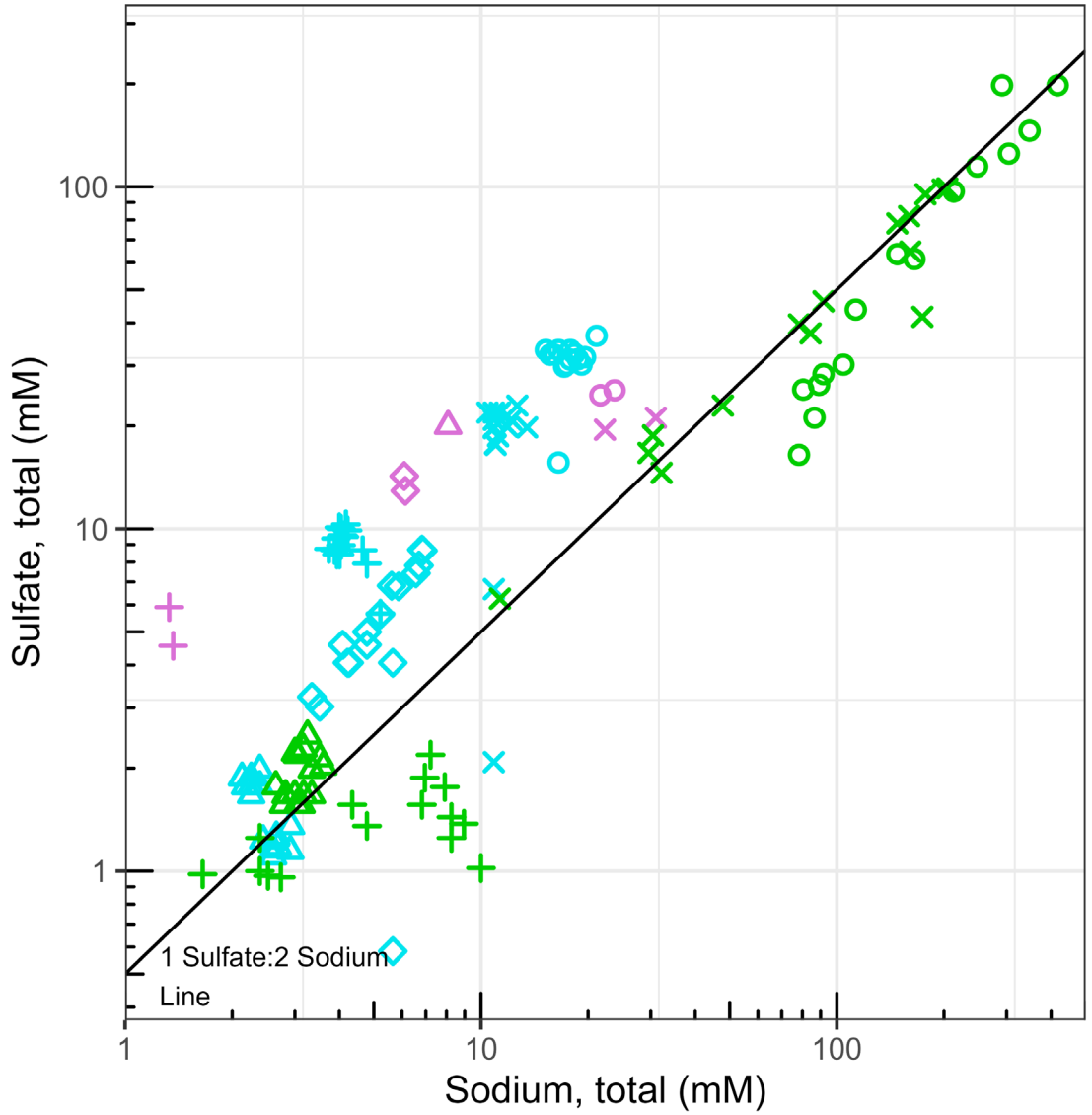
NOTES:
UD = Upper Drift
UA = Uppermost Aquifer

RAMBOLL

DRAFTED BY: AO | 12/20/2024

Comparison of Geochemical Parameters
Nature and Extent Report Addendum
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 4-2



Location Type

- C - UD
- NE - UD
- Porewater

Location

APW02	APW21S
APW03	APW22S
APW04	APW23S
APW05S	XPW01
APW12	XPW02
APW19S	XPW03
APW20S	XPW04

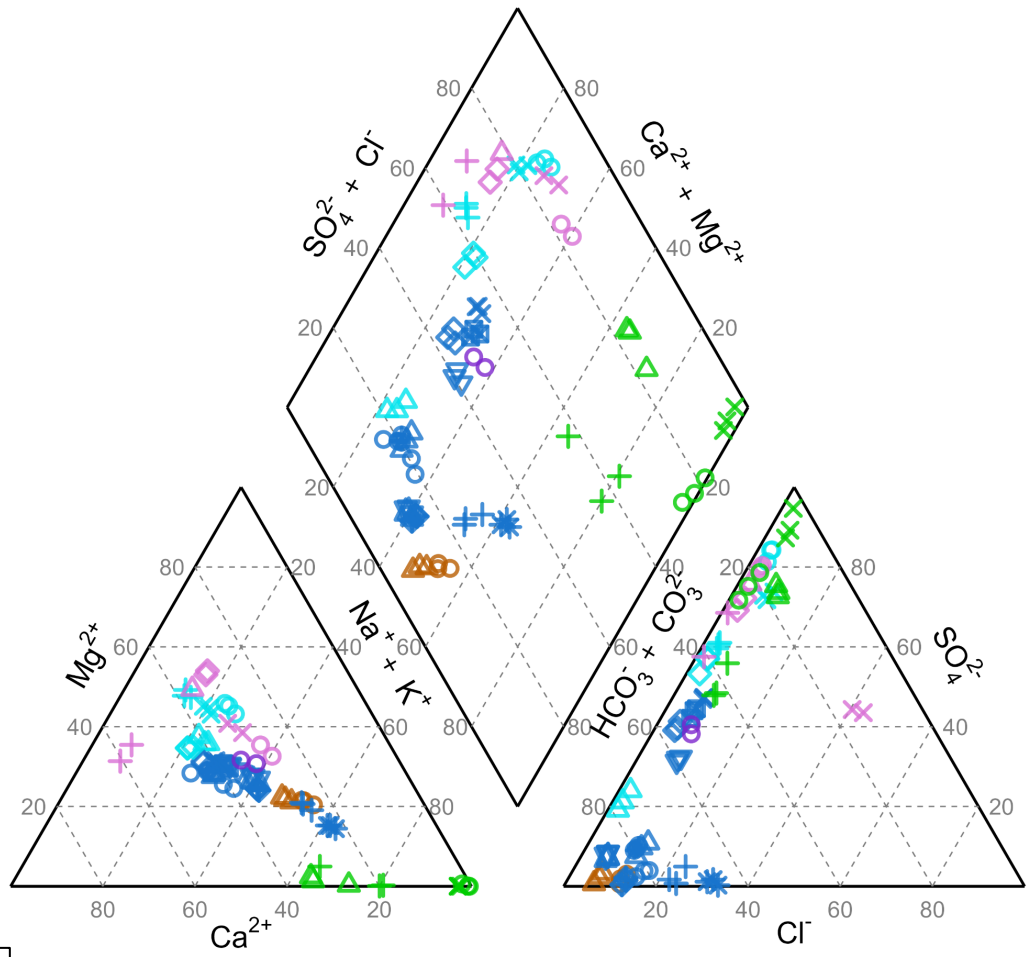
NOTES:
C = Compliance
NE = Nature and Extent
UD = Upper Drift

RAMBOLL

DRAFTED BY: AO | 12/20/2024

Correlation of Sulfate and Sodium in Porewater and UD Locations
Nature and Extent Report Addendum
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 4-3



Location Type

- B
- C - UA
- C - UD
- NE - UA
- NE - UD
- Porewater

Location

APW02	APW15
APW03	APW16
APW04	APW17
APW05	APW18
APW05S	APW19S
APW06	APW20S
APW07	APW21S
APW08	APW22S
APW09	APW23
APW10	APW23S
APW11	XPW01
APW12	XPW02
APW13	XPW03
APW14	XPW04

NOTES:
C = Compliance
NE = Nature and Extent
UD = Upper Drift
UA = Uppermost Aquifer

RAMBOLL

DRAFTED BY: AO | 12/20/2024

Piper Diagram
Nature and Extent Report Addendum
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 4-4

APPENDICES

APPENDIX A
TECHNICAL MEMORANDUM
FIELD ACTIVITIES 2024

RAMBOLL

ENVIRONMENT
& HEALTH

TECHNICAL MEMORANDUM

To: Ms. Sam Davies, Environmental Manager, Vistra Corp

From: Nikki Pagano and Chase Christenson

Re: Summary of Site Work Completed in June 2024
Newton Power Plant
Newton, Illinois

December 6, 2024

Ramboll
234 W. Florida Street
Fifth Floor
Milwaukee, WI 53204
USA

T 414-837-3607
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Ref. 1940108210

INTRODUCTION

This Technical Memorandum (Tech Memo) for Newton Power Plant (NPP) was prepared by Ramboll America's Engineering Solutions, Inc. (Ramboll) for Illinois Power Generating Company This Tech Memo documents the monitoring network maintenance performed in June 2024 pursuant to the following document:

- *Proposal for Nature and Extent Investigation and Repairs and Improvements at Select Monitoring Wells, Newton Power Plant* (Proposal; Ramboll, 2024).

OBJECTIVES

The objectives of the field event were to: (1) install and develop two monitoring wells (APW19S and APW20S) downgradient of APW02, one monitoring well pair (APW23 and APW23S) downgradient of APW04, and two monitoring wells (APW21S and APW22S) downgradient of APW05S to meet the requirements of Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845.650(d)(1); (2) collect soil samples from each new monitoring wells respective screen interval and from the soils just above the screen interval to characterize soils that interact with groundwater in support of groundwater polishing evaluations; (3) perform maintenance at select monitoring well locations, including installation of protective bollards and replacement of concrete well pads.

Based on observations made during a site visit on May 9, 2024 and confirmed during field activities, Ramboll made the following adjustments to the original scope of work:

- The location for the proposed monitoring well pair east of APW04 was inaccessible and the wells could not be installed due to the steepness of the slopes and thickness of vegetation in the area.
- Locations and scope of well improvements and repairs were adjusted in the field based on observations of Ramboll field staff. Notes of the adjustments are provided in this memorandum.

SITE WORK ACTIVITIES

At the request of Vistra, Ramboll oversaw completion of the on-site work activities on June 17 through June 28, 2024 in accordance with Ramboll's Proposal (Ramboll, 2024). Well installation and well improvement and repair work were performed by Cascade Drilling (Cascade) with oversight from Ramboll.

The following sections discuss site work methods and documentation of completed work.

UTILITY CLEARANCE

Prior to drilling Ground Penetrating Radar Systems (GPRS) utilized a ground penetrating radar antenna to scan a 10-foot radius around the proposed well locations and well improvement and repair locations.

Ramboll completed a subsurface clearance checklist, confirming all locations requiring intrusive work were cleared by GPRS and safe for ground disturbance.

MONITORING WELL INSTALLATION

Cascade utilized a Geoprobe 8140LS Mini Sonic drill rig equipped with a 6-inch diameter core barrel to advance borings for monitoring wells APW19S, APW20S, APW21S, APW22S, APW23, and AWP23S to to their final depths as directed by Ramboll field staff.

The soil lithology was logged continuously using the Unified Soil Classification System (USCS). The boring logs are provided in **Attachment A**. Based on observations in the field, soil samples from each boring location were collected by Ramboll for laboratory analysis from within the screened interval of each well and from the soil just above the screen interval as summarized in **Table A**. Soil samples were submitted by Ramboll for total metals by 7-step sequential extraction procedure, bulk mineralogy and clay mineralogy by x-ray diffraction, loss on ignition, and cation exchange capacity.

Table A. Soil Sample Collection Summary

Well Location	Top of Sample Interval (feet bgs)	Bottom of Sample Interval (feet bgs)	General Lithology
APW19S	7.5	8.2	Sand
APW19S	16	18	Sandy Clay
APW20S	14	16	Silty Clay
APW20S	20	22	Silty Clay
APW21S	8	10	Sand
APW21S	14	16	Sand
APW22S	9	11	Silty Clay
APW22S	20.5	22	Sand
APW23	37	39	Sand
APW23S	12	16	Silty Clay

bgs = below ground surface

The monitoring wells were constructed using 2-inch diameter schedule 40 polyvinyl chloride (PVC) casing and installed with a 10-foot PVC screen with a slot diameter of 0.010-inches. Filter sand was placed in the annular space surrounding the PVC extending to approximately two feet above the PVC screen. The annular space was sealed with 3/8-inch bentonite chips to at least two feet above the filter pack and the remaining annular space sealed with either 3/8-inch bentonite chips or cement-bentonite grout to surface. At each well a steel protective stick-up was installed to approximately three feet above the ground surface and set in a concrete pad extending horizontally approximately two feet by two feet and approximately 12 inches below ground surface (bgs). In addition, four 3.5-inch diameter concrete-filled steel bollards were installed around each well. Well construction logs are provided in **Attachment B**.

The monitoring wells were temporarily identified on the exterior of the protective cover until permanent identification markers are installed at each location. The soil boring and monitoring well construction

activities were completed on June 20, 2024. **Attachment C** includes a photographic log of the soil boring and monitoring well installation. The locations of the monitoring wells are depicted on **Figure 1**. The monitoring wells were surveyed by IngenAE, LLC in September 2024.

Each of the monitoring wells was developed twice following installation of the wells over the two week field event by Cascade and Ramboll using a pump and surge technique. The wells were surged and pumped until the purge water from the wells was clear or the wells went dry a minimum of three times during each development event. The volume of water removed and the depth to water in the wells before and after development are recorded on the well development logs provided in **Attachment D**.

MONITORING WELL IMPROVEMENT AND REPAIR TASKS

3.5-inch diameter, four or six-foot-tall concrete filled bollards were installed at 14 locations that had fewer than three bollards present or where existing bollards were in poor condition and needed to be replaced. Locations were identified in need of repair from the investigation performed by Ramboll in the spring of 2023 and modified based on updated observations during site work. **Attachment E** includes a photographic log of bollard installation. The number of bollards installed at each location is summarized in **Table B**. All surface seal debris and replaced bollards were disposed of on-site at the direction of plant personnel.

The protective cover and concrete surface pad was replaced at one location (A207) and the concrete surface pad was replaced at one location (G113) as summarized in **Table C**. In addition, the well pad at G139 was repaired by adding concrete to it to increase stability of the pad.

At monitoring well A207, a skid-steer was utilized to lift the protective cover vertically and remove it without disturbing the PVC well casing. The existing concrete surface pad was removed utilizing a skid-steer with a jack hammer attachment. The area was then hand excavated to approximately two feet by two feet horizontally and to approximately 12-inches bgs and the new protective cover and concrete pad was installed. The padlock and identification tag were reinstalled with the new protective cover. At G113, a skid-steer with a jack hammer attachment was utilized to remove the existing concrete surface pad. The area was then hand excavated to approximately two feet by two feet horizontally and to approximately 12-inches bgs and a new concrete pad was installed. **Attachment E** includes a photographic log of well pad installations and protective cover replacement.

Table B. Well Improvement and Repairs Summary - Bollards

Well Location	Number of Bollards Present Prior to June 2024	Number of Bollards Installed	Notes
A207	3	0	--
G104D	0	4	--
G104S	0	4	--
G109	0	4	--
G111	0	3	Three bollards installed in triangular shape.
G112	0	4	--
G113	0	3	Three bollards installed in triangular shape.
G115	0	4	--
G116	0	4	--
G118	3	0	Noted three pre-existing and stable bollards.
G125	3	3	Previous bollards in poor condition and replaced.
G130	1	4	One existing bollard removed prior to installation of four new bollards.
G202	2	2	Well shares bollards with R202. Four bollards surround well pair and provide adequate protection.
R219	1	0	Driller expressed safety concerns with working on slope at location.
T101	0	4	--
T102	0	4	--
Total Installed or Replaced		**47**	

Table C. Well Improvement and Repairs Summary – Pads and Protective Casings

Well Location	Protective Casing Replaced	Well Pad Replaced	Notes
G119	No	No	Noted during field visit that pad was sturdy and in good condition.
G125	No	No	Noted during field visit that pad was sturdy and in good condition.
G128	No	No	Unable to replace pad without damaging well, as annular spacing in protective casing was filled with concrete.
G139	No	No	Concrete added to well pad to increase stability and improve surface seal.
G202	No	No	Noted during field visit that pad was sturdy and in good condition.
G203	No	No	Unable to replace pad without damaging well, as annular spacing in protective casing was filled with concrete.
MW31S	No	No	Noted during field visit that pad was sturdy and in good condition.
A207	Yes	Yes	Added to scope, pad noted as in poor condition. Well pad and protective casing replaced.

REFERENCES

Ramboll Americas Engineering Solutions, Inc., 2024. *Proposal for Nature and Extent Investigation and Repairs and Improvements at Select Monitoring Wells, Newton Power Plant*. April 8, 2024.

FIGURE

Figure 1 – Monitoring Well Location Map

ATTACHMENTS

Attachment A Soil Boring Logs
Attachment B Monitoring Well Construction Logs
Attachment C Soil Boring and Well Installation Photographic Log
Attachment D Monitoring Well Development Logs
Attachment E Monitoring Well Improvement and Repairs Photographic Log

FIGURES

Y:\Mapping\Projects\22\22285\MXD\Sampling_and_Analysis_Request\NEW Monitoring Well Location Map.mxd

PORE WATER WELL
MONITORING WELL
LEACHATE WELL
STAFF GAGE, CCR UNIT
STAFF GAGE, RIVER
SURFACE WATER SAMPLE
RAIN GAGE
SITE FEATURE

NOTE:
*MULTI-PORT WELL

0 450 900
Feet

MONITORING WELL LOCATION MAP

NATURE AND EXTENT SITE WORK MEMORANDUM
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: 169000XXX | DATED: 7/25/2024 | DESIGNER: GALARNMC

ATTACHMENTS

ATTACHMENT A
SOIL BORING LOGS

RAMBOLL

SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Plant		APW19S

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Gavin Morgan Cascade Drilling LP	6/18/2024	6/18/2024	Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW19S	Feet (NAVD88)	529.58 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 822,400.65 N, 995,301.68 E Ⓔ/ W

1/4 of 1/4 of Section , T N, R

Lat 38.925146

Long -88.294493

Local Grid Location ☐ N ☐ E Feet ☐ S Feet ☐ W

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 CS	96 108		0.5	0 - 0.5' **FILL, TOPSOIL:** CL, grass, roots, vegetation, moist.	(FILL) CL									
			1.0	0.5 - 1' **FILL, POORLY-GRADED GRAVEL:** GP, light gray (10YR 7/1), loose, moist.	(FILL) GP									
			1.5	1 - 1.8' **FILL, ASH (Coal):** ASH (Coal), very dark gray (10YR 3/1), silt-sized, loose.	(FILL) ASH (Coal)									
			2.0	1.8 - 4' **SILTY CLAY:** CL/ML, grayish brown (10YR 5/2) with dark yellowish brown (10YR 4/6) mottling, sand (15-25%), gravel (0-5%), low plasticity, very stiff, moist.	CL/ML				2.5					
			4.0	4 - 7.5' **SANDY LEAN CLAY:** s(CL), yellowish brown (10YR 5/6), gravel (5-10%), low to medium plasticity, very stiff to hard, moist.					4.5					
			5.0	5' very dark gray (10YR 3/1) laminations.					3					
			6.0		s(CL)				1					
			7.0	7.1' - 7.2' layer of fine sand, wet.					4.5					
			7.5	7.5 - 8.2' **POORLY-GRADED SAND WITH GRAVEL:** (SP)g, brown (10YR 5/3), well-rounded sand and gravel, clay (5-10%), medium dense, wet.	(SP)g									Soil sample collected at 7.5 - 8.2 feet below ground surface.
2 CS	120 120		8.0	8.2 - 15' **LEAN CLAY WITH SAND:** (CL)s, brown (10YR 5/3) with yellowish brown (10YR 5/6) mottling, very dark gray (10YR 3/1) staining, sand (15-25%), gravel (5-10%), low plasticity, hard, moist.	(CL)s				4.5					
			8.5											
			9.0											
			9.5											
			10.0											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Michael Davie

Firm Ramboll

234 W Florida Street, 5th Floor, Milwaukee, WI 53204

Tel: (414)837-3607

Fax: (414)837-3608

Template: RAMBOLL_IL_BORING LOG - Project: NEWTON N&E.GPJ

Boring Number APW19S

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			10.5	8.2 - 15' **LEAN CLAY WITH SAND:** (CL)s, brown (10YR 5/3) with yellowish brown (10YR 5/6) mottling, very dark gray (10YR 3/1) staining, sand (15-25%), gravel (5-10%), low plasticity, hard, moist. *(continued)*	(CL)s				4.5					
			11.0											
			11.5											
			12.0											
			12.5											
			13.0						4.5					
			13.5											
			14.0											
			14.5											
			15.0	15 - 18' **SANDY LEAN CLAY WITH GRAVEL:** s(CL)g, brown (10YR 4/3), well-rounded sand and gravel, medium plasticity, stiff to very stiff, wet.	s(CL)g				1					
			15.5											
			16.0						2					Soil sample collected at 16 - 18 feet below ground surface.
			16.5											
			17.0						2					
			17.5											
			18.0	18' End of Boring.										

RAMBOLL

SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Plant		APW20S

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Gavin Morgan Cascade Drilling LP	6/18/2024	6/18/2024	Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW20S	Feet (NAVD88)	521.93 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 822,691.50 N, 995,187.09 E Ⓔ/ W

1/4 of 1/4 of Section , T N, R

Lat 38.925944

Long -88.294895

Local Grid Location ☐ N ☐ S Feet ☐ E ☐ W Feet

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 CS	96 105		0.5 1.0 1.5 2.0	0 - 2' **CLAYEY SILT:** ML/CL, brown (10YR 4/3), gravel (0-5%), sand (0-5%), low plasticity, medium stiff, moist.	ML/CL				0.75					
			2.5 3.0 3.5 4.0 4.5	2 - 19' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/4), dark yellowish brown (10YR 4/6) mottling, sand (15-25%), gravel (5-10%), low plasticity, hard, dry.					4.5					
			5.0 5.5 6.0 6.5 7.0	5' cobble. 6' gravel (30-45%).	CL/ML				4.5					
2 CS	120 99		7.5 8.0 8.5 9.0 9.5 10.0	7.5' moist.					4.5					

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Michael Panic

Firm Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

Boring Number APW20S

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			10.5	2 - 19' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/4), dark yellowish brown (10YR 4/6) mottling, sand (15-25%), gravel (5-10%), low plasticity, hard, dry. *(continued)*										
			11.0						4.5					
			11.5											
			12.0											
			12.5											
			13.0						4.5					
			13.5											
			14.0											
			14.5	14' dark yellowish brown (10YR 3/6) mottling or oxidation along fractures.	CL/ML									Soil sample collected at 14 - 16 feet below ground surface.
			15.0	15' coarse gravel-sized coal fragment.					4.5					
			15.5											
			16.0											
			16.5											
			17.0						4.5					
			17.5											
3 CS	60 72		18.0											
			18.5											
			19.0	19 - 23' **SILTY CLAY:** CL/ML, dark reddish gray (2.5YR 4/1), gravel (5-10%), sand (0-5%), low plasticity, hard, moist.					4.5					
			19.5											
			20.0						4.5					Soil sample collected at 20 - 22 feet below ground surface.
			20.5											
			21.0		CL/ML				4.5					
			21.5											
			22.0											
			22.5											
			23.0	23' End of Boring.										

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SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Plant		APW21S

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Gavin Morgan Cascade Drilling LP	6/18/2024	6/18/2024	Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW21S	Feet (NAVD88)	541.85 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 825,613.44 N, 998,549.65 E Ⓔ/ W

1/4 of 1/4 of Section , T N, R

Lat 38.933963

Long -88.283070

Local Grid Location ☐ N ☐ S Feet ☐ E ☐ W Feet

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 CS	96 80		0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0	0 - 0.3' **FILL, TOPSOIL:** CL, grass, roots, vegetation. 0.3 - 1' **FILL, ASH (Coal):** ASH (Coal), gray (10YR 5/1), silt-sized, roots (0-5%), loose. 1 - 3' **SANDY LEAN CLAY WITH GRAVEL:** s(CL)g, brown (10YR 5/3) with dark yellowish brown (10YR 4/6) mottling, gravel (15-25%), roots (0-5%), medium plasticity, very stiff, moist. 3 - 5' **SILT:** ML, grayish brown (10YR 5/2) with dark yellowish brown (10YR 4/6) mottling, roots (0-5%), stiff to very stiff, moist. 5 - 7.5' **SILTY CLAY WITH SAND:** (CL/ML)S, brown (10YR 5/3) with dark yellowish brown (10YR 4/6) mottling, gravel (5-10%), low to medium plasticity, very stiff to hard, moist. 7.5 - 10' **POORLY-GRADED SAND WITH CLAY:** SP-SC, dark yellowish brown (10YR 3/6) to brown (10YR 5/3), well-rounded sand, well-rounded gravel (5-10%), loose, wet.	(FILL) CL (FILL) ASH (Coal) s(CL)g ML (CL/ML)S SP-SC				2 3 3.5 4.5					
2 CS	120 120													Soil sample collected at 8 - 10 feet below ground surface.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Michael Davis

Firm Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204

Tel: (414)837-3607
Fax: (414)837-3608

Boring Number APW21S

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			10.5	10 - 11.5' **SILTY CLAY WITH SAND:** (CL/ML)S, dark gray (10YR 4/1), gravel (5-10%), hard, moist.	(CL/ML)S				4.5					
			11.0											
			11.5	11.5 - 12' **SILT WITH GRAVEL:** (ML)g, yellowish brown (10YR 5/4), clay (0-5%), hard, moist.	(ML)g				4.5					
			12.0	12 - 14' **SILTY CLAY:** CL/ML, dark gray (10YR 4/1), gravel (0-5%), sand (0-5%), hard, moist.										
			12.5											
			13.0		CL/ML				4.5					
			13.5											
			14.0	14 - 16' **POORLY-GRADED SAND:** SP, dark grayish brown (10YR 4/2), rounded, medium to coarse grained, gravel (0-10%), medium dense, wet.										Soil sample collected at 14 - 16 feet below ground surface.
			14.5											
			15.0		SP									
			15.5											
			16.0	16 - 18' **SILTY CLAY:** CL/ML, dark gray (10YR 4/1), gravel (0-5%), sand (0-5%), hard, moist.										
			16.5											
			17.0		CL/ML				4.5					
			17.5											
			18.0	18' End of Boring.										

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SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Plant		APW22S

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Gavin Morgan Cascade Drilling LP	6/19/2024	6/19/2024	Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW22S	Feet (NAVD88)	545.57 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 826,253.53 N, 999,581.23 E Ⓔ/ W

1/4 of 1/4 of Section , T N, R

Lat 38.935718

Long -88.279442

Local Grid Location ☐ N ☐ S Feet ☐ E ☐ W Feet

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 CS	96 91		0	0 - 0.5' **FILL, WELL-GRADED GRAVEL:** GW, dark gray (10YR 4/1), angular gravel, loose, moist.	(FILL) GW									
			1	0.5 - 1.7' **FILL, ASH (Coal):** ASH (Coal), very dark grayish brown (10YR 6/2) with dark yellowish brown (10YR 4/6) mottling, medium sand- to fine gravel-sized, subangular, loose, moist.	(FILL) ASH (Coal)									
			2	1.7 - 4.2' **FILL, LEAN CLAY:** CL, light brownish gray (10YR 6/2) with dark yellowish brown (10YR 4/6) mottling, gravel (5-10%), coarse sand (0-5%), medium plasticity, stiff to very stiff, moist.	(FILL) CL				1					
			3											
			4						2					
			4	4.2 - 4.5' **SILTY CLAY:** CL/ML, black (10YR 2/1), roots (5-10%), organics present, soft, wet.	CL/ML				2					
			5	4.5 - 6' **SILTY CLAY:** CL/ML, dark yellowish brown (10YR 4/4) with dark yellowish brown (10YR 4/6) mottling (0-5%), gravel (15-25%), sand (15-25%), roots (0-5%), medium plasticity very stiff, moist.	CL/ML				3					
			6	6 - 7' **SILTY CLAY:** CL/ML, gray (10YR 5/1) with brown (10YR 4/4) mottling, fine gravel (0-10%), coarse sand (0-10%), medium plasticity, stiff, moist.	CL/ML				0.5					
			7											
2 CS	120 117		8	7 - 11.5' **SILTY CLAY WITH GRAVEL:** (CL/ML)g, yellowish brown (10YR 5/4), dark yellowish brown (10YR 4/6) mottling (0-5%), low plasticity, very stiff, moist.					2					
			9		(CL/ML)g									
			10						3					Soil sample collected at 9 - 11 feet below ground surface.
			11	11' dark gray (10YR 4/1) mottling.										
			12	11.5 - 16.2' **SILTY CLAY WITH SAND:** (CL/ML)S, dark gray (10YR 4/1), dark yellowish brown (10YR 4/6) mottling (0-5%), gravel (5-10%), medium plasticity, moist.	(CL/ML)S				2					
			13											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Michael Davis

Firm Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

Boring Number APW22S

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			14	11.5 - 16.2' **SILTY CLAY WITH SAND:** (CL/ML)S, dark gray (10YR 4/1), dark yellowish brown (10YR 4/6) mottling (0-5%), gravel (5-10%), medium plasticity, moist. *(continued)*	(CL/ML)S				2					
			15	15' dark yellowish brown (10YR 4/6) mottling (40-50%). 15.2' - 15.3' layer of fine sand, wet.					1.5					
			16	16' - 16.2' layer of clayey sand with gravel, yellowish brown (10YR 5/6), rounded gravel, loose, wet.										
			17	16.2 - 19.5' **CLAYEY SILT:** to **SILTY CLAY:** ML/CL, yellowish brown (10YR 5/6), gravel (15-25%), sand (15-25%), moist.	ML/CL				4					
3 CS	60 72		18	17.2' - 17.5' layer of sandy lean clay with gravel, dark yellowish brown (10YR 4/4), high plasticity, wet.					4.5					
			19	17.5' yellowish brown (10YR 4/4).										
			20	19.5 - 20.5' **SILT:** ML, yellowish brown (10YR 5/4), gravel (0-5%), stiff, moist.	ML									
			21	20.5 - 22' **POORLY-GRADED SAND WITH GRAVEL:** (SP)g, yellowish brown (10YR 5/4), rounded sand and gravel, loose, wet.	(SP)g									Soil sample collected at 20.5 - 22 feet below ground surface.
			22	22 - 23' **SILTY CLAY:** CL/ML, yellowish brown (10YR 4/4), gravel (15-25%), sand (15-25%), hard, moist.	CL/ML				4.5					
			23	23' End of Boring.										

RAMBOLL

SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Plant		APW23

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Gavin Morgan Cascade Drilling LP	6/19/2024	6/20/2024	Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW23	Feet (NAVD88)	517.48 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 823,048.97 N, 1,001,259.46 E Ⓔ/ W

1/4 of 1/4 of Section , T N, R

Lat 38.926917

Long -88.273550

Local Grid Location ☐ N ☐ S Feet ☐ E ☐ W Feet

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 CS	96 78		0 1 2 3 4 5 6 7	0 - 0.5' **FILL, POORLY-GRADED GRAVEL WITH SAND:** (GP)s, gray (10YR 5/1), coarse grained, angular gravel, loose, moist. 0.5 - 1.5' **FILL, ASH (Coal):** ASH (Coal), very dark gray (10YR 3/1), fine to coarse sand-sized, subangular, coarse gravel, loose, moist. 1.5 - 3' **SILTY CLAY:** CL/ML, olive (5Y 4/3) with dark yellowish brown (10YR 4/4) mottling (5-15%), gravel (15-25%), sand (15-25%), medium plasticity, medium stiff, moist. 3 - 7' **FAT CLAY:** CH, olive gray (5Y 5/2), organic mottling (10-20%), sand (15-25%), roots (0-5%), medium to high plasticity, medium stiff, moist.	(FILL) (GP)s (FILL) ASH (Coal) CL/ML CH				1 1					
2 CS	120 120		8 9 10 11 12 13	7 - 8.5' **SILTY CLAY:** CL/ML, olive (5Y 4/3) with dark yellowish brown (10YR 4/4) mottling (5-15%), (gravel (15-25%), sand (15-25%), medium plasticity, stiff, moist. 8.5 - 34.5' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/6), gray (10YR 5/1) mottling (5-15%), gravel (15-25%), sand (15-25%), low to medium plasticity, hard, moist. 11.5' layer of gravel, moist to wet (1" thick). 12.5' layer of gravel, moist to wet (1" thick).	CL/ML CL/ML				1.5 4.5 4.5					

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm	
Michael Davis	Ramboll 234 W Florida Street, 5th Floor, Milwaukee, WI 53204	Tel: (414)837-3607 Fax: (414)837-3608

Boring Number APW23 Page 2 of 3

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			14	8.5 - 34.5' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/6), gray (10YR 5/1) mottling (5-15%), gravel (15-25%), sand (15-25%), low to medium plasticity, hard, moist. *(continued)* 14' layer of gravel, moist to wet (1" thick).					4.5					
			15						4.5					
			16											
			17	16.5' layer of gravel, moist to wet (1" thick).					4.5					
3 CS	120 128		18											
			19						4.5					
			20											
			21						4.5					
			22											
			23						4.5					
			24		CL/ML									
			25						4.5					
			26											
			27						4.5					
4 CS	120 128		28	28' brown (10YR 5/3).										
			29						4.5					
			30											
			31						4.5					
			32											
			33						4.5					
			34											

Boring Number APW23 Page 3 of 3

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
5 CS	120 116		35	34.5 - 36.8' **WELL-GRADED SAND:** SW, yellowish brown (10YR 5/4), fine to medium sand, clay (15-25%), silt (15-25%), gravel (0-5%), wet. *(continued)*	SW									
			36											
			37	36.5' - 36.8' layer of sandy silt, yellowish brown (10YR 5/4), gravel (0-5%), wet.										Soil sample collected at 37 - 39 feet below ground surface.
				36.8 - 38.5' **WELL-GRADED SAND:** SW, yellowish brown (10YR 5/4), fine to medium sand, clay (15-25%), silt (15-25%), gravel (0-5%), wet.	SW									
			38											
			39	38.5 - 39.2' **SANDY SILT:** s(ML), yellowish brown (10YR 5/4), gravel (0-5%), wet.	s(ML)									
				39.2 - 40' **WELL-GRADED SAND:** SW, yellowish brown (10YR 5/4), medium to coarse sand, clay (15-25%), silt (15-25%), gravel (15-25%), wet.	SW									
			40											
				40 - 41' **SANDY SILT:** s(ML), yellowish brown (10YR 5/4), gravel (0-5%), wet.	s(ML)									
			41	41 - 41.5' **WELL-GRADED SAND:** SW, yellowish brown (10YR 5/4), fine to medium sand, clay (15-25%), silt (15-25%), gravel (15-25%), wet.	SW									
			42											
				41.5 - 44' **GRAVELLY SILT WITH SAND:** g(ML)s, light brownish gray (10YR 6/2), fine sand, clay (15-25%), hard, moist.	g(ML)s				4.5					
			43											
			44	44 - 48' **SILTY CLAY:** CL/ML, dark gray (10YR 4/1), gravel (0-10%), sand (0-10%), low to medium plasticity, hard, moist.										
			45						4.5					
			46		CL/ML									
			47						4.5					
			48	48' End of Boring.										

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SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Plant		APW23S

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Gavin Morgan Cascade Drilling LP	6/19/2024	6/19/2024	Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW23S	Feet (NAVD88)	515.79 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 823,040.09 N, 1,001,281.17 E Ⓔ/ W

1/4 of 1/4 of Section , T N, R

Lat 38.926892

Long -88.273474

Local Grid Location ☐ N ☐ E Feet ☐ S Feet ☐ W

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 HA	48 48		0.5	0 - 0.5' **FILL, POORLY-GRADED GRAVEL WITH SAND:** (GP)s, gray (10YR 5/1), coarse grained, angular gravel, loose, moist.	(FILL) (GP)s									
			1.0	0.5 - 1.5' **FILL, ASH (Coal):** ASH (Coal), very dark gray (10YR 3/1), fine to coarse sand-sized, subangular, coarse gravel, loose, moist.	(FILL) ASH (Coal)									
			1.5	1.5 - 3' **SILTY CLAY:** CL/ML, olive (5Y 4/3) with dark yellowish brown (10YR 4/4) mottling (5-15%), gravel (15-25%), sand (15-25%), medium plasticity, medium stiff, moist.	CL/ML				2					
			3.0	3 - 7' **FAT CLAY:** CH, olive gray (5Y 5/2), organic mottling (10-20%), sand (15-25%), roots (0-5%), medium to high plasticity, medium stiff, moist.					0.5					
2 CS	48 48		4.5		CH				2					
			6.0						3.5					
			7.0	7 - 8.5' **SILTY CLAY:** CL/ML, olive (5Y 4/3) with dark yellowish brown (10YR 4/4) mottling (5-15%), (gravel (15-25%), sand (15-25%), medium plasticity, stiff, moist.	CL/ML									
3 CS	120 75		8.5						4					
			9.0	8.5 - 18' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/6), gray (10YR 5/1) mottling (5-15%), gravel (15-25%), sand (15-25%), low to medium plasticity, hard, moist.	CL/ML				4.5					
			10.0											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Michael Davis

Firm Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

Boring Number APW23S

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			10.5	8.5 - 18' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/6), gray (10YR 5/1) mottling (5-15%), gravel (15-25%), sand (15-25%), low to medium plasticity, hard, moist. *(continued)*										
			11.0						4.5					
			11.5	11.5' layer of gravel, moist to wet (1" thick).										
			12.0											
			12.5	12.5' layer of gravel, moist to wet (1" thick).										Soil sample collected at 12 - 16 feet below ground surface.
			13.0						4.5					
			13.5											
			14.0	14' layer of gravel, moist to wet (1" thick).	CL/ML									
			14.5											
			15.0						2					
			15.5											
			16.0											
			16.5	16.5' layer of gravel, moist to wet (1" thick).										
			17.0						4.5					
			17.5											
			18.0	18' End of Boring.										

ATTACHMENT B
MONITORING WELL CONTRUCTION LOGS

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Plant	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: APW19S
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 38.925146 Long. -88.294493 or	
Facility ID	St. Plane 822,401 ft. N, 995,302 ft. E. Ⓔ/W	Date Well Installed: 06/18/2024
Type of Well: Well Code 11/mw	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W	Well Installed By: (Person's Name and Firm): Gavin Morgan
Distance from Waste/Source: ____ ft. State: IL	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ____ Cascade Drilling LP

A. Protective pipe, top elevation 532.39 ft. (NAVD88)

B. Well casing, top elevation 531.84 ft. (NAVD88)

C. Land surface elevation 529.58 ft. (NAVD88)

D. Surface seal, bottom 528.6 ft. (NAVD88) or 1.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☒ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☒ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Sonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☐

16. Drilling additives used? ☒ Yes ☐ No

Describe ____

17. Source of water (attach analysis, if required):
Potable water source from Newton Power Plant

E. Bentonite seal, top 527.6 ft. (NAVD88) or 2.0 ft.

F. Fine sand, top ____ ft. (NAVD88) or ____ ft.

G. Filter pack, top 523.6 ft. (NAVD88) or 6.0 ft.

H. Screen joint, top 521.6 ft. (NAVD88) or 8.0 ft.

I. Well bottom 511.6 ft. (NAVD88) or 18.0 ft.

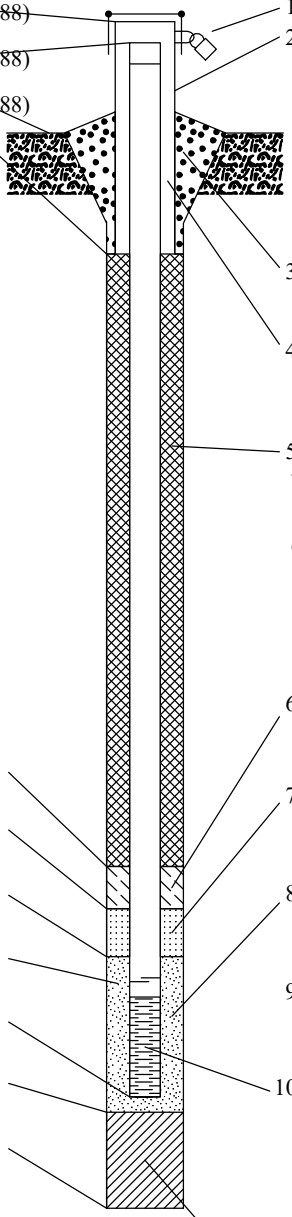
J. Filter pack, bottom 511.6 ft. (NAVD88) or 18.0 ft.

K. Borehole, bottom 511.6 ft. (NAVD88) or 18.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.38 in.

N. I.D. well casing 2.07 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: 4 steel bollards
3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐
4. Material between well casing and protective pipe: Bentonite ☒ Sand Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☒
b. ____Lbs/gal mud weight . . . Bentonite-sand slurry ☐
c. ____Lbs/gal mud weight . . . Bentonite slurry ☐
d. ____% Bentonite . . . Bentonite-cement grout ☐
e. 0.5 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ Tremie pumped ☐ Gravity ☒
6. Bentonite seal: a. Bentonite granules ☐
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. ____
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. K&E Well Gravel
b. Volume added 1.5 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
10. Screen material: Schedule 40 PVC
a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
b. Manufacturer Johnson Screens
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒ Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge. Date Modified: 10/24/2024

Signature: Michael Davie

Firm: Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Plant	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: APW20S
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 38.925944 Long. -88.294895 or	
Facility ID	St. Plane 822,692 ft. N, 995,187 ft. E. Ⓔ/W	Date Well Installed: 06/18/2024
Type of Well: Well Code 11/mw	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W	Well Installed By: (Person's Name and Firm): Gavin Morgan; Cascade Drilling LP
Distance from Waste/Source: ____ ft. State: IL	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number:

A. Protective pipe, top elevation 525.93 ft. (NAVD88)

B. Well casing, top elevation 525.60 ft. (NAVD88)

C. Land surface elevation 521.93 ft. (NAVD88)

D. Surface seal, bottom 520.9 ft. (NAVD88) or 1.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☒ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Sonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☐

16. Drilling additives used? ☒ Yes ☐ No

Describe ____

17. Source of water (attach analysis, if required):
Potable water source from Newton Power Plant

E. Bentonite seal, top 512.9 ft. (NAVD88) or 9.0 ft.

F. Fine sand, top ____ ft. (NAVD88) or ____ ft.

G. Filter pack, top 509.9 ft. (NAVD88) or 12.0 ft.

H. Screen joint, top 508.9 ft. (NAVD88) or 13.0 ft.

I. Well bottom 498.9 ft. (NAVD88) or 23.0 ft.

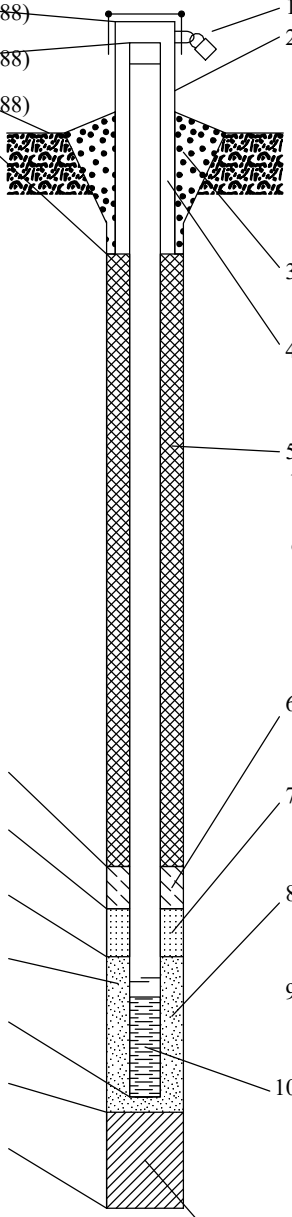
J. Filter pack, bottom 498.9 ft. (NAVD88) or 23.0 ft.

K. Borehole, bottom 498.9 ft. (NAVD88) or 23.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.38 in.

N. I.D. well casing 2.07 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: 4 steel bollards
3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐
4. Material between well casing and protective pipe: Bentonite ☒ Sand Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☐
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐
c. ____ Lbs/gal mud weight . . . Bentonite slurry ☐
d. 5 % Bentonite . . . Bentonite-cement grout ☒
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ Tremie pumped ☒ Gravity ☐
6. Bentonite seal: a. Bentonite granules ☐
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. ____
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. K&E Well Gravel
b. Volume added 1 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
10. Screen material: Schedule 40 PVC
a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
b. Manufacturer Johnson Screens
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒ Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge. Date Modified: 10/24/2024

Signature: Michael Davie

Firm: Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Plant	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: APW21S
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 38.933963 Long. -88.283070 or	
Facility ID	St. Plane 825,613 ft. N, 998,550 ft. E. Ⓔ/W	Date Well Installed: 06/18/2024
Type of Well: Well Code 11/mw	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W	Well Installed By: (Person's Name and Firm): Gavin Morgan
Distance from Waste/Source: ____ ft. State: IL	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ____ Cascade Drilling LP

A. Protective pipe, top elevation 545.99 ft. (NAVD88)

B. Well casing, top elevation 545.70 ft. (NAVD88)

C. Land surface elevation 541.85 ft. (NAVD88)

D. Surface seal, bottom 540.9 ft. (NAVD88) or 1.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☒ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☒ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Sonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☐

16. Drilling additives used? ☒ Yes ☐ No

Describe ____

17. Source of water (attach analysis, if required):
Potable water source from Newton Power Plant

E. Bentonite seal, top 539.9 ft. (NAVD88) or 2.0 ft.

F. Fine sand, top ____ ft. (NAVD88) or ____ ft.

G. Filter pack, top 535.9 ft. (NAVD88) or 6.0 ft.

H. Screen joint, top 533.9 ft. (NAVD88) or 8.0 ft.

I. Well bottom 523.9 ft. (NAVD88) or 18.0 ft.

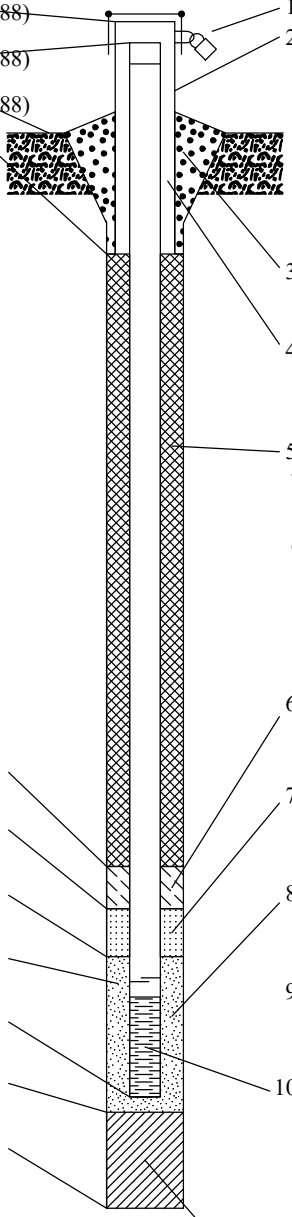
J. Filter pack, bottom 523.9 ft. (NAVD88) or 18.0 ft.

K. Borehole, bottom 523.9 ft. (NAVD88) or 18.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.38 in.

N. I.D. well casing 2.07 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: 4 steel bollards
3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐
4. Material between well casing and protective pipe: Bentonite ☒ Sand Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☒
b. ____Lbs/gal mud weight . . . Bentonite-sand slurry ☐
c. ____Lbs/gal mud weight . . . Bentonite slurry ☐
d. ____% Bentonite . . . Bentonite-cement grout ☐
e. 0.5 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ Tremie pumped ☐ Gravity ☒
6. Bentonite seal: a. Bentonite granules ☐
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. ____
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. K&E Well Gravel
b. Volume added 1.5 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
10. Screen material: Schedule 40 PVC
a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
b. Manufacturer Johnson Screens
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒ Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge. Date Modified: 10/24/2024

Signature: Michael Davie

Firm: Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Plant	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: APW22S
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 38.935718 Long. -88.279442 or	
Facility ID	St. Plane 826,254 ft. N, 999,581 ft. E. Ⓔ/W	Date Well Installed: 06/19/2024
Type of Well: Well Code 11/mw	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W	Well Installed By: (Person's Name and Firm): Gavin Morgan
Distance from Waste/Source: ____ ft. State: IL	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ____ Cascade Drilling LP

A. Protective pipe, top elevation 549.23 ft. (NAVD88)

B. Well casing, top elevation 548.97 ft. (NAVD88)

C. Land surface elevation 545.57 ft. (NAVD88)

D. Surface seal, bottom 544.6 ft. (NAVD88) or 1.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☒ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☒ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Sonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☐

16. Drilling additives used? ☒ Yes ☐ No

Describe ____

17. Source of water (attach analysis, if required):
Potable water source from Newton Power Plant

E. Bentonite seal, top 543.6 ft. (NAVD88) or 2.0 ft.

F. Fine sand, top ____ ft. (NAVD88) or ____ ft.

G. Filter pack, top 535.6 ft. (NAVD88) or 10.0 ft.

H. Screen joint, top 533.6 ft. (NAVD88) or 12.0 ft.

I. Well bottom 523.6 ft. (NAVD88) or 22.0 ft.

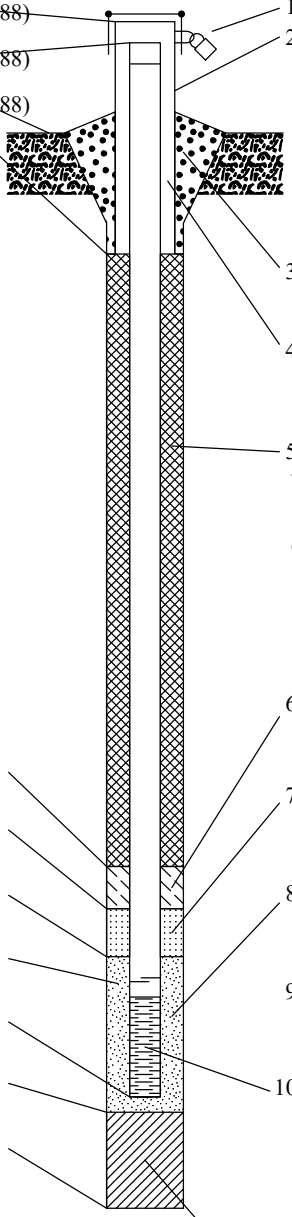
J. Filter pack, bottom 523.6 ft. (NAVD88) or 22.0 ft.

K. Borehole, bottom 522.6 ft. (NAVD88) or 23.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.38 in.

N. I.D. well casing 2.07 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: 4 steel bollards
3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐
4. Material between well casing and protective pipe: Bentonite ☒ Sand Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☒
b. ____Lbs/gal mud weight . . . Bentonite-sand slurry ☐
c. ____Lbs/gal mud weight . . . Bentonite slurry ☐
d. ____% Bentonite . . . Bentonite-cement grout ☐
e. 0.5 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ Tremie pumped ☐ Gravity ☒
6. Bentonite seal: a. Bentonite granules ☐
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. ____
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. K&E Well Gravel
b. Volume added 2.5 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
10. Screen material: Schedule 40 PVC
a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
b. Manufacturer Johnson Screens
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☐ K&E Well Gravel Other ☒

I hereby certify that the information on this form is true and correct to the best of my knowledge. Date Modified: 10/24/2024

Signature: Michael Davie

Firm: Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Plant	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: APW23
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 38.926917 Long. -88.273550 or	
Facility ID	St. Plane 823,049 ft. N, 1,001,259 ft. E. Ⓔ/W	Date Well Installed: 06/20/2024
Type of Well: Well Code 11/mw	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W	Well Installed By: (Person's Name and Firm): Gavin Morgan; Cascade Drilling LP
Distance from Waste/Source ____ ft. State: IL	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ____

A. Protective pipe, top elevation 521.13 ft. (NAVD88)

B. Well casing, top elevation 520.66 ft. (NAVD88)

C. Land surface elevation 517.48 ft. (NAVD88)

D. Surface seal, bottom 516.5 ft. (NAVD88) or 1.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☒ SP ☐
SM ☐ SC ☐ ML ☒ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Sonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☐

16. Drilling additives used? ☒ Yes ☐ No

Describe ____

17. Source of water (attach analysis, if required):
Potable water source from Newton Power Plant

E. Bentonite seal, top 489.5 ft. (NAVD88) or 28.0 ft.

F. Fine sand, top ____ ft. (NAVD88) or ____ ft.

G. Filter pack, top 487.5 ft. (NAVD88) or 30.0 ft.

H. Screen joint, top 485.5 ft. (NAVD88) or 32.0 ft.

I. Well bottom 475.5 ft. (NAVD88) or 42.0 ft.

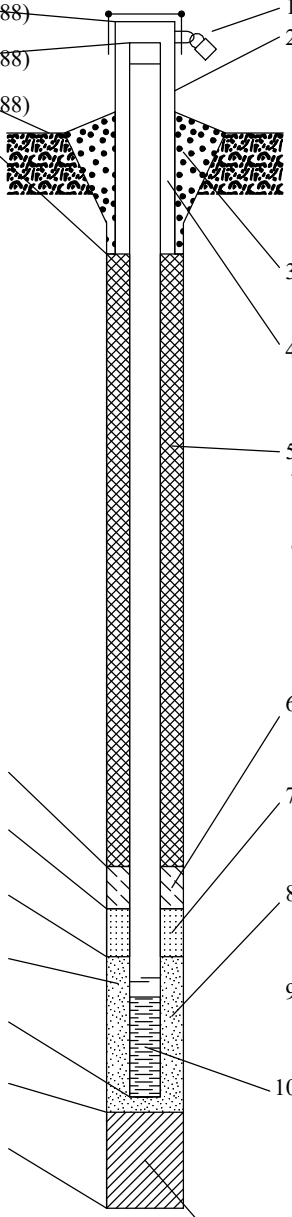
J. Filter pack, bottom 473.5 ft. (NAVD88) or 44.0 ft.

K. Borehole, bottom 469.5 ft. (NAVD88) or 48.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.38 in.

N. I.D. well casing 2.07 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
   a. Inside diameter: 4.0 in.
   b. Length: 5.0 ft.
   c. Material: Steel ☒ Other ☐
   d. Additional protection? ☒ Yes ☐ No
   If yes, describe: 4 steel bollards
3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐
4. Material between well casing and protective pipe: Bentonite ☒ Sand Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☐
   b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐
   c. ____ Lbs/gal mud weight . . . Bentonite slurry ☐
   d. 5 % Bentonite . . . Bentonite-cement grout ☒
   e. ____ Ft^3 volume added for any of the above
   f. How installed: Tremie ☐ Tremie pumped ☒ Gravity ☐
6. Bentonite seal: a. Bentonite granules ☐
   b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
   c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
   a. ____
   b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
   a. K&E Well Gravel
   b. Volume added 3 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
10. Screen material: Schedule 40 PVC
    a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
    b. Manufacturer Johnson Screens
    c. Slot size: 0.010 in.
    d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☐ 3/8" bentonite chips Other ☒

I hereby certify that the information on this form is true and correct to the best of my knowledge. Date Modified: 10/24/2024

Signature: Michael Davie

Firm: Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Plant	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: APW23S
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 38.926892 Long. -88.273474 or	
Facility ID	St. Plane 823,040 ft. N, 1,001,281 ft. E. Ⓔ/W	Date Well Installed: 06/19/2024
Type of Well: Well Code 11/mw	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W	Well Installed By: (Person's Name and Firm): Gavin Morgan
Distance from Waste/Source ft. / State: IL	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ____ Cascade Drilling LP

A. Protective pipe, top elevation 519.81 ft. (NAVD88)

B. Well casing, top elevation 519.53 ft. (NAVD88)

C. Land surface elevation 515.79 ft. (NAVD88)

D. Surface seal, bottom 514.8 ft. (NAVD88) or 1.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☒ MH ☐ CL ☒ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Sonic Other ☒

15. Drilling fluid used: Water ☐ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☒

16. Drilling additives used? ☐ Yes ☒ No

Describe ____

17. Source of water (attach analysis, if required):

E. Bentonite seal, top 513.8 ft. (NAVD88) or 2.0 ft.

F. Fine sand, top ____ ft. (NAVD88) or ____ ft.

G. Filter pack, top 509.8 ft. (NAVD88) or 6.0 ft.

H. Screen joint, top 507.8 ft. (NAVD88) or 8.0 ft.

I. Well bottom 497.8 ft. (NAVD88) or 18.0 ft.

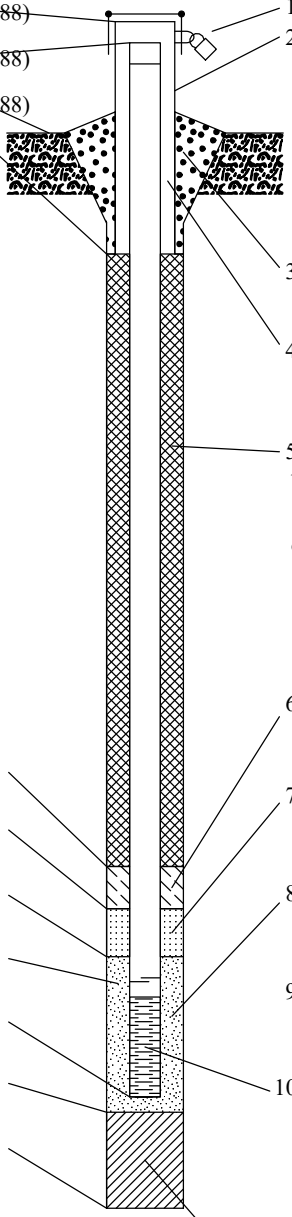
J. Filter pack, bottom 497.8 ft. (NAVD88) or 18.0 ft.

K. Borehole, bottom 497.8 ft. (NAVD88) or 18.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.38 in.

N. I.D. well casing 2.07 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
   a. Inside diameter: 4.0 in.
   b. Length: 5.0 ft.
   c. Material: Steel ☒ Other ☐
   d. Additional protection? ☒ Yes ☐ No
   If yes, describe: 4 steel bollards
3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐
4. Material between well casing and protective pipe: Bentonite ☒ Sand Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☒
   b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐
   c. ____ Lbs/gal mud weight . . . Bentonite slurry ☐
   d. ____ % Bentonite . . . Bentonite-cement grout ☐
   e. 0.5 Ft^3 volume added for any of the above
   f. How installed: Tremie ☐ Tremie pumped ☐ Gravity ☒
6. Bentonite seal: a. Bentonite granules ☐
   b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
   c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
   a. ____
   b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
   a. K&E Well Gravel
   b. Volume added 2 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
10. Screen material: Schedule 40 PVC
    a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
    b. Manufacturer Johnson Screens
    c. Slot size: 0.010 in.
    d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒ Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge. Date Modified: 10/24/2024

Signature: Michael Davie

Firm: Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

ATTACHMENT C
SOIL BORING AND WELL INSTALLATION PHOTOGRAPHIC LOG

ATTACHMENT C. SOIL BORING AND MONITORING WELL INSTALLATION PHOTOGRAPHIC LOG

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO.	**DATE:**		
1	06/18/2024		
DESCRIPTION:			
General site conditions during site work.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO.	**DATE:**		
2	06/18/2024		
DESCRIPTION:			
Soil samples were collected from lithologies above and within the screened interval for analytical testing. Soil boring APW19S was sampled from approximately 7.5-8.2 and 16-18 feet below ground surface.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO.	**DATE:**		
3	06/18/2024		
DESCRIPTION:			
Soil samples were collected from lithologies above and within the screened interval for analytical testing. Soil boring APW19S was sampled from approximately 7.5-8.2 and 16-18 feet below ground surface.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO.	**DATE:**		
4	06/18/2024		
DESCRIPTION:			
Soil samples were collected from lithologies above and within the screened interval for analytical testing. Soil boring APW20S was sampled from approximately 14-16 and 20-22 feet below ground surface.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO.	**DATE:**		
5	06/18/2024		

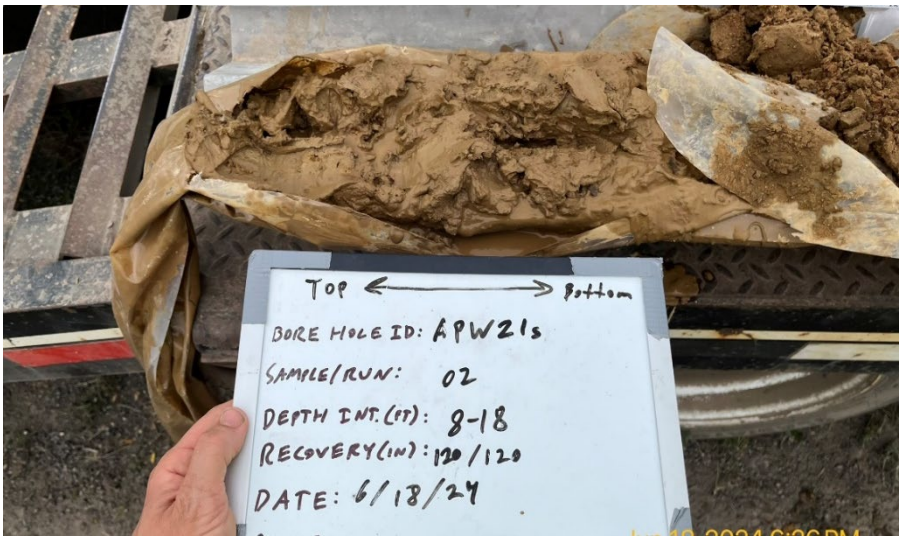
DESCRIPTION:

Soil samples were collected from lithologies above and within the screened interval for analytical testing. Soil boring APW20S was sampled from approximately 14-16 and 20-22 feet below ground surface.

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO.	**DATE:**		
6	06/18/2024		

DESCRIPTION:

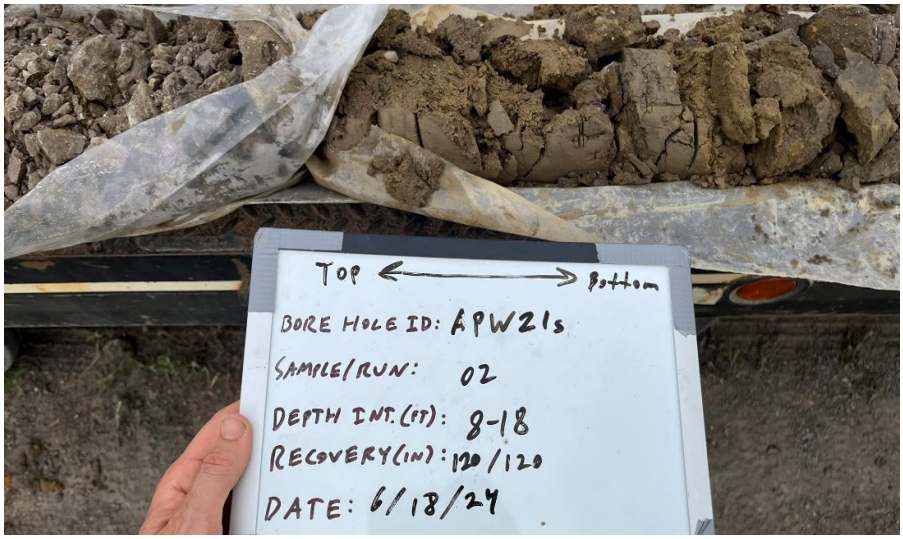
Soil samples were collected from lithologies above and within the screened interval for analytical testing. Soil boring APW21S was sampled from approximately 8-10 and 14-16 feet below ground surface.



CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO.	**DATE:**		
7	06/18/2024		

DESCRIPTION:

Soil samples were collected from lithologies above and within the screened interval for analytical testing. Soil boring APW21S was sampled from approximately 8-10 and 14-16 feet below ground surface.



CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO.	**DATE:**		
8	06/19/2024		

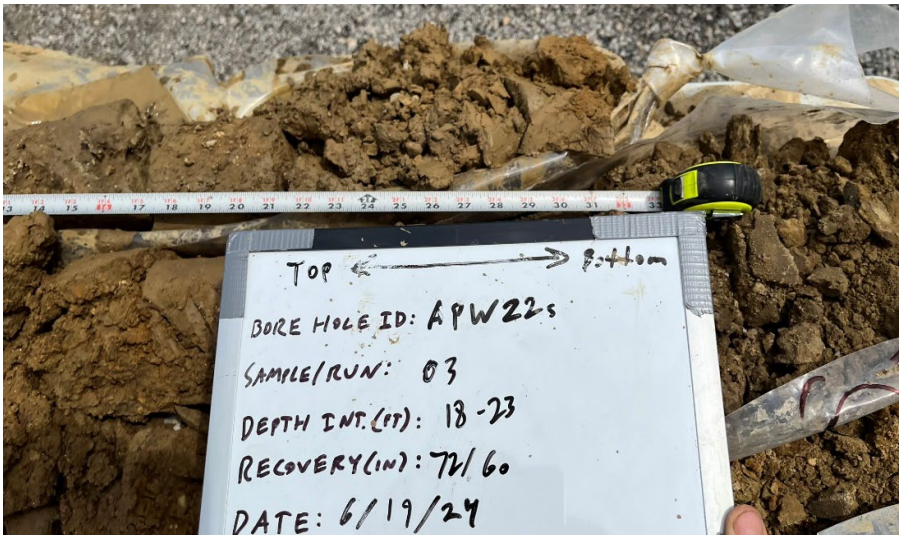
DESCRIPTION:

Soil samples were collected from lithologies above and within the screened interval for analytical testing. Soil boring APW22S was sampled from approximately 9-11 and 20.5-22 feet below ground surface.

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO.	**DATE:**		
9	06/18/2024		

DESCRIPTION:

Soil samples were collected from lithologies above and within the screened interval for analytical testing. Soil boring APW22S was sampled from approximately 9-11 and 20.5-22 feet below ground surface.



CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO.	**DATE:**		
10	06/19/2024		

DESCRIPTION:

Soil samples were collected from lithologies above and within the screened interval for analytical testing. Soil boring APW23S was sampled from approximately 12-16 feet below ground surface.

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO.	**DATE:**		
11	06/20/2024		
DESCRIPTION:			
Soil samples were collected from lithologies above and within the screened interval for analytical testing. Soil boring APW23 was sampled from approximately 37-39 feet below ground surface.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO.	**DATE:**		
12	06/27/2024		
DESCRIPTION:			
Surface completion of monitoring well APW19S.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO.	**DATE:**		
13	06/27/2024		
DESCRIPTION: Surface completion of monitoring well APW20S.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO.	**DATE:**		
14	06/27/2024		
DESCRIPTION: Surface completion of monitoring well APW21S.			

CLIENT NAME:	SITE LOCATION:	PROJECT NO.
IPGC	Newton Power Plant	1940108208

PHOTO NO.	DATE:
15	06/27/2024

DESCRIPTION:
Surface completion of monitoring well APW22S.

CLIENT NAME:	SITE LOCATION:	PROJECT NO.
IPGC	Newton Power Plant	1940108208

PHOTO NO.	DATE:
16	06/27/2024

DESCRIPTION:
Surface completion of monitoring well APW23S.

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO.	**DATE:**		
17	06/27/2024		
DESCRIPTION: Surface completion of monitoring well APW23.			

ATTACHMENT D
MONITORING WELL DEVELOPMENT LOGS

MONITORING WELL DEVELOPMENT

Facility/Project Name	State	Well Name
Vistra - Newton Nature and Extent	Illinois	APW19S

Facility License, Permit or Monitoring Number

1. Can this well be purged dry? ☑ Yes ☐ No

2. Well development method:
- surged with bailer and bailed ☐
- surged with bailer and pumped ☐
- surged with block and bailed ☐
- surged with block and pumped ☑
- surged with block, bailed, and pumped ☐
- compressed air ☐
- bailed only ☐
- pumped only ☐
- pumped slowly ☐
- other _____ ☐

3. Time spent developing well 53 min.

4. Depth of well (from top of well casing) 20.29 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 6.89 gal.

7. Volume of water removed from well ~ 40 gal.

8. Volume of water added (if any) ~ 125 gal.

9. Source of water added On-site potable

10. Analysis performed on water added? ☐ Yes ☑ No
(If yes, attach results)

		Before Development	After Development
11. Depth to Water (from top of well casing)	a.	7.29 ft.	20.29 ft.
Date	b.	6/27/2024	6/27/2024
Time	c.	8:35 ☑ a.m. ☐ p.m.	12:40 ☐ a.m. ☑ p.m.
12. Sediment in well bottom		0.02 inches	0.01 inches
13. Water clarity		Clear ☐ Turbid ☑ (Describe) light brown	Clear ☐ Turbid ☑ (Describe) slightly cloudy brown

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	mg/l	mg/l
15. COD	mg/l	mg/l

16. Well developed by: Person's Name and Firm
Lauren Anderson
Ramboll Americas Engineering Solutions, Inc.

17. Additional comments on development:

08:35-09:05 - purged dry ~ 3 times
12:17-12:40 - purged dry ~ 3 times

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Lauren Anderson

Print Name: Lauren Anderson

Firm: Ramboll Americas Engineering Solutions, Inc.

MONITORING WELL DEVELOPMENT

Facility/Project Name	State	Well Name
Vistra - Newton Nature and Extent	Illinois	APW20S

Facility License, Permit or Monitoring Number

1. Can this well be purged dry? ☑ Yes ☐ No

2. Well development method:
- surged with bailer and bailed ☐
- surged with bailer and pumped ☐
- surged with block and bailed ☐
- surged with block and pumped ☑
- surged with block, bailed, and pumped ☐
- compressed air ☐
- bailed only ☐
- pumped only ☐
- pumped slowly ☐
- other _____ ☐

3. Time spent developing well 45 min.

4. Depth of well (from top of well casing) 26.28 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 2.58 gal.

7. Volume of water removed from well ~ 15 gal.

8. Volume of water added (if any) ~ 25 gal.

9. Source of water added On-site potable

10. Analysis performed on water added? ☐ Yes ☑ No
(If yes, attach results)

		Before Development	After Development
11. Depth to Water (from top of well casing)	a.	21.68 ft.	26.28 ft.
Date	b.	6/27/2024	6/27/2024
Time	c.	11:15 ☑ a.m. ☐ p.m.	12:01 ☐ a.m. ☑ p.m.
12. Sediment in well bottom		0.00 inches	0.00 inches
13. Water clarity		Clear ☑ Turbid ☐ (Describe)	Clear ☑ Turbid ☐ (Describe)
14. Total suspended solids		mg/l	mg/l
15. COD		mg/l	mg/l

Fill in if drilling fluids were used and well is at solid waste facility:

16. Well developed by: Person's Name and Firm
Lauren Anderson
Ramboll Americas Engineering Solutions, Inc.

17. Additional comments on development:
purged dry ~ 5 times

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Lauren Anderson

Print Name: Lauren Anderson

Firm: Ramboll Americas Engineering Solutions, Inc.

MONITORING WELL DEVELOPMENT

Facility/Project Name	State	Well Name
Vistra - Newton Nature and Extent	Illinois	APW21S

Facility License, Permit or Monitoring Number

1. Can this well be purged dry? ☑ Yes ☐ No

2. Well development method:
- surged with bailer and bailed ☐
- surged with bailer and pumped ☐
- surged with block and bailed ☐
- surged with block and pumped ☑
- surged with block, bailed, and pumped ☐
- compressed air ☐
- bailed only ☐
- pumped only ☐
- pumped slowly ☐
- other _____ ☐

3. Time spent developing well 39 min.

4. Depth of well (from top of well casing) 20.26 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 5.48 gal.

7. Volume of water removed from well ~ 15 gal.

8. Volume of water added (if any) ~ 125 gal.

9. Source of water added On-site potable

10. Analysis performed on water added? ☐ Yes ☑ No
(If yes, attach results)

		Before Development	After Development
11. Depth to Water (from top of well casing)	a.	10.48 ft.	20.26 ft.
Date	b.	6/27/2024	6/27/2024
Time	c.	10:08 ☑ a.m. ☐ p.m.	10:47 ☑ a.m. ☐ p.m.
12. Sediment in well bottom		0.00 inches	0.00 inches
13. Water clarity		Clear ☑ Turbid ☐ (Describe)	Clear ☑ Turbid ☐ (Describe)

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	mg/l	mg/l
15. COD	mg/l	mg/l

16. Well developed by: Person's Name and Firm
Lauren Anderson
Ramboll Americas Engineering Solutions, Inc.

17. Additional comments on development:
purged dry ~ 2 times

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Lauren Anderson

Print Name: Lauren Anderson

Firm: Ramboll Americas Engineering Solutions, Inc.

MONITORING WELL DEVELOPMENT

Facility/Project Name	State	Well Name
Vistra - Newton Nature and Extent	Illinois	APW22S

Facility License, Permit or Monitoring Number

1. Can this well be purged dry? ☑ Yes ☐ No

2. Well development method:
- surged with bailer and bailed ☐
- surged with bailer and pumped ☐
- surged with block and bailed ☐
- surged with block and pumped ☑
- surged with block, bailed, and pumped ☐
- compressed air ☐
- bailed only ☐
- pumped only ☐
- pumped slowly ☐
- other _____ ☐

3. Time spent developing well 22 min.

4. Depth of well (from top of well casing) 25.82 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 7.46 gal.

7. Volume of water removed from well ~ 25 gal.

8. Volume of water added (if any) ~ 125 gal.

9. Source of water added On-site potable

10. Analysis performed on water added? ☐ Yes ☑ No
(If yes, attach results)

		Before Development	After Development
11. Depth to Water (from top of well casing)	a.	9.44 ft.	25.82 ft.
Date	b.	6/28/2024	6/28/2024
Time	c.	9:03 ☑ a.m. ☐ p.m.	9:25 ☑ a.m. ☐ p.m.
12. Sediment in well bottom		0.02 inches	0.01 inches
13. Water clarity		Clear ☐ Turbid ☑ (Describe) light cloudy brown	Clear ☐ Turbid ☑ (Describe) slightly cloudy brown

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	mg/l	mg/l
15. COD	mg/l	mg/l

16. Well developed by: Person's Name and Firm
Lauren Anderson
Ramboll Americas Engineering Solutions, Inc.

17. Additional comments on development:
purged dry ~ 3 times

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Lauren Anderson

Print Name: Lauren Anderson

Firm: Ramboll Americas Engineering Solutions, Inc.

MONITORING WELL DEVELOPMENT

Facility/Project Name	State	Well Name
Vistra - Newton Nature and Extent	Illinois	APW23

Facility License, Permit or Monitoring Number

1. Can this well be purged dry? ☑ Yes ☐ No

2. Well development method:
- surged with bailer and bailed ☐
- surged with bailer and pumped ☐
- surged with block and bailed ☐
- surged with block and pumped ☑
- surged with block, bailed, and pumped ☐
- compressed air ☐
- bailed only ☐
- pumped only ☐
- pumped slowly ☐
- other _____ ☐

3. Time spent developing well: 21 min.

4. Depth of well (from top of well casing): 45.25 ft.

5. Inside diameter of well: 2.0 in.

6. Volume of water in filter pack and well casing: 9.82 gal.

7. Volume of water removed from well: ~ 45 gal.

8. Volume of water added (if any): ~ 250 gal.

9. Source of water added: On-site potable

10. Analysis performed on water added? ☐ Yes ☑ No
(If yes, attach results)

		Before Development	After Development
11. Depth to Water (from top of well casing)	a.	15.00 ft.	45.25 ft.
Date	b.	6/28/2024	6/28/2024
Time	c.	10:02 ☑ a.m. ☐ p.m.	10:23 ☑ a.m. ☐ p.m.
12. Sediment in well bottom		0.00 inches	0.00 inches
13. Water clarity		Clear ☑ Turbid ☐ (Describe)	Clear ☑ Turbid ☐ (Describe)
14. Total suspended solids		mg/l	mg/l
15. COD		mg/l	mg/l

Fill in if drilling fluids were used and well is at solid waste facility:

16. Well developed by: Person's Name and Firm
Lauren Anderson
Ramboll Americas Engineering Solutions, Inc.

17. Additional comments on development:

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Lauren Anderson

Print Name: Lauren Anderson

Firm: Ramboll Americas Engineering Solutions, Inc.

MONITORING WELL DEVELOPMENT

Facility/Project Name	State	Well Name
Vistra - Newton Nature and Extent	Illinois	APW23S

Facility License, Permit or Monitoring Number

1. Can this well be purged dry? ☑ Yes ☐ No

2. Well development method:
- surged with bailer and bailed ☐
- surged with bailer and pumped ☐
- surged with block and bailed ☐
- surged with block and pumped ☑
- surged with block, bailed, and pumped ☐
- compressed air ☐
- bailed only ☐
- pumped only ☐
- pumped slowly ☐
- other _____ ☐

3. Time spent developing well 18 min.

4. Depth of well (from top of well casing) 22.17 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 7.04 gal.

7. Volume of water removed from well ~ 20 gal.

8. Volume of water added (if any) ~ 125 gal.

9. Source of water added On-site potable

10. Analysis performed on water added? ☐ Yes ☑ No
(If yes, attach results)

		Before Development	After Development
11. Depth to Water (from top of well casing)	a.	8.27 ft.	22.17 ft.
Date	b.	6/27/2024	6/27/2024
Time	c.	1:07 ☐ a.m. ☑ p.m.	1:25 ☐ a.m. ☑ p.m.
12. Sediment in well bottom		0.01 inches	0.00 inches
13. Water clarity		Clear ☐ Turbid ☑ (Describe) cloudy yellow brown	Clear ☑ Turbid ☐ (Describe)
14. Total suspended solids		mg/l	mg/l
15. COD		mg/l	mg/l

Fill in if drilling fluids were used and well is at solid waste facility:

16. Well developed by: Person's Name and Firm
Lauren Anderson
Ramboll Americas Engineering Solutions, Inc.

17. Additional comments on development:
purged dry ~ 2 times

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Lauren Anderson

Print Name: Lauren Anderson

Firm: Ramboll Americas Engineering Solutions, Inc.

MONITORING WELL DEVELOPMENT

Facility/Project Name	State	Well Name
Vistra - Newton Nature and Extent	Illinois	APW19S

Facility License, Permit or Monitoring Number

1. Can this well be purged dry? ☑ Yes ☐ No

2. Well development method:

surged with bailer and bailed	☐
surged with bailer and pumped	☐
surged with block and bailed	☐
surged with block and pumped	☐
surged with block, bailed, and pumped	☐
compressed air	☐
bailed only	☐
pumped only	☑
pumped slowly	☐
other _____	☐

3. Time spent developing well 35 min.

4. Depth of well (from top of well casing) 20.25 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 6.87 gal.

7. Volume of water removed from well 6.5 gal.

8. Volume of water added (if any) ~ 125 gal.

9. Source of water added On-site potable

10. Analysis performed on water added? ☐ Yes ☑ No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing) a.	7.34 ft.	20.25 ft.
Date b.	6/20/2024	6/20/2024
Time c.	4:10 ☐ a.m. ☑ p.m.	4:50 ☐ a.m. ☑ p.m.
12. Sediment in well bottom	0.00 inches	0.00 inches
13. Water clarity	Clear ☐ Turbid ☑ (Describe) tan	Clear ☐ Turbid ☑ (Describe) tan
14. Total suspended solids	mg/l	mg/l
15. COD	mg/l	mg/l

Fill in if drilling fluids were used and well is at solid waste facility:

16. Well developed by: Person's Name and Firm
Michael Davis
Ramboll Americas Engineering Solutions, Inc.

17. Additional comments on development:
purged dry 4 times

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Michael Davis

Print Name: Michael Davis

Firm: Ramboll Americas Engineering Solutions, Inc.

MONITORING WELL DEVELOPMENT

Facility/Project Name	State	Well Name
Vistra - Newton Nature and Extent	Illinois	APW20S

Facility License, Permit or Monitoring Number

1. Can this well be purged dry? ☑ Yes ☐ No

2. Well development method:

surged with bailer and bailed	☐
surged with bailer and pumped	☐
surged with block and bailed	☐
surged with block and pumped	☐
surged with block, bailed, and pumped	☐
compressed air	☐
bailed only	☐
pumped only	☑
pumped slowly	☐
other _____	☐

3. Time spent developing well 35 min.

4. Depth of well (from top of well casing) 25.20 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 7.61 gal.

7. Volume of water removed from well 4.5 gal.

8. Volume of water added (if any) ~ 25 gal.

9. Source of water added On-site potable

10. Analysis performed on water added? ☐ Yes ☑ No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing) a.	7.95 ft.	25.20 ft.
Date b.	6/20/2024	6/20/2024
Time c.	4:00 ☐ a.m. ☑ p.m.	4:40 ☐ a.m. ☑ p.m.
12. Sediment in well bottom	0.00 inches	0.00 inches
13. Water clarity	Clear ☐ Turbid ☑ (Describe) tan	Clear ☑ Turbid ☐ (Describe)

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	mg/l	mg/l
15. COD	mg/l	mg/l

16. Well developed by: Person's Name and Firm
Gavin Morgan
Cascade Environmental, LLC

17. Additional comments on development:
purged dry 6 times

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Michael Davis

Print Name: Michael Davis

Firm: Ramboll Americas Engineering Solutions, Inc.

MONITORING WELL DEVELOPMENT

Facility/Project Name	State	Well Name
Vistra - Newton Nature and Extent	Illinois	APW21S

Facility License, Permit or Monitoring Number

1. Can this well be purged dry? ☑ Yes ☐ No

2. Well development method:

surged with bailer and bailed	☐
surged with bailer and pumped	☐
surged with block and bailed	☐
surged with block and pumped	☐
surged with block, bailed, and pumped	☐
compressed air	☐
bailed only	☐
pumped only	☑
pumped slowly	☐
other _____	☐

3. Time spent developing well 30 min.

4. Depth of well (from top of well casing) 20.25 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 5.61 gal.

7. Volume of water removed from well 12 gal.

8. Volume of water added (if any) ~ 125 gal.

9. Source of water added On-site potable

10. Analysis performed on water added? ☐ Yes ☑ No
(If yes, attach results)

		Before Development	After Development
11. Depth to Water (from top of well casing)	a.	10.24 ft.	20.25 ft.
Date	b.	6/21/2024	6/21/2024
Time	c.	9:35 ☑ a.m. ☐ p.m.	10:10 ☑ a.m. ☐ p.m.
12. Sediment in well bottom		0.00 inches	0.00 inches
13. Water clarity		Clear ☐ Turbid ☑ (Describe) dark brown	Clear ☐ Turbid ☑ (Describe) brown
Fill in if drilling fluids were used and well is at solid waste facility:			
14. Total suspended solids		mg/l	mg/l
15. COD		mg/l	mg/l

16. Well developed by: Person's Name and Firm
Michael Davis
Ramboll Americas Engineering Solutions, Inc.

17. Additional comments on development:
purged dry 5 times

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Michael Davis

Print Name: Michael Davis

Firm: Ramboll Americas Engineering Solutions, Inc.

MONITORING WELL DEVELOPMENT

Facility/Project Name	State	Well Name
Vistra - Newton Nature and Extent	Illinois	APW22S

Facility License, Permit or Monitoring Number

1. Can this well be purged dry? ☑ Yes ☐ No

2. Well development method:

surged with bailer and bailed	☐
surged with bailer and pumped	☐
surged with block and bailed	☐
surged with block and pumped	☐
surged with block, bailed, and pumped	☐
compressed air	☐
bailed only	☐
pumped only	☑
pumped slowly	☐
other _____	☐

3. Time spent developing well: 90 min.

4. Depth of well (from top of well casing): 26.20 ft.

5. Inside diameter of well: 2.0 in.

6. Volume of water in filter pack and well casing: 7.60 gal.

7. Volume of water removed from well: 20 gal.

8. Volume of water added (if any): ~ 125 gal.

9. Source of water added: On-site potable

10. Analysis performed on water added? ☐ Yes ☑ No
(If yes, attach results)

		Before Development	After Development
11. Depth to Water (from top of well casing)	a.	9.00 ft.	26.20 ft.
Date	b.	6/21/2024	6/21/2024
Time	c.	8:00 ☑ a.m. ☐ p.m.	9:20 ☑ a.m. ☐ p.m.
12. Sediment in well bottom		0.00 inches	0.00 inches
13. Water clarity		Clear ☐ Turbid ☑ (Describe) brown	Clear ☐ Turbid ☑ (Describe) light brown

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	mg/l	mg/l
15. COD	mg/l	mg/l

16. Well developed by: Person's Name and Firm
Michael Davis
Ramboll Americas Engineering Solutions, Inc.

17. Additional comments on development:
purged dry 6 times

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Michael Davis

Print Name: Michael Davis

Firm: Ramboll Americas Engineering Solutions, Inc.

MONITORING WELL DEVELOPMENT

Facility/Project Name	State	Well Name
Vistra - Newton Nature and Extent	Illinois	APW23

Facility License, Permit or Monitoring Number

1. Can this well be purged dry? ☑ Yes ☐ No

2. Well development method:
- surged with bailer and bailed ☐
- surged with bailer and pumped ☐
- surged with block and bailed ☐
- surged with block and pumped ☐
- surged with block, bailed, and pumped ☐
- compressed air ☐
- bailed only ☐
- pumped only ☑
- pumped slowly ☐
- other _____ ☐

3. Time spent developing well 110 min.

4. Depth of well (from top of well casing) 45.00 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 10.46 gal.

7. Volume of water removed from well 68 gal.

8. Volume of water added (if any) ~ 250 gal.

9. Source of water added On-site potable

10. Analysis performed on water added? ☐ Yes ☑ No
(If yes, attach results)

		Before Development	After Development
11. Depth to Water (from top of well casing)	a.	11.00 ft.	45.00 ft.
Date	b.	6/21/2024	6/21/2024
Time	c.	7:30 ☑ a.m. ☐ p.m.	9:20 ☑ a.m. ☐ p.m.
12. Sediment in well bottom		0.00 inches	0.00 inches
13. Water clarity		Clear ☐ Turbid ☑ (Describe) brown	Clear ☑ Turbid ☐ (Describe)

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	mg/l	mg/l
15. COD	mg/l	mg/l

16. Well developed by: Person's Name and Firm
Michael Davis
Ramboll Americas Engineering Solutions, Inc.

17. Additional comments on development:
purged dry 15 times

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Michael Davis

Print Name: Michael Davis

Firm: Ramboll Americas Engineering Solutions, Inc.

MONITORING WELL DEVELOPMENT

Facility/Project Name	State	Well Name
Vistra - Newton Nature and Extent	Illinois	APW23S

Facility License, Permit or Monitoring Number

1. Can this well be purged dry? ☑ Yes ☐ No

2. Well development method:

surged with bailer and bailed	☐
surged with bailer and pumped	☐
surged with block and bailed	☐
surged with block and pumped	☐
surged with block, bailed, and pumped	☐
compressed air	☐
bailed only	☐
pumped only	☑
pumped slowly	☐
other _____	☐

3. Time spent developing well 60 min.

4. Depth of well (from top of well casing) 20.25 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 7.07 gal.

7. Volume of water removed from well 11 gal.

8. Volume of water added (if any) ~ 125 gal.

9. Source of water added On-site potable

10. Analysis performed on water added? ☐ Yes ☑ No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing) a.	6.20 ft.	20.25 ft.
Date b.	6/21/2024	6/21/2024
Time c.	2:30 ☐ a.m. ☑ p.m.	3:50 ☐ a.m. ☑ p.m.
12. Sediment in well bottom	0.00 inches	0.00 inches
13. Water clarity	Clear ☐ Turbid ☑ (Describe) tan, cloudy	Clear ☐ Turbid ☑ (Describe) light tan, cloudy

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	mg/l	mg/l
15. COD	mg/l	mg/l

16. Well developed by: Person's Name and Firm
Michael Davis
Ramboll Americas Engineering Solutions, Inc.

17. Additional comments on development:
purged dry 4 times

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Michael Davis

Print Name: Michael Davis

Firm: Ramboll Americas Engineering Solutions, Inc.

ATTACHMENT E
MONITORING WELL IMPROVEMENT AND REPAIRS PHOTOGRAPHIC LOG

ATTACHMENT E. MONITORING WELL IMPROVEMENT AND REPAIRS PHOTOGRAPHIC LOG

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 1	**DATE:** June 26, 2024		
DESCRIPTION: Four bollards were installed surrounding G104S.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 2	**DATE:** June 26, 2024		
DESCRIPTION: Four bollards were installed surrounding G104D.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 3	**DATE:** June 26, 2024		
DESCRIPTION: Four bollards were installed surrounding G109.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 4	**DATE:** June 26, 2024		
DESCRIPTION: Three bollards were installed surrounding G111. An unidentified subsurface obstruction prevented installation of a fourth bollard.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 5	**DATE:** June 26, 2024		
DESCRIPTION: Four bollards were installed surrounding G112.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 6	**DATE:** June 26, 2024		
DESCRIPTION: Three bollards were installed surrounding G113 and pad was replaced. Area was limited to three bollards due to slope.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 7	**DATE:** June 26, 2024		
DESCRIPTION: Four bollards were installed surrounding G115.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 8	**DATE:** June 28, 2024		
DESCRIPTION: Four bollards were installed surrounding G116.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 9	**DATE:** June 26, 2024		
DESCRIPTION: Existing bollards observed at G118. Ramboll field staff found bollards to be sturdy, so they were not replaced.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 10	**DATE:** June 25, 2024		
DESCRIPTION: Existing pad observed at G119. Ramboll field staff found the pad in good condition, so it was not replaced.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 11	**DATE:** June 26, 2024		
DESCRIPTION: Three bollards were installed surrounding G125. Ramboll field staff found the pad in good condition, so it was not replaced.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 12	**DATE:** June 25, 2024		
DESCRIPTION: Ramboll field staff observed concrete in annular spacing between protective casing and well casing at G128, preventing removal and replacement of well pad.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 13	**DATE:** June 27, 2024		
DESCRIPTION: Four bollards were installed surrounding G130.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 14	**DATE:** June 27, 2024		
DESCRIPTION: Additional concrete was added at G139 to improve stability and surface seal.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 15	**DATE:** June 27, 2024		
DESCRIPTION: Two new bollards were installed surrounding G202.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 16	**DATE:** June 26, 2024		
DESCRIPTION: Existing pad observed at G202. Ramboll field staff found the pad in good condition, so it was not replaced.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 17	**DATE:** June 25, 2024		
DESCRIPTION: Ramboll field staff observed concrete in annular spacing between protective casing and well casing at G203, preventing removal and replacement of well pad.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 18	**DATE:** June 26, 2024		
DESCRIPTION: Existing bollards at R219. Cascade could not safely access the slope to install additional bollards.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 19	**DATE:** June 27, 2024		
DESCRIPTION: Ramboll field staff found the pad at A207 in poor condition during performance of field work. Pad and protective casing were replaced.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 21	**DATE:** June 26, 2024		
DESCRIPTION: Four bollards were installed surrounding T101.			

CLIENT NAME:		SITE LOCATION:	PROJECT NO.
IPGC		Newton Power Plant	1940108208
PHOTO NO. 22	**DATE:** June 26, 2024		
DESCRIPTION: Four bollards were installed surrounding T102.			

APPENDIX B
FIELD SAMPLING FORMS AND GROUNDWATER ANALYTICAL LABORATORY REPORTS

November 13, 2023

Eric Bauer
Ramboll
234 W. Florida Street
Fifth Floor
Milwaukee, WI 53204
TEL: (414) 837-3607
FAX: (414) 837-3608

Illinois	100226
Kansas	E-10374
Louisiana	05002
Louisiana	05003
Oklahoma	9978

RE: NEW-23Q3 **WorkOrder:** 23070389

Dear Eric Bauer:

TEKLAB, INC received 24 samples for NEW-SUP-000 on 8/17/2023 2:00:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Elizabeth A. Hurley

Elizabeth A. Hurley
Director of Customer Service
(618)344-1004 ex 33
ehurley@teklabinc.com

Report Contents

Client: Ramboll
Work Order: 23070389
Client Project: NEW-23Q3
Report Date: 13-Nov-23

This reporting package includes the following:

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Accreditations	7
Laboratory Results	8
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Chain of Custody	Appended

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Abbr Definition

*	Analytes on report marked with an asterisk are not NELAP accredited
CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
CRQL	A Client Requested Quantitation Limit is a reporting limit that varies according to customer request. The CRQL may not be less than the MDL.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilution factors.
DNI	Did not ignite
DUP	Laboratory duplicate is a replicate aliquot prepared under the same laboratory conditions and independently analyzed to obtain a measure of precision.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample is a sample matrix, free from the analytes of interest,spiked with verified known amounts of analytes and analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system.
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MBLK	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	"The method detection limit is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results."
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
NC	Data is not acceptable for compliance purposes
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions.
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TIC	Tentatively identified compound: Analytes tentatively identified in the sample by using a library search. Only results not in the calibration standard will be reported as tentatively identified compounds. Results for tentatively identified compounds that are not present in the calibration standard, but are assigned a specific chemical name based upon the library search, are calculated using total peak areas from reconstructed ion chromatograms and a response factor of one. The nearest Internal Standard is used for the calculation. The results of any TICs must be considered estimated, and are flagged with a "T". If the estimated result is above the calibration range it is flagged "ET"
TNTC	Too numerous to count (> 200 CFU)

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Qualifiers

# -	Unknown hydrocarbon	B -	Analyte detected in associated Method Blank
C -	RL shown is a Client Requested Quantitation Limit	E -	Value above quantitation range
H -	Holding times exceeded	I -	Associated internal standard was outside method criteria
J -	Analyte detected below quantitation limits	M -	Manual Integration used to determine area response
ND -	Not Detected at the Reporting Limit	R -	RPD outside accepted recovery limits
S -	Spike Recovery outside recovery limits	T -	TIC(Tentatively identified compound)
X -	Value exceeds Maximum Contaminant Level		

Client: Ramboll
Work Order: 23070389
Client Project: NEW-23Q3
Report Date: 13-Nov-23

Cooler Receipt Temp: 3.8 °C

An employee of Teklab, Inc. collected the sample(s).

Lab conductivity will be reported for APW02, APW03, APW04, APW05S, APW07, APW08, APW09, APW10, APW13, APW14, APW17, G104, G106, G118, G139, G141, G201, G208, G217S, G221, G225, R217D, R219 and applicable field duplicates due to field meter malfunction(s). JC/EAH 8/2/23

A215, G06D, G105, G202, G230, and MW46D could not be collected; the wells were dry. G108 could not be collected; the well was abandoned. L301 could not be collected; the well was inoperable. EAH 8/2/23

Depth, only, wells will be reported with collection dates/times per the field file. G118 will be reported as collected at 0726 per the field file. EAH 8/4/23

Per Eric Bauer, include total Iron for G201, G223, and G224 and include total and dissolved Iron for G231, G232, and G233. (ehurley - 8/10/2023 7:54:42 AM)

G104D and G223 collection times will be reported per the field file(s) rather than the chain of custody forms. EAH 8/16/23

A214, G116, G231, G232, MW35D, and APW02 (and its field duplicate) required resampling due to field meter errors. The resamples will be included in the final report(s). MW35D was dry at resampling. EAH 8/18/23

Per Eric Bauer's request, only NEW-SUP-000 data is included in this report. EAH 11/13/23

Case Narrative

http://www.teklabinc.com/

Client: Ramboll
Client Project: NEW-23Q3

Work Order: 23070389
Report Date: 13-Nov-23

Locations

Collinsville

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email jhriley@teklabinc.com

Springfield

Address 3920 Pintail Dr
Springfield, IL 62711-9415
Phone (217) 698-1004
Fax (217) 698-1005
Email KKlostermann@teklabinc.com

Kansas City

Address 8421 Nieman Road
Lenexa, KS 66214
Phone (913) 541-1998
Fax (913) 541-1998
Email jhriley@teklabinc.com

Collinsville Air

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email EHurley@teklabinc.com

Chicago

Address 1319 Butterfield Rd.
Downers Grove, IL 60515
Phone (630) 324-6855
Fax
Email arenner@teklabinc.com

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2024	Collinsville
Kansas	KDHE	E-10374	NELAP	4/30/2024	Collinsville
Louisiana	LDEQ	05002	NELAP	6/30/2024	Collinsville
Louisiana	LDEQ	05003	NELAP	6/30/2024	Collinsville
Oklahoma	ODEQ	9978	NELAP	8/31/2024	Collinsville
Arkansas	ADEQ	88-0966		3/14/2024	Collinsville
Illinois	IDPH	17584		5/31/2025	Collinsville
Iowa	IDNR	430		6/1/2024	Collinsville
Kentucky	UST	0073		1/31/2024	Collinsville
Missouri	MDNR	00930		5/31/2023	Collinsville
Missouri	MDNR	930		1/31/2025	Collinsville

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-006 **Client Sample ID:** APW03

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 13:47

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**3.802**	mg/L	1	07/31/2023 13:47	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**5.6**	NTU	1	07/31/2023 13:47	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**64**	mV	1	07/31/2023 13:47	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**16.5**	°C	1	07/31/2023 13:47	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.75**	mg/L	1	07/31/2023 13:47	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**6.79**		1	07/31/2023 13:47	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**422**	mg/L	1	08/01/2023 12:45	R334418
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 12:45	R334418
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**446**	mg/L	1	08/01/2023 13:40	R334418
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 13:40	R334418
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**620**	mg/L	1	08/02/2023 9:32	R334530
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**0.157**	mg/L	1	08/02/2023 12:56	R334477
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010	H	**< 0.010**	mg/L	1	08/03/2023 11:05	R334531
Sample required re-analysis out of hold time.									
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	61	100		**144**	mg/L	10	08/02/2023 19:13	R334506
SW-846 9036 (TOTAL)									
Sulfate	NELAP	61	100		**118**	mg/L	10	08/04/2023 14:05	R334639
SW-846 9050A									
Conductivity	NELAP	10	10		**918**	µmhos/cm @25C	1	08/09/2023 10:19	R334775
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**1.5**	mg/L	1	08/10/2023 1:47	R334837
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**1.5**	mg/L	1	08/18/2023 17:56	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	1	4		**10**	mg/L	1	08/02/2023 19:08	R334538
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**10**	mg/L	1	08/03/2023 19:38	R334594

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-006 **Client Sample ID:** APW03

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 13:47

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**89.8**	mg/L	1	08/02/2023 16:29	210298
Magnesium	NELAP	0.0087	0.0500		**50.4**	mg/L	1	08/02/2023 16:29	210298
Potassium	NELAP	0.0400	0.100		**0.466**	mg/L	1	08/02/2023 16:29	210298
Silicon	*	0.0272	0.0500		**11.8**	mg/L	1	08/02/2023 16:29	210298
Sodium	NELAP	0.0180	0.0500		**55.0**	mg/L	1	08/02/2023 16:29	210298
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**96.5**	mg/L	1	08/02/2023 11:24	210259
Magnesium	NELAP	0.0055	0.0500		**54.3**	mg/L	1	08/02/2023 11:24	210259
Potassium	NELAP	0.0400	0.100		**0.602**	mg/L	1	08/02/2023 11:24	210259
Silicon	*	0.0272	0.0500		**12.5**	mg/L	1	08/02/2023 16:09	210259
Sodium	NELAP	0.0180	0.0500		**56.2**	mg/L	1	08/02/2023 11:24	210259
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.012	0.025	J	**0.016**	mg/L	5	09/16/2023 22:46	210298
Iron	NELAP	0.0115	0.0250		**0.0342**	mg/L	5	09/16/2023 22:46	210298
Manganese	NELAP	0.0008	0.0020		**0.0363**	mg/L	5	09/16/2023 22:46	210298
CCV recovered outside the upper control limits for Al. Sample results are below the reporting limit. Data is reportable per the TNI standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.144**	mg/L	5	09/16/2023 13:10	210259
Iron	NELAP	0.0115	0.0250		**0.180**	mg/L	5	09/16/2023 13:10	210259
Manganese	NELAP	0.0008	0.0020		**0.0440**	mg/L	5	09/16/2023 13:10	210259

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-007 **Client Sample ID:** APW04

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 11:53

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**3.540**	mg/L	1	07/31/2023 11:53	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**8.0**	NTU	1	07/31/2023 11:53	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**92**	mV	1	07/31/2023 11:53	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**18.9**	°C	1	07/31/2023 11:53	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.68**	mg/L	1	07/31/2023 11:53	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**6.59**		1	07/31/2023 11:53	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**518**	mg/L	1	08/01/2023 12:51	R334418
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 12:51	R334418
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**511**	mg/L	1	08/01/2023 13:47	R334418
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 13:47	R334418
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**1770**	mg/L	1	08/02/2023 10:47	R334530
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.020**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.029**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**0.015**	mg/L	1	08/02/2023 12:56	R334477
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**0.015**	mg/L	1	08/02/2023 12:56	R334477
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	123	200		**844**	mg/L	20	08/03/2023 16:38	R334559
SW-846 9036 (TOTAL)									
Sulfate	NELAP	307	500		**808**	mg/L	50	08/04/2023 14:31	R334639
SW-846 9050A									
Conductivity	NELAP	10	10		**1950**	umhos/cm @25C	1	08/09/2023 10:22	R334775
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**2.5**	mg/L	1	08/10/2023 1:53	R334837
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**2.6**	mg/L	1	08/18/2023 18:02	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	1	4		**36**	mg/L	1	08/02/2023 19:16	R334538
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**36**	mg/L	1	08/03/2023 20:15	R334594
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**199**	mg/L	1	08/02/2023 16:30	210298

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-007 **Client Sample ID:** APW04

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 11:53

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Magnesium	NELAP	0.0087	0.0500		**163**	mg/L	1	08/02/2023 16:30	210298
Potassium	NELAP	0.0400	0.100		**1.57**	mg/L	1	08/02/2023 16:30	210298
Silicon	*	0.0272	0.0500		**7.61**	mg/L	1	08/02/2023 16:30	210298
Sodium	NELAP	0.0180	0.0500		**87.4**	mg/L	1	08/02/2023 16:30	210298
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**211**	mg/L	1	08/02/2023 11:25	210259
Magnesium	NELAP	0.0055	0.0500		**174**	mg/L	1	08/02/2023 11:25	210259
Potassium	NELAP	0.0400	0.100		**1.72**	mg/L	1	08/02/2023 11:25	210259
Silicon	*	0.0272	0.0500		**8.71**	mg/L	1	08/02/2023 16:10	210259
Sodium	NELAP	0.0180	0.0500		**90.6**	mg/L	1	08/02/2023 11:25	210259
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.0125	0.0250		**< 0.0250**	mg/L	5	09/16/2023 22:52	210298
Iron	NELAP	0.0115	0.0250		**0.0280**	mg/L	5	09/16/2023 22:52	210298
Manganese	NELAP	0.0008	0.0020		**0.499**	mg/L	5	09/16/2023 22:52	210298
CCV recovered outside the upper control limits for Al. Sample results are below the reporting limit. Data is reportable per the TNI standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.530**	mg/L	5	09/16/2023 13:15	210259
Iron	NELAP	0.0115	0.0250		**0.935**	mg/L	5	09/16/2023 13:15	210259
Manganese	NELAP	0.0008	0.0020		**0.818**	mg/L	5	09/16/2023 13:15	210259

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-008 **Client Sample ID:** APW05

Matrix: GROUNDWATER **Collection Date:** 07/24/2023 13:52

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**0.999**	mg/L	1	07/24/2023 13:52	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**14**	NTU	1	07/24/2023 13:52	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**-88**	mV	1	07/24/2023 13:52	R334750
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**1030**	µS/cm	1	07/24/2023 13:52	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**15.6**	°C	1	07/24/2023 13:52	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.36**	mg/L	1	07/24/2023 13:52	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**8.02**		1	07/24/2023 13:52	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**484**	mg/L	1	07/26/2023 11:29	R333138
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/26/2023 11:29	R333138
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**474**	mg/L	1	07/26/2023 10:36	R333138
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/26/2023 10:36	R333138
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**550**	mg/L	2.5	07/26/2023 9:18	R333199
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.021**	mg/L	1	07/25/2023 21:05	R333082
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**0.096**	mg/L	1	07/25/2023 21:05	R333082
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**0.414**	mg/L	1	07/26/2023 0:00	R333097
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**0.414**	mg/L	1	07/26/2023 0:00	R333097
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	6	10	J	**8**	mg/L	1	07/31/2023 12:14	R334391
SW-846 9036 (TOTAL)									
Sulfate	NELAP	6	10		**10**	mg/L	1	07/27/2023 17:21	R333276
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**2.8**	mg/L	1	08/10/2023 2:00	R334837
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**2.9**	mg/L	1	08/18/2023 18:09	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	1	4		**47**	mg/L	1	07/27/2023 13:28	R333281
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**46**	mg/L	1	07/27/2023 17:22	R333281
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**53.2**	mg/L	1	08/02/2023 17:14	210037

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-008 **Client Sample ID:** APW05

Matrix: GROUNDWATER **Collection Date:** 07/24/2023 13:52

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Magnesium	NELAP	0.0055	0.0500		**27.2**	mg/L	1	08/02/2023 17:14	210037
Potassium	NELAP	0.0400	0.100		**1.26**	mg/L	1	07/28/2023 20:44	210037
Silicon	*	0.0272	0.0500		**5.63**	mg/L	1	08/02/2023 17:14	210037
Sodium	NELAP	0.0180	0.0500		**129**	mg/L	1	08/02/2023 17:14	210037
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**50.4**	mg/L	1	07/26/2023 14:00	209945
Magnesium	NELAP	0.0060	0.0500		**25.4**	mg/L	1	07/26/2023 14:00	209945
Potassium	NELAP	0.0400	0.100		**1.55**	mg/L	1	07/26/2023 14:00	209945
Silicon	*	0.0272	0.0500	B	**6.23**	mg/L	1	07/26/2023 14:00	209945
Sodium	NELAP	0.0180	0.0500		**128**	mg/L	1	07/26/2023 14:00	209945
Sample result(s) for Si exceed 10 times the method blank contamination. Data is reportable per the TNI Standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.012	0.025	J	**0.016**	mg/L	5	09/16/2023 17:20	210037
Iron	NELAP	0.0115	0.0250		**1.31**	mg/L	5	09/16/2023 17:20	210037
Manganese	NELAP	0.0008	0.0020		**0.0275**	mg/L	5	09/16/2023 17:20	210037
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.206**	mg/L	5	09/16/2023 15:53	209945
Iron	NELAP	0.0115	0.0250		**2.18**	mg/L	5	09/16/2023 15:53	209945
Manganese	NELAP	0.0008	0.0020		**0.0375**	mg/L	5	09/16/2023 15:53	209945

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-009 **Client Sample ID:** APW05S

Matrix: GROUNDWATER **Collection Date:** 07/25/2023 12:53

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**0.164**	mg/L	1	07/25/2023 12:53	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**50**	NTU	1	07/25/2023 12:53	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**36**	mV	1	07/25/2023 12:53	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**19.5**	°C	1	07/25/2023 12:53	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.31**	mg/L	1	07/25/2023 12:53	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**6.88**		1	07/25/2023 12:53	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**541**	mg/L	1	07/27/2023 11:35	R333225
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/27/2023 11:35	R333225
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**541**	mg/L	1	07/27/2023 10:08	R333225
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/27/2023 10:08	R333225
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**3200**	mg/L	2.5	07/27/2023 9:28	R333268
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.011**	mg/L	1	07/26/2023 16:41	R333187
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.027**	mg/L	1	07/26/2023 17:38	R333187
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**0.021**	mg/L	1	07/26/2023 15:37	R333097
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**0.049**	mg/L	1	07/26/2023 15:37	R333097
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	307	500		**1720**	mg/L	50	07/31/2023 12:28	R334391
SW-846 9036 (TOTAL)									
Sulfate	NELAP	307	500		**1790**	mg/L	50	08/03/2023 17:02	R334559
SW-846 9050A									
Conductivity	NELAP	10	10		**3530**	µmhos/cm @25C	1	08/09/2023 10:42	R334775
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**2.8**	mg/L	1	08/10/2023 2:06	R334837
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**2.9**	mg/L	1	08/18/2023 18:15	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	2	20		**134**	mg/L	5	07/27/2023 13:41	R333281
SW-846 9251 (TOTAL)									
Chloride	NELAP	5	40		**123**	mg/L	10	08/01/2023 0:09	R334401
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100	S	**364**	mg/L	1	08/02/2023 16:58	210037

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-009 **Client Sample ID:** APW05S

Matrix: GROUNDWATER **Collection Date:** 07/25/2023 12:53

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Magnesium	NELAP	0.0055	0.0500	S	**287**	mg/L	1	08/02/2023 16:58	210037
Potassium	NELAP	0.0400	0.100		**1.72**	mg/L	1	07/28/2023 20:45	210037
Silicon	*	0.0272	0.0500	S	**10.3**	mg/L	1	08/02/2023 16:58	210037
Sodium	NELAP	0.0180	0.0500	S	**247**	mg/L	1	08/02/2023 16:58	210037
Matrix spike control limits are not applicable due to high sample/spike ratio.									
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**355**	mg/L	1	08/01/2023 18:05	210094
Magnesium	NELAP	0.0055	0.0500		**282**	mg/L	1	08/01/2023 18:05	210094
Potassium	NELAP	0.0400	0.100		**2.17**	mg/L	1	08/01/2023 18:05	210094
Silicon	*	0.0272	0.0500		**10.3**	mg/L	1	08/04/2023 12:14	210094
Sodium	NELAP	0.0180	0.0500		**257**	mg/L	1	08/01/2023 18:05	210094
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.012	0.025	J	**0.013**	mg/L	5	09/16/2023 17:41	210037
Iron	NELAP	0.0115	0.0250		**0.0562**	mg/L	5	09/16/2023 17:41	210037
Manganese	NELAP	0.0008	0.0020		**0.418**	mg/L	5	09/16/2023 17:41	210037
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.380**	mg/L	5	07/31/2023 16:08	210094
Iron	NELAP	0.0115	0.0250		**0.641**	mg/L	5	07/31/2023 16:08	210094
Manganese	NELAP	0.0008	0.0020	B	**0.467**	mg/L	5	07/31/2023 16:08	210094
Sample result for Mn exceed 10 times the method blank contamination. Data is reportable per the TNI Standard.									
CCV recovered outside the upper control limits for TL. Sample results are below the reporting limit. Data is reportable per the TNI standard.									

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-010 **Client Sample ID:** APW06

Matrix: GROUNDWATER **Collection Date:** 07/25/2023 12:22

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**0.678**	mg/L	1	07/25/2023 12:22	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**18**	NTU	1	07/25/2023 12:22	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**22**	mV	1	07/25/2023 12:22	R334750
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**647**	µS/cm	1	07/25/2023 12:22	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**14.5**	°C	1	07/25/2023 12:22	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.39**	mg/L	1	07/25/2023 12:22	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**7.70**		1	07/25/2023 12:22	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**466**	mg/L	1	07/27/2023 11:43	R333225
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/27/2023 11:43	R333225
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**456**	mg/L	1	07/27/2023 10:16	R333225
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/27/2023 10:16	R333225
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**540**	mg/L	2.5	07/27/2023 9:28	R333268
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	07/26/2023 16:43	R333187
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	07/26/2023 17:47	R333187
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**0.249**	mg/L	1	07/26/2023 15:37	R333097
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**0.246**	mg/L	1	07/26/2023 15:37	R333097
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	6	10		**13**	mg/L	1	07/31/2023 12:30	R334391
SW-846 9036 (TOTAL)									
Sulfate	NELAP	6	10		**17**	mg/L	1	08/02/2023 21:00	R334506
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**4.2**	mg/L	1	08/10/2023 2:14	R334837
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**4.5**	mg/L	1	08/18/2023 18:22	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	1	4		**24**	mg/L	1	07/27/2023 13:44	R333281
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**24**	mg/L	1	08/02/2023 21:00	R334538
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**55.8**	mg/L	1	08/02/2023 17:15	210037

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-010 **Client Sample ID:** APW06

Matrix: GROUNDWATER **Collection Date:** 07/25/2023 12:22

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Magnesium	NELAP	0.0055	0.0500		**25.6**	mg/L	1	08/02/2023 17:15	210037
Potassium	NELAP	0.0400	0.100		**1.26**	mg/L	1	07/28/2023 20:50	210037
Silicon	*	0.0272	0.0500		**6.67**	mg/L	1	08/02/2023 17:15	210037
Sodium	NELAP	0.0180	0.0500		**114**	mg/L	1	08/02/2023 17:15	210037
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100	S	**53.7**	mg/L	1	08/01/2023 18:06	210094
Magnesium	NELAP	0.0055	0.0500		**24.7**	mg/L	1	08/01/2023 18:06	210094
Potassium	NELAP	0.0400	0.100		**1.42**	mg/L	1	08/01/2023 18:06	210094
Silicon	*	0.0272	0.0500	S	**7.81**	mg/L	1	08/04/2023 12:37	210094
Sodium	NELAP	0.0180	0.0500	S	**115**	mg/L	1	08/01/2023 18:06	210094
Matrix spike control limits are not applicable due to high sample/spike ratio.									
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.0125	0.0250		**0.0259**	mg/L	5	09/16/2023 17:25	210037
Iron	NELAP	0.0115	0.0250		**0.683**	mg/L	5	09/16/2023 17:25	210037
Manganese	NELAP	0.0008	0.0020		**0.0486**	mg/L	5	09/16/2023 17:25	210037
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.0524**	mg/L	5	09/15/2023 23:08	210307
Iron	NELAP	0.0205	0.0250		**0.846**	mg/L	5	09/15/2023 23:08	210307
Manganese	NELAP	0.0008	0.0020		**0.0486**	mg/L	5	09/15/2023 23:08	210307
Matrix spike control limits are not applicable due to high sample/spike ratio.									

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-011 **Client Sample ID:** APW07

Matrix: GROUNDWATER **Collection Date:** 07/25/2023 10:10

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**2.293**	mg/L	1	07/25/2023 10:10	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**390**	NTU	1	07/25/2023 10:10	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**33**	mV	1	07/25/2023 10:10	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**15.8**	°C	1	07/25/2023 10:10	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**9.50**	mg/L	1	07/25/2023 10:10	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**7.35**		1	07/25/2023 10:10	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**502**	mg/L	1	07/27/2023 11:51	R333225
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/27/2023 11:51	R333225
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**493**	mg/L	1	07/27/2023 10:24	R333225
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/27/2023 10:24	R333225
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**605**	mg/L	2.5	07/27/2023 9:28	R333268
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.042**	mg/L	1	07/26/2023 16:45	R333187
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**0.236**	mg/L	1	07/26/2023 17:49	R333187
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**1.11**	mg/L	1	07/26/2023 15:37	R333097
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**1.47**	mg/L	1	07/26/2023 15:37	R333097
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	6	10		**19**	mg/L	1	07/27/2023 13:51	R333276
SW-846 9036 (TOTAL)									
Sulfate	NELAP	6	10		**23**	mg/L	1	08/02/2023 21:07	R334506
SW-846 9050A									
Conductivity	NELAP	10	10		**998**	umhos/cm @25C	1	08/09/2023 10:04	R334775
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**3.9**	mg/L	1	08/15/2023 1:38	R334982
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**4.2**	mg/L	1	08/18/2023 19:00	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	2	20		**65**	mg/L	5	07/27/2023 13:57	R333281
SW-846 9251 (TOTAL)									
Chloride	NELAP	5	40		**62**	mg/L	10	08/02/2023 21:14	R334538
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**94.5**	mg/L	1	08/02/2023 17:17	210037

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-011 **Client Sample ID:** APW07

Matrix: GROUNDWATER **Collection Date:** 07/25/2023 10:10

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Magnesium	NELAP	0.0055	0.0500		**35.7**	mg/L	1	08/02/2023 17:17	210037
Potassium	NELAP	0.0400	0.100		**1.50**	mg/L	1	07/28/2023 20:52	210037
Silicon	*	0.0272	0.0500		**7.29**	mg/L	1	08/02/2023 17:17	210037
Sodium	NELAP	0.0180	0.0500		**90.7**	mg/L	1	08/02/2023 17:17	210037
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**90.4**	mg/L	1	08/01/2023 18:08	210094
Magnesium	NELAP	0.0055	0.0500		**34.8**	mg/L	1	08/01/2023 18:08	210094
Potassium	NELAP	0.0400	0.100		**1.76**	mg/L	1	08/01/2023 18:08	210094
Silicon	*	0.0272	0.0500		**7.02**	mg/L	1	08/04/2023 12:14	210094
Sodium	NELAP	0.0180	0.0500		**91.2**	mg/L	1	08/01/2023 18:08	210094
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.0125	0.0250		**0.0329**	mg/L	5	09/16/2023 17:31	210037
Iron	NELAP	0.0115	0.0250		**2.36**	mg/L	5	09/16/2023 17:31	210037
Manganese	NELAP	0.0008	0.0020		**0.0224**	mg/L	5	09/16/2023 17:31	210037
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.427**	mg/L	5	07/31/2023 16:14	210094
Iron	NELAP	0.0115	0.0250		**3.42**	mg/L	5	07/31/2023 16:14	210094
Manganese	NELAP	0.0008	0.0020	B	**0.0412**	mg/L	5	07/31/2023 16:14	210094

Mn was detected in the MBLK at a level above the MDL and the RL. Sample result showed a low level of Mn. Sample results may be biased high by detectable levels in the MBLK. Sample is consumed.

CCV recovered outside the upper control limits for TL. Sample results are below the reporting limit. Data is reportable per the TNI standard.

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-012 **Client Sample ID:** APW08

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 15:09

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**5.765**	mg/L	1	07/31/2023 15:09	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**11**	NTU	1	07/31/2023 15:09	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**94**	mV	1	07/31/2023 15:09	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**17.5**	°C	1	07/31/2023 15:09	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.95**	mg/L	1	07/31/2023 15:09	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**7.08**		1	07/31/2023 15:09	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**511**	mg/L	1	08/01/2023 12:58	R334418
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 12:58	R334418
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**505**	mg/L	1	08/01/2023 13:54	R334418
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 13:54	R334418
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**600**	mg/L	2.5	08/02/2023 10:47	R334530
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.037**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**1.24**	mg/L	1	08/02/2023 12:56	R334477
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**1.66**	mg/L	1	08/02/2023 12:56	R334477
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	12	20		**53**	mg/L	2	08/03/2023 16:46	R334559
SW-846 9036 (TOTAL)									
Sulfate	NELAP	12	20		**53**	mg/L	2	08/04/2023 14:35	R334639
SW-846 9050A									
Conductivity	NELAP	10	10		**1050**	umhos/cm @25C	1	08/09/2023 10:14	R334775
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**3.5**	mg/L	1	08/15/2023 1:44	R334982
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**3.8**	mg/L	1	08/18/2023 19:06	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	5	40		**53**	mg/L	10	08/02/2023 19:30	R334538
SW-846 9251 (TOTAL)									
Chloride	NELAP	5	40		**56**	mg/L	10	08/03/2023 20:29	R334594
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**94.0**	mg/L	1	08/02/2023 16:35	210298

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-012 **Client Sample ID:** APW08

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 15:09

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Magnesium	NELAP	0.0087	0.0500		**39.3**	mg/L	1	08/02/2023 16:35	210298
Potassium	NELAP	0.0400	0.100		**1.75**	mg/L	1	08/02/2023 16:35	210298
Silicon	*	0.0272	0.0500		**6.06**	mg/L	1	08/02/2023 16:35	210298
Sodium	NELAP	0.0180	0.0500		**82.1**	mg/L	1	08/02/2023 16:35	210298
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**102**	mg/L	1	08/02/2023 11:26	210259
Magnesium	NELAP	0.0055	0.0500		**42.9**	mg/L	1	08/02/2023 11:26	210259
Potassium	NELAP	0.0400	0.100		**1.99**	mg/L	1	08/02/2023 11:26	210259
Silicon	*	0.0272	0.0500		**7.50**	mg/L	1	08/02/2023 16:11	210259
Sodium	NELAP	0.0180	0.0500		**85.2**	mg/L	1	08/02/2023 11:26	210259
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.0125	0.0250		**< 0.0250**	mg/L	5	09/16/2023 22:57	210298
Iron	NELAP	0.0115	0.0250		**3.24**	mg/L	5	09/16/2023 22:57	210298
Manganese	NELAP	0.0008	0.0020		**0.0585**	mg/L	5	09/16/2023 22:57	210298
CCV recovered outside the upper control limits for Al. Sample results are below the reporting limit. Data is reportable per the TNI standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.509**	mg/L	5	09/16/2023 13:21	210259
Iron	NELAP	0.0115	0.0250		**5.14**	mg/L	5	09/16/2023 13:21	210259
Manganese	NELAP	0.0008	0.0020		**0.0962**	mg/L	5	09/16/2023 13:21	210259
CCV recovered outside the upper control limits for Li. Sample results are below the reporting limit. Data is reportable per the TNI standard.									

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-013 **Client Sample ID:** APW09

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 13:32

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**6.366**	mg/L	1	07/31/2023 13:32	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**5.0**	NTU	1	07/31/2023 13:32	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**91**	mV	1	07/31/2023 13:32	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**17.9**	°C	1	07/31/2023 13:32	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.47**	mg/L	1	07/31/2023 13:32	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**7.20**		1	07/31/2023 13:32	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**605**	mg/L	1	08/01/2023 13:05	R334418
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 13:05	R334418
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**617**	mg/L	1	08/01/2023 14:01	R334418
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 14:01	R334418
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**805**	mg/L	2.5	08/02/2023 10:47	R334530
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**2.27**	mg/L	1	08/02/2023 12:56	R334477
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**4.27**	mg/L	1	08/02/2023 12:56	R334477
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	6	10		**21**	mg/L	1	08/02/2023 19:31	R334506
SW-846 9036 (TOTAL)									
Sulfate	NELAP	6	10		**19**	mg/L	1	08/03/2023 20:30	R334559
SW-846 9050A									
Conductivity	NELAP	10	10		**1360**	µmhos/cm @25C	1	08/09/2023 10:08	R334775
SW-846 9060A									
Dissolved Organic Carbon	NELAP	4.5	5.0		**8.0**	mg/L	10	08/14/2023 12:58	R334982
Total Organic Carbon (TOC)	NELAP	2.2	5.0	S	**9.2**	mg/L	5	08/18/2023 19:12	R335281
Matrix spike did not recover within control limits. Results verified by dilution.									
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	5	40		**132**	mg/L	10	08/02/2023 19:38	R334538
SW-846 9251 (TOTAL)									
Chloride	NELAP	5	40		**134**	mg/L	10	08/03/2023 20:37	R334594

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-013 **Client Sample ID:** APW09

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 13:32

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**74.9**	mg/L	1	08/02/2023 16:36	210298
Magnesium	NELAP	0.0087	0.0500		**37.1**	mg/L	1	08/02/2023 16:36	210298
Potassium	NELAP	0.0400	0.100		**1.78**	mg/L	1	08/02/2023 16:36	210298
Silicon	*	0.0272	0.0500		**5.95**	mg/L	1	08/02/2023 16:36	210298
Sodium	NELAP	0.0180	0.0500		**186**	mg/L	1	08/02/2023 16:36	210298
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**78.4**	mg/L	1	08/02/2023 11:26	210259
Magnesium	NELAP	0.0055	0.0500		**39.3**	mg/L	1	08/02/2023 11:26	210259
Potassium	NELAP	0.0400	0.100		**1.83**	mg/L	1	08/02/2023 11:26	210259
Silicon	*	0.0272	0.0500		**6.35**	mg/L	1	08/02/2023 16:11	210259
Sodium	NELAP	0.0180	0.0500		**191**	mg/L	1	08/02/2023 11:26	210259
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.0125	0.0250		**< 0.0250**	mg/L	5	09/16/2023 23:03	210298
Iron	NELAP	0.0115	0.0250		**3.20**	mg/L	5	09/16/2023 23:03	210298
Manganese	NELAP	0.0008	0.0020		**0.0294**	mg/L	5	09/16/2023 23:03	210298
CCV recovered outside the upper control limits for Al. Sample results are below the reporting limit. Data is reportable per the TNI standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.0761**	mg/L	5	09/16/2023 13:26	210259
Iron	NELAP	0.0115	0.0250		**3.74**	mg/L	5	09/16/2023 13:26	210259
Manganese	NELAP	0.0008	0.0020		**0.0342**	mg/L	5	09/16/2023 13:26	210259

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-014 **Client Sample ID:** APW10

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 11:26

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**3.611**	mg/L	1	07/31/2023 11:26	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**4.2**	NTU	1	07/31/2023 11:26	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**104**	mV	1	07/31/2023 11:26	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**17.1**	°C	1	07/31/2023 11:26	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**1.58**	mg/L	1	07/31/2023 11:26	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**7.07**		1	07/31/2023 11:26	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**413**	mg/L	1	08/01/2023 13:12	R334418
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 13:12	R334418
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**416**	mg/L	1	08/01/2023 14:09	R334418
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 14:09	R334418
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**1060**	mg/L	1	08/02/2023 10:48	R334530
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**0.513**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**0.557**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**< 0.010**	mg/L	1	08/02/2023 12:56	R334477
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**0.046**	mg/L	1	08/02/2023 12:56	R334477
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	61	100		**436**	mg/L	10	08/02/2023 19:45	R334506
SW-846 9036 (TOTAL)									
Sulfate	NELAP	61	100		**421**	mg/L	10	08/03/2023 20:44	R334559
SW-846 9050A									
Conductivity	NELAP	10	10		**1410**	µmhos/cm @25C	1	08/09/2023 10:17	R334775
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**2.9**	mg/L	1	08/14/2023 14:20	R334982
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**1.4**	mg/L	1	08/18/2023 19:50	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	1	4		**44**	mg/L	1	08/02/2023 19:40	R334538
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**45**	mg/L	1	08/03/2023 20:39	R334594
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**133**	mg/L	1	08/02/2023 16:37	210298

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-014 **Client Sample ID:** APW10

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 11:26

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Magnesium	NELAP	0.0087	0.0500		**66.3**	mg/L	1	08/02/2023 16:37	210298
Potassium	NELAP	0.0400	0.100		**1.59**	mg/L	1	08/02/2023 16:37	210298
Silicon	*	0.0272	0.0500		**7.41**	mg/L	1	08/02/2023 16:37	210298
Sodium	NELAP	0.0180	0.0500		**116**	mg/L	1	08/02/2023 16:37	210298
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100	S	**140**	mg/L	1	08/02/2023 11:40	210259
Magnesium	NELAP	0.0055	0.0500	S	**67.3**	mg/L	1	08/02/2023 11:40	210259
Potassium	NELAP	0.0400	0.100		**1.50**	mg/L	1	08/02/2023 11:40	210259
Silicon	*	0.0272	0.0500		**7.67**	mg/L	1	08/02/2023 16:24	210259
Sodium	NELAP	0.0180	0.0500	S	**112**	mg/L	1	08/02/2023 11:40	210259
Matrix spike control limits are not applicable due to high sample/spike ratio.									
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.012	0.025	J	**0.023**	mg/L	5	09/18/2023 16:46	210298
Iron	NELAP	0.0115	0.0250		**0.0949**	mg/L	5	09/16/2023 23:08	210298
Manganese	NELAP	0.0008	0.0020		**0.350**	mg/L	5	09/16/2023 23:08	210298
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.0751**	mg/L	5	09/16/2023 13:37	210259
Iron	NELAP	0.0115	0.0250		**0.139**	mg/L	5	09/16/2023 13:37	210259
Manganese	NELAP	0.0008	0.0020		**0.383**	mg/L	5	09/16/2023 13:37	210259
Matrix spike recovered outside upper control limits for Sb. Sample results are below the reporting limit. Data is reportable.									

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-015 **Client Sample ID:** APW11

Matrix: GROUNDWATER **Collection Date:** 07/24/2023 14:53

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**1.041**	mg/L	1	07/24/2023 14:53	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**130**	NTU	1	07/24/2023 14:53	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**-54**	mV	1	07/24/2023 14:53	R334750
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**1340**	µS/cm	1	07/24/2023 14:53	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**15.5**	°C	1	07/24/2023 14:53	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.31**	mg/L	1	07/24/2023 14:53	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**7.17**		1	07/24/2023 14:53	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**418**	mg/L	1	07/26/2023 11:37	R333138
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/26/2023 11:37	R333138
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**427**	mg/L	1	07/26/2023 10:43	R333138
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/26/2023 10:43	R333138
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**840**	mg/L	2.5	07/26/2023 9:18	R333199
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	07/25/2023 21:05	R333082
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.037**	mg/L	1	07/25/2023 21:05	R333082
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**0.021**	mg/L	1	07/26/2023 0:00	R333097
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**0.295**	mg/L	1	07/26/2023 0:00	R333097
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	61	100		**265**	mg/L	10	07/27/2023 14:21	R333276
SW-846 9036 (TOTAL)									
Sulfate	NELAP	61	100		**268**	mg/L	10	07/31/2023 14:47	R334391
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0	J	**0.7**	mg/L	1	08/14/2023 14:27	R334982
Total Organic Carbon (TOC)	NELAP	0.4	1.0	J	**0.8**	mg/L	1	08/18/2023 19:56	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	1	4		**25**	mg/L	1	07/27/2023 14:16	R333281
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**25**	mg/L	1	07/27/2023 17:33	R333281
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**128**	mg/L	1	08/02/2023 17:18	210037

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-015 **Client Sample ID:** APW11

Matrix: GROUNDWATER **Collection Date:** 07/24/2023 14:53

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Magnesium	NELAP	0.0055	0.0500		**55.6**	mg/L	1	08/02/2023 17:18	210037
Potassium	NELAP	0.0400	0.100		**1.27**	mg/L	1	07/28/2023 20:54	210037
Silicon	*	0.0272	0.0500		**9.54**	mg/L	1	08/02/2023 17:18	210037
Sodium	NELAP	0.0180	0.0500		**91.7**	mg/L	1	08/02/2023 17:18	210037
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**122**	mg/L	1	07/26/2023 14:02	209945
Magnesium	NELAP	0.0060	0.0500		**52.7**	mg/L	1	07/26/2023 14:02	209945
Potassium	NELAP	0.0400	0.100		**2.10**	mg/L	1	07/26/2023 14:02	209945
Silicon	*	0.0272	0.0500	B	**13.9**	mg/L	1	07/26/2023 14:02	209945
Sodium	NELAP	0.0180	0.0500		**89.5**	mg/L	1	07/26/2023 14:02	209945
Sample result(s) for Si exceed 10 times the method blank contamination. Data is reportable per the TNI Standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.012	0.025	J	**0.017**	mg/L	5	09/16/2023 17:36	210037
Iron	NELAP	0.0115	0.0250		**1.08**	mg/L	5	09/16/2023 17:36	210037
Manganese	NELAP	0.0008	0.0020		**0.947**	mg/L	5	09/16/2023 17:36	210037
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**1.59**	mg/L	5	09/16/2023 15:58	209945
Iron	NELAP	0.0115	0.0250		**7.75**	mg/L	5	09/16/2023 15:58	209945
Manganese	NELAP	0.0008	0.0020		**1.09**	mg/L	5	09/16/2023 15:58	209945

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-016 **Client Sample ID:** APW12

Matrix: GROUNDWATER **Collection Date:** 07/24/2023 15:23

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**0.362**	mg/L	1	07/24/2023 15:23	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**< 1.0**	NTU	1	07/24/2023 15:23	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**47**	mV	1	07/24/2023 15:23	R334750
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**2190**	µS/cm	1	07/24/2023 15:23	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**13.7**	°C	1	07/24/2023 15:23	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.40**	mg/L	1	07/24/2023 15:23	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**6.39**		1	07/24/2023 15:23	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**635**	mg/L	1	07/26/2023 11:44	R333138
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/26/2023 11:44	R333138
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**614**	mg/L	1	07/26/2023 10:51	R333138
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/26/2023 10:51	R333138
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**1700**	mg/L	1	07/26/2023 9:19	R333199
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.010**	mg/L	1	07/25/2023 21:05	R333082
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.027**	mg/L	1	07/25/2023 21:05	R333082
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**< 0.010**	mg/L	1	07/26/2023 0:00	R333097
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**< 0.010**	mg/L	1	07/26/2023 0:00	R333097
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	123	200		**668**	mg/L	20	07/31/2023 12:39	R334391
SW-846 9036 (TOTAL)									
Sulfate	NELAP	123	200		**655**	mg/L	20	07/31/2023 15:07	R334391
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**2.1**	mg/L	1	08/14/2023 14:33	R334982
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**2.0**	mg/L	1	08/18/2023 20:35	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	1	4		**26**	mg/L	1	07/27/2023 14:24	R333281
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**25**	mg/L	1	07/27/2023 18:10	R333281
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**249**	mg/L	1	08/02/2023 17:20	210037

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-016 **Client Sample ID:** APW12

Matrix: GROUNDWATER **Collection Date:** 07/24/2023 15:23

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Magnesium	NELAP	0.0055	0.0500		**115**	mg/L	1	08/02/2023 17:20	210037
Potassium	NELAP	0.0400	0.100		**1.01**	mg/L	1	07/28/2023 20:55	210037
Silicon	*	0.0272	0.0500		**15.8**	mg/L	1	08/02/2023 17:20	210037
Sodium	NELAP	0.0180	0.0500		**129**	mg/L	1	08/02/2023 17:20	210037
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**245**	mg/L	1	07/26/2023 14:22	209945
Magnesium	NELAP	0.0060	0.0500		**114**	mg/L	1	07/26/2023 14:22	209945
Potassium	NELAP	0.0400	0.100		**1.18**	mg/L	1	07/26/2023 14:22	209945
Silicon	*	0.0272	0.0500	B	**17.1**	mg/L	1	07/26/2023 14:22	209945
Sodium	NELAP	0.0180	0.0500		**129**	mg/L	1	07/26/2023 14:22	209945
Sample result(s) for Si exceed 10 times the method blank contamination. Data is reportable per the TNI Standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.012	0.025	J	**0.018**	mg/L	5	09/16/2023 18:20	210037
Iron	NELAP	0.0115	0.0250		**0.211**	mg/L	5	09/18/2023 11:53	210037
Manganese	NELAP	0.0008	0.0020		**1.40**	mg/L	5	09/18/2023 11:53	210037
CCV recovered outside the upper control limits for Al. Sample results are below the reporting limit. Data is reportable per the TNI standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.0402**	mg/L	5	09/16/2023 16:04	209945
Iron	NELAP	0.0115	0.0250		**0.366**	mg/L	5	09/16/2023 16:04	209945
Manganese	NELAP	0.0008	0.0020		**1.68**	mg/L	5	09/16/2023 16:04	209945

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-017 **Client Sample ID:** APW13

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 12:14

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**4.841**	mg/L	1	07/31/2023 12:14	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**5.8**	NTU	1	07/31/2023 12:14	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**109**	mV	1	07/31/2023 12:14	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**18.1**	°C	1	07/31/2023 12:14	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.56**	mg/L	1	07/31/2023 12:14	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**6.94**		1	07/31/2023 12:14	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**503**	mg/L	1	08/01/2023 13:19	R334418
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 13:19	R334418
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**504**	mg/L	1	08/01/2023 14:16	R334418
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 14:16	R334418
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**875**	mg/L	2.5	08/02/2023 10:48	R334530
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.041**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.048**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**< 0.010**	mg/L	1	08/02/2023 12:56	R334477
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**< 0.010**	mg/L	1	08/02/2023 12:56	R334477
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	61	100		**260**	mg/L	10	08/02/2023 20:09	R334506
SW-846 9036 (TOTAL)									
Sulfate	NELAP	61	100		**233**	mg/L	10	08/03/2023 21:05	R334559
SW-846 9050A									
Conductivity	NELAP	10	10		**1290**	umhos/cm @25C	1	08/09/2023 10:13	R334775
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**1.3**	mg/L	1	08/14/2023 14:39	R334982
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**1.0**	mg/L	1	08/18/2023 20:41	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	5	40		**53**	mg/L	10	08/02/2023 20:10	R334538
SW-846 9251 (TOTAL)									
Chloride	NELAP	5	40		**48**	mg/L	10	08/03/2023 21:06	R334594
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**112**	mg/L	1	08/02/2023 16:38	210298

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-017 **Client Sample ID:** APW13

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 12:14

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Magnesium	NELAP	0.0087	0.0500		**57.3**	mg/L	1	08/02/2023 16:38	210298
Potassium	NELAP	0.0400	0.100		**1.86**	mg/L	1	08/02/2023 16:38	210298
Silicon	*	0.0272	0.0500		**8.15**	mg/L	1	08/02/2023 16:38	210298
Sodium	NELAP	0.0180	0.0500		**118**	mg/L	1	08/02/2023 16:38	210298
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**121**	mg/L	1	08/02/2023 11:42	210259
Magnesium	NELAP	0.0055	0.0500		**61.7**	mg/L	1	08/02/2023 11:42	210259
Potassium	NELAP	0.0400	0.100		**1.94**	mg/L	1	08/02/2023 11:42	210259
Silicon	*	0.0272	0.0500		**8.82**	mg/L	1	08/02/2023 16:12	210259
Sodium	NELAP	0.0180	0.0500		**122**	mg/L	1	08/02/2023 11:42	210259
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.012	0.025	J	**0.016**	mg/L	5	09/16/2023 23:13	210298
Iron	NELAP	0.0115	0.0250		**1.44**	mg/L	5	09/16/2023 23:13	210298
Manganese	NELAP	0.0008	0.0020		**0.598**	mg/L	5	09/16/2023 23:13	210298
CCV recovered outside the upper control limits for Al. Sample results are below the reporting limit. Data is reportable per the TNI standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.0849**	mg/L	5	09/16/2023 13:31	210259
Iron	NELAP	0.0115	0.0250		**2.56**	mg/L	5	09/16/2023 13:31	210259
Manganese	NELAP	0.0008	0.0020		**0.846**	mg/L	5	09/16/2023 13:31	210259

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-018 **Client Sample ID:** APW14

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 12:33

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**overrange**	mg/L	1	07/31/2023 12:33	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**7.7**	NTU	1	07/31/2023 12:33	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**117**	mV	1	07/31/2023 12:33	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**16.2**	°C	1	07/31/2023 12:33	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.45**	mg/L	1	07/31/2023 12:33	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**7.04**		1	07/31/2023 12:33	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**453**	mg/L	1	08/01/2023 13:26	R334418
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 13:26	R334418
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**450**	mg/L	1	08/01/2023 14:23	R334418
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 14:23	R334418
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**990**	mg/L	2.5	08/02/2023 11:11	R334530
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**0.064**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**0.108**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**< 0.010**	mg/L	1	08/02/2023 12:56	R334477
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**< 0.010**	mg/L	1	08/02/2023 12:56	R334477
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	61	100		**377**	mg/L	10	08/02/2023 20:17	R334506
SW-846 9036 (TOTAL)									
Sulfate	NELAP	61	100		**370**	mg/L	10	08/03/2023 21:13	R334559
SW-846 9050A									
Conductivity	NELAP	10	10		**1420**	umhos/cm @25C	1	08/09/2023 10:11	R334775
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0	J	**0.9**	mg/L	1	08/14/2023 14:45	R334982
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**1.4**	mg/L	1	08/18/2023 20:47	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	1	4		**42**	mg/L	1	08/02/2023 20:12	R334538
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**42**	mg/L	1	08/03/2023 21:09	R334594
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**125**	mg/L	1	08/02/2023 16:38	210298

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-018 **Client Sample ID:** APW14

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 12:33

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Magnesium	NELAP	0.0087	0.0500		**64.4**	mg/L	1	08/02/2023 16:38	210298
Potassium	NELAP	0.0400	0.100		**1.97**	mg/L	1	08/02/2023 16:38	210298
Silicon	*	0.0272	0.0500		**7.08**	mg/L	1	08/02/2023 16:38	210298
Sodium	NELAP	0.0180	0.0500		**124**	mg/L	1	08/02/2023 16:38	210298
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**133**	mg/L	1	08/02/2023 11:43	210259
Magnesium	NELAP	0.0055	0.0500		**67.6**	mg/L	1	08/02/2023 11:43	210259
Potassium	NELAP	0.0400	0.100		**2.00**	mg/L	1	08/02/2023 11:43	210259
Silicon	*	0.0272	0.0500		**8.03**	mg/L	1	08/02/2023 16:13	210259
Sodium	NELAP	0.0180	0.0500		**126**	mg/L	1	08/02/2023 11:43	210259
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.0125	0.0250		**0.0283**	mg/L	5	09/18/2023 18:08	210298
Iron	NELAP	0.0115	0.0250		**3.13**	mg/L	5	09/17/2023 0:24	210298
Manganese	NELAP	0.0008	0.0020		**0.207**	mg/L	5	09/17/2023 0:24	210298
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.230**	mg/L	5	09/16/2023 14:48	210259
Iron	NELAP	0.0115	0.0250		**4.45**	mg/L	5	09/16/2023 14:48	210259
Manganese	NELAP	0.0008	0.0020		**0.244**	mg/L	5	09/16/2023 14:48	210259

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-019 **Client Sample ID:** APW15

Matrix: GROUNDWATER **Collection Date:** 08/01/2023 8:39

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**overrange**	mg/L	1	08/01/2023 8:39	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**130**	NTU	1	08/01/2023 8:39	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**-62**	mV	1	08/01/2023 8:39	R334750
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**2570**	µS/cm	1	08/01/2023 8:39	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**15.2**	°C	1	08/01/2023 8:39	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.49**	mg/L	1	08/01/2023 8:39	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**6.92**		1	08/01/2023 8:39	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**742**	mg/L	1	08/03/2023 11:41	R334529
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/03/2023 11:41	R334529
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**742**	mg/L	1	08/03/2023 10:35	R334529
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/03/2023 10:35	R334529
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**1120**	mg/L	2.5	08/03/2023 10:28	R334586
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	08/02/2023 15:07	R334535
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**0.620**	mg/L	1	08/02/2023 15:41	R334535
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**1.44**	mg/L	1	08/02/2023 12:56	R334477
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**1.75**	mg/L	1	08/02/2023 12:56	R334477
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	6	10		**14**	mg/L	1	08/03/2023 23:05	R334559
SW-846 9036 (TOTAL)									
Sulfate	NELAP	6	10		**16**	mg/L	1	08/05/2023 1:58	R334639
SW-846 9060A									
Dissolved Organic Carbon	NELAP	4.5	10.0		**26.2**	mg/L	10	08/24/2023 19:31	R335506
Total Organic Carbon (TOC)	NELAP	4.5	10.0		**33.4**	mg/L	10	08/24/2023 17:37	R335506
Sample result exceeds 10 times the CCB contamination. Data is reportable per the TNI Standard.									
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	5	40		**244**	mg/L	10	08/03/2023 23:11	R334594
SW-846 9251 (TOTAL)									
Chloride	NELAP	5	40		**235**	mg/L	10	08/08/2023 12:16	R334776

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-019 **Client Sample ID:** APW15

Matrix: GROUNDWATER **Collection Date:** 08/01/2023 8:39

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**90.6**	mg/L	1	08/09/2023 17:33	210567
Magnesium	NELAP	0.0055	0.0500		**36.1**	mg/L	1	08/09/2023 17:33	210567
Potassium	NELAP	0.0400	0.100		**3.05**	mg/L	1	08/09/2023 17:33	210567
Silicon	*	0.0272	0.0500		**7.02**	mg/L	1	08/09/2023 17:33	210567
Sodium	NELAP	0.0180	0.0500		**275**	mg/L	1	08/09/2023 17:33	210567
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**100**	mg/L	1	08/04/2023 10:55	210307
Magnesium	NELAP	0.0055	0.0500		**39.9**	mg/L	1	08/04/2023 10:55	210307
Potassium	NELAP	0.0400	0.100		**3.35**	mg/L	1	08/04/2023 10:55	210307
Silicon	*	0.0272	0.0500		**10.3**	mg/L	1	08/04/2023 10:55	210307
Sodium	NELAP	0.0180	0.0500		**298**	mg/L	1	08/04/2023 10:55	210307
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.012	0.025	J	**0.019**	mg/L	5	09/14/2023 1:47	210567
Iron	NELAP	0.0115	0.0250		**10.5**	mg/L	5	09/14/2023 1:47	210567
Manganese	NELAP	0.0008	0.0020		**0.0865**	mg/L	5	09/14/2023 1:47	210567
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**2.10**	mg/L	5	09/15/2023 23:51	210307
Iron	NELAP	0.0575	0.125		**17.6**	mg/L	25	09/18/2023 8:21	210307
Manganese	NELAP	0.0008	0.0020		**0.151**	mg/L	5	09/15/2023 23:51	210307

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-020 **Client Sample ID:** APW16

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 15:37

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**5.594**	mg/L	1	07/31/2023 15:37	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**3.2**	NTU	1	07/31/2023 15:37	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**108**	mV	1	07/31/2023 15:37	R334750
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**946**	µS/cm	1	07/31/2023 15:37	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**14.2**	°C	1	07/31/2023 15:37	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**1.14**	mg/L	1	07/31/2023 15:37	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**7.13**		1	07/31/2023 15:37	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**643**	mg/L	1	08/01/2023 13:33	R334418
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 13:33	R334418
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**628**	mg/L	1	08/01/2023 14:29	R334418
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/01/2023 14:29	R334418
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**665**	mg/L	2.5	08/02/2023 11:11	R334530
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	08/01/2023 16:41	R334435
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**1.47**	mg/L	1	08/02/2023 12:56	R334477
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**4.11**	mg/L	1	08/02/2023 12:56	R334477
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	6	10		**17**	mg/L	1	08/02/2023 20:19	R334506
SW-846 9036 (TOTAL)									
Sulfate	NELAP	6	10		**14**	mg/L	1	08/03/2023 21:15	R334559
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**6.5**	mg/L	1	08/14/2023 14:59	R334982
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**6.9**	mg/L	1	08/18/2023 21:31	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	5	40		**63**	mg/L	10	08/02/2023 20:26	R334538
SW-846 9251 (TOTAL)									
Chloride	NELAP	5	40		**64**	mg/L	10	08/03/2023 21:22	R334594
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**89.2**	mg/L	1	08/02/2023 16:39	210298

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-020 **Client Sample ID:** APW16

Matrix: GROUNDWATER **Collection Date:** 07/31/2023 15:37

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Magnesium	NELAP	0.0087	0.0500		**40.2**	mg/L	1	08/02/2023 16:39	210298
Potassium	NELAP	0.0400	0.100		**1.93**	mg/L	1	08/02/2023 16:39	210298
Silicon	*	0.0272	0.0500		**5.21**	mg/L	1	08/02/2023 16:39	210298
Sodium	NELAP	0.0180	0.0500		**132**	mg/L	1	08/02/2023 16:39	210298
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**94.0**	mg/L	1	08/02/2023 11:44	210259
Magnesium	NELAP	0.0055	0.0500		**42.7**	mg/L	1	08/02/2023 11:44	210259
Potassium	NELAP	0.0400	0.100		**1.96**	mg/L	1	08/02/2023 11:44	210259
Silicon	*	0.0272	0.0500		**5.67**	mg/L	1	08/02/2023 16:26	210259
Sodium	NELAP	0.0180	0.0500		**135**	mg/L	1	08/02/2023 11:44	210259
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.012	0.025	J	**0.013**	mg/L	5	09/17/2023 0:29	210298
Iron	NELAP	0.0115	0.0250		**2.89**	mg/L	5	09/17/2023 0:29	210298
Manganese	NELAP	0.0008	0.0020		**0.0270**	mg/L	5	09/17/2023 0:29	210298
CCV recovered outside the upper control limits for Al. Sample results are below the reporting limit. Data is reportable per the TNI standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.0550**	mg/L	5	09/16/2023 14:53	210259
Iron	NELAP	0.0115	0.0250		**2.85**	mg/L	5	09/16/2023 14:53	210259
Manganese	NELAP	0.0008	0.0020		**0.0247**	mg/L	5	09/16/2023 14:53	210259
CCV recovered outside the upper control limits for Li. Sample results are below the reporting limit. Data is reportable per the TNI standard.									

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-021 **Client Sample ID:** APW17

Matrix: GROUNDWATER **Collection Date:** 07/25/2023 10:36

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**3.197**	mg/L	1	07/25/2023 10:36	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**4.5**	NTU	1	07/25/2023 10:36	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**50**	mV	1	07/25/2023 10:36	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**16.6**	°C	1	07/25/2023 10:36	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.51**	mg/L	1	07/25/2023 10:36	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**6.94**		1	07/25/2023 10:36	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**544**	mg/L	1	07/27/2023 11:59	R333225
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/27/2023 11:59	R333225
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**534**	mg/L	1	07/27/2023 10:32	R333225
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/27/2023 10:32	R333225
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**670**	mg/L	2.5	07/27/2023 10:22	R333268
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	07/26/2023 17:01	R333187
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.250		**1.99**	mg/L	1	07/26/2023 17:51	R333187
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**1.60**	mg/L	1	07/26/2023 15:37	R333097
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**1.93**	mg/L	1	07/26/2023 15:37	R333097
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	31	50		**63**	mg/L	5	07/27/2023 14:37	R333276
SW-846 9036 (TOTAL)									
Sulfate	NELAP	12	20		**56**	mg/L	2	08/03/2023 17:32	R334559
SW-846 9050A									
Conductivity	NELAP	10	10		**1100**	umhos/cm @25C	1	08/09/2023 10:05	R334775
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**3.2**	mg/L	1	08/14/2023 16:08	R334982
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**4.1**	mg/L	1	08/18/2023 22:10	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	2	20		**58**	mg/L	5	07/27/2023 14:37	R333281
SW-846 9251 (TOTAL)									
Chloride	NELAP	5	40		**53**	mg/L	10	08/02/2023 21:30	R334538
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**109**	mg/L	1	08/02/2023 17:22	210037

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-021 **Client Sample ID:** APW17

Matrix: GROUNDWATER **Collection Date:** 07/25/2023 10:36

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Magnesium	NELAP	0.0055	0.0500		**44.1**	mg/L	1	08/02/2023 17:22	210037
Potassium	NELAP	0.0400	0.100		**1.55**	mg/L	1	07/28/2023 20:57	210037
Silicon	*	0.0272	0.0500		**6.71**	mg/L	1	08/02/2023 17:22	210037
Sodium	NELAP	0.0180	0.0500		**86.6**	mg/L	1	08/02/2023 17:22	210037
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**106**	mg/L	1	08/01/2023 18:12	210094
Magnesium	NELAP	0.0055	0.0500		**44.7**	mg/L	1	08/01/2023 18:12	210094
Potassium	NELAP	0.0400	0.100		**1.83**	mg/L	1	08/01/2023 18:12	210094
Silicon	*	0.0272	0.0500		**6.09**	mg/L	1	08/04/2023 17:00	210094
Sodium	NELAP	0.0180	0.0500		**90.1**	mg/L	1	08/01/2023 18:12	210094
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.0125	0.0250		**< 0.0250**	mg/L	5	09/16/2023 18:25	210037
Iron	NELAP	0.0115	0.0250		**2.18**	mg/L	5	09/18/2023 12:25	210037
Manganese	NELAP	0.0008	0.0020		**0.0191**	mg/L	5	09/18/2023 12:25	210037
CCV recovered outside the upper control limits for Al. Sample results are below the reporting limit. Data is reportable per the TNI standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.012	0.025	J	**0.024**	mg/L	5	07/31/2023 16:21	210094
Iron	NELAP	0.0115	0.0250		**2.57**	mg/L	5	07/31/2023 16:21	210094
Manganese	NELAP	0.0008	0.0020	B	**0.0233**	mg/L	5	07/31/2023 16:21	210094
Mn was detected in the MBLK at a level above the MDL and the RL. Sample result showed a low level of Mn. Sample results may be biased high by detectable levels in the MBLK. Sample is consumed.									
CCV recovered outside the upper control limits for TL. Sample results are below the reporting limit. Data is reportable per the TNI standard.									

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-022 **Client Sample ID:** APW18

Matrix: GROUNDWATER **Collection Date:** 07/25/2023 9:42

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**1.422**	mg/L	1	07/25/2023 10:04	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**3.6**	NTU	1	07/25/2023 10:04	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**48**	mV	1	07/25/2023 10:04	R334750
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**756**	µS/cm	1	07/25/2023 10:04	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**14.4**	°C	1	07/25/2023 10:04	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.52**	mg/L	1	07/25/2023 10:04	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**7.22**		1	07/25/2023 10:04	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**516**	mg/L	1	07/27/2023 12:07	R333225
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/27/2023 12:07	R333225
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**517**	mg/L	1	07/27/2023 10:41	R333225
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/27/2023 10:41	R333225
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**535**	mg/L	2.5	07/27/2023 10:23	R333268
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	07/26/2023 17:09	R333187
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.039**	mg/L	1	07/26/2023 17:53	R333187
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**0.860**	mg/L	1	07/26/2023 15:37	R333097
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**0.860**	mg/L	1	07/26/2023 15:37	R333097
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	6	10		**46**	mg/L	1	07/27/2023 14:38	R333276
SW-846 9036 (TOTAL)									
Sulfate	NELAP	12	20		**49**	mg/L	2	08/03/2023 17:43	R334559
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**3.9**	mg/L	1	08/14/2023 16:15	R334982
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**4.4**	mg/L	1	08/18/2023 22:16	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	1	4		**25**	mg/L	1	07/27/2023 14:40	R333281
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4	S	**26**	mg/L	1	08/02/2023 21:35	R334538

Matrix spike did not recover within control limits due to matrix interference.

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-022 **Client Sample ID:** APW18

Matrix: GROUNDWATER **Collection Date:** 07/25/2023 9:42

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**66.6**	mg/L	1	07/28/2023 21:08	210037
Magnesium	NELAP	0.0055	0.0500		**33.2**	mg/L	1	07/28/2023 21:08	210037
Potassium	NELAP	0.0400	0.100		**2.38**	mg/L	1	07/28/2023 21:08	210037
Silicon	*	0.0272	0.0500		**6.08**	mg/L	1	08/02/2023 17:23	210037
Sodium	NELAP	0.0180	0.0500		**106**	mg/L	1	08/02/2023 17:23	210037
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**73.2**	mg/L	1	08/01/2023 18:13	210094
Magnesium	NELAP	0.0055	0.0500		**36.8**	mg/L	1	08/01/2023 18:13	210094
Potassium	NELAP	0.0400	0.100		**2.76**	mg/L	1	08/01/2023 18:13	210094
Silicon	*	0.0272	0.0500		**5.77**	mg/L	1	08/04/2023 12:40	210094
Sodium	NELAP	0.0180	0.0500		**107**	mg/L	1	08/01/2023 18:13	210094
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.012	0.025	J	**0.016**	mg/L	5	09/16/2023 18:30	210037
Iron	NELAP	0.0115	0.0250		**1.40**	mg/L	5	09/18/2023 12:31	210037
Manganese	NELAP	0.0008	0.0020		**0.0453**	mg/L	5	09/18/2023 12:31	210037
CCV recovered outside the upper control limits for Al. Sample results are below the reporting limit. Data is reportable per the TNI standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.0953**	mg/L	5	07/31/2023 16:27	210094
Iron	NELAP	0.0115	0.0250		**1.82**	mg/L	5	07/31/2023 16:27	210094
Manganese	NELAP	0.0008	0.0020	B	**0.0791**	mg/L	5	07/31/2023 16:27	210094
Sample result for Mn exceed 10 times the method blank contamination. Data is reportable per the TNI Standard.									
CCV recovered outside the upper control limits for TL. Sample results are below the reporting limit. Data is reportable per the TNI standard.									

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-102 **Client Sample ID:** XPW01

Matrix: GROUNDWATER **Collection Date:** 07/24/2023 12:30

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**0.571**	mg/L	1	07/24/2023 12:30	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**14**	NTU	1	07/24/2023 12:30	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**-290**	mV	1	07/24/2023 12:30	R334750
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**12500**	µS/cm	1	07/24/2023 12:30	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**17.3**	°C	1	07/24/2023 12:30	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.15**	mg/L	1	07/24/2023 12:30	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**12.7**		1	07/24/2023 12:30	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/27/2023 14:55	R333219
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**714**	mg/L	1	07/27/2023 14:55	R333219
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	07/25/2023 21:05	R333082
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.042**	mg/L	1	07/25/2023 21:05	R333082
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**0.301**	mg/L	1	07/26/2023 0:00	R333097
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**0.396**	mg/L	1	07/26/2023 0:00	R333097
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	614	1000		**2300**	mg/L	100	08/02/2023 18:15	R334506
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.9	2.0	H	**13.7**	mg/L	2	08/24/2023 19:37	R335506
Total Organic Carbon (TOC)	NELAP	0.9	2.0	S	**12.0**	mg/L	2	08/18/2023 22:41	R335281
Sample required re-extraction out of hold time.									
Matrix spike did not recover within control limits. Result is verified by reanalysis.									
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.04	0.10		**4.18**	mg/L	1	07/26/2023 12:18	R333087
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	2	20		**46**	mg/L	5	07/27/2023 15:49	R333281
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**8.73**	mg/L	1	07/28/2023 21:18	210037
Magnesium	NELAP	0.0055	0.0500		**0.0709**	mg/L	1	07/28/2023 21:18	210037
Potassium	NELAP	0.400	1.00		**37.5**	mg/L	10	07/28/2023 21:16	210037
Silicon	*	0.136	0.250		**75.1**	mg/L	5	08/02/2023 17:25	210037
Sodium	NELAP	0.0900	0.250		**2250**	mg/L	5	08/02/2023 17:25	210037
Elevated reporting limit for Fe due to high levels of target and/or non-target analytes.									
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Silicon	*	0.272	0.500	B	**84.0**	mg/L	10	07/31/2023 13:37	209945

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-102 **Client Sample ID:** XPW01

Matrix: GROUNDWATER **Collection Date:** 07/24/2023 12:30

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Sample result(s) for Si exceed 10 times the method blank contamination. Data is reportable per the TNI Standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.0125	0.0250		**10.3**	mg/L	5	09/18/2023 12:58	210037
Iron	NELAP	0.0115	0.0250		**0.0699**	mg/L	5	09/18/2023 12:58	210037
Manganese	NELAP	0.0008	0.0020		**< 0.0020**	mg/L	5	09/16/2023 18:58	210037
CCV recovered outside the upper control limits for Mn. Sample results are below the reporting limit. Data is reportable per the TNI standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**13.7**	mg/L	5	09/16/2023 16:09	209945
Antimony	NELAP	0.0004	0.0010	J	**0.0010**	mg/L	5	08/02/2023 0:41	209945
Arsenic	NELAP	0.0004	0.0010		**0.0641**	mg/L	5	09/16/2023 16:09	209945
Barium	NELAP	0.0007	0.0010		**0.0448**	mg/L	5	09/16/2023 16:09	209945
Beryllium	NELAP	0.0002	0.0010		**< 0.0010**	mg/L	5	09/16/2023 16:09	209945
Boron	NELAP	0.0092	0.0250		**13.3**	mg/L	5	09/16/2023 16:09	209945
Cadmium	NELAP	0.0002	0.0010		**< 0.0010**	mg/L	5	09/16/2023 16:09	209945
Chromium	NELAP	0.0007	0.0015		**0.0086**	mg/L	5	09/16/2023 16:09	209945
Cobalt	NELAP	0.0001	0.0010		**0.0010**	mg/L	5	08/02/2023 0:41	209945
Iron	NELAP	0.0115	0.0250		**0.658**	mg/L	5	09/16/2023 16:09	209945
Lead	NELAP	0.0006	0.0010		**0.0018**	mg/L	5	09/18/2023 11:42	209945
Lithium	*	0.0015	0.0030		**0.0545**	mg/L	5	08/02/2023 0:41	209945
Manganese	NELAP	0.0008	0.0020		**0.0084**	mg/L	5	09/16/2023 16:09	209945
Molybdenum	*	0.0006	0.0015		**0.185**	mg/L	5	09/16/2023 16:09	209945
Selenium	NELAP	0.0006	0.0010		**0.0483**	mg/L	5	08/02/2023 0:41	209945
Thallium	NELAP	0.0010	0.0020		**< 0.0020**	mg/L	5	08/02/2023 0:41	209945
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.00006	0.00020		**0.00953**	mg/L	1	07/26/2023 15:15	209946

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-103 **Client Sample ID:** XPW02

Matrix: GROUNDWATER **Collection Date:** 07/24/2023 11:30

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**0.193**	mg/L	1	07/24/2023 11:30	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**1.2**	NTU	1	07/24/2023 11:30	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**-106**	mV	1	07/24/2023 11:30	R334750
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**562**	µS/cm	1	07/24/2023 11:30	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**17.0**	°C	1	07/24/2023 11:30	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.43**	mg/L	1	07/24/2023 11:30	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**9.50**		1	07/24/2023 11:30	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**22**	mg/L	1	07/26/2023 12:00	R333138
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**23**	mg/L	1	07/26/2023 12:00	R333138
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	07/25/2023 21:05	R333082
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.033**	mg/L	1	07/25/2023 21:05	R333082
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**0.316**	mg/L	1	07/26/2023 0:00	R333097
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**0.316**	mg/L	1	07/26/2023 0:00	R333097
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	31	50		**201**	mg/L	5	07/27/2023 16:20	R333276
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**2.8**	mg/L	1	08/14/2023 16:27	R334982
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**3.4**	mg/L	1	08/18/2023 23:01	R335281
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.04	0.10		**0.46**	mg/L	1	07/26/2023 12:19	R333087
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	1	4		**17**	mg/L	1	07/27/2023 16:16	R333281
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**25.0**	mg/L	1	07/28/2023 21:21	210037
Magnesium	NELAP	0.0055	0.0500		**0.191**	mg/L	1	07/28/2023 21:21	210037
Potassium	NELAP	0.400	1.00		**14.8**	mg/L	10	07/28/2023 21:19	210037
Silicon	*	0.0272	0.0500		**3.90**	mg/L	1	08/02/2023 17:35	210037
Sodium	NELAP	0.0180	0.0500		**68.1**	mg/L	1	08/02/2023 17:35	210037
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Silicon	*	0.0272	0.0500	BS	**3.90**	mg/L	1	07/26/2023 14:28	209945

Sample result(s) for Si exceed 10 times the method blank contamination. Data is reportable per the TNI Standard.

Matrix spike control limits are not applicable due to high sample/spike ratio.

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-103 **Client Sample ID:** XPW02

Matrix: GROUNDWATER **Collection Date:** 07/24/2023 11:30

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.0125	0.0250		**0.410**	mg/L	5	09/18/2023 13:03	210037
Iron	NELAP	0.0115	0.0250		**0.0348**	mg/L	5	09/18/2023 13:03	210037
Manganese	NELAP	0.0008	0.0020	J	**0.0015**	mg/L	5	09/16/2023 19:03	210037
CCV recovered outside the upper control limits for Mn. Sample results are below the reporting limit. Data is reportable per the TNI standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.422**	mg/L	5	09/16/2023 16:20	209945
Antimony	NELAP	0.0004	0.0010	J	**0.0006**	mg/L	5	07/28/2023 7:54	209945
Arsenic	NELAP	0.0004	0.0010		**0.0619**	mg/L	5	09/16/2023 16:20	209945
Barium	NELAP	0.0007	0.0010		**0.0138**	mg/L	5	09/16/2023 16:20	209945
Beryllium	NELAP	0.0002	0.0010		**< 0.0010**	mg/L	5	09/16/2023 16:20	209945
Boron	NELAP	0.0092	0.0250		**1.70**	mg/L	5	09/16/2023 16:20	209945
Cadmium	NELAP	0.0002	0.0010		**< 0.0010**	mg/L	5	09/16/2023 16:20	209945
Chromium	NELAP	0.0007	0.0015	J	**0.0008**	mg/L	5	09/16/2023 16:20	209945
Cobalt	NELAP	0.0001	0.0010		**< 0.0010**	mg/L	5	07/28/2023 7:54	209945
Iron	NELAP	0.0115	0.0250		**0.0441**	mg/L	5	09/16/2023 16:20	209945
Lead	NELAP	0.0006	0.0010		**< 0.0010**	mg/L	5	09/16/2023 16:20	209945
Lithium	*	0.0015	0.0030		**0.0207**	mg/L	5	07/28/2023 7:54	209945
Manganese	NELAP	0.0008	0.0020		**0.0021**	mg/L	5	09/16/2023 16:20	209945
Molybdenum	*	0.0006	0.0015		**0.0491**	mg/L	5	09/16/2023 16:20	209945
Selenium	NELAP	0.0006	0.0010	J	**0.0007**	mg/L	5	07/28/2023 7:54	209945
Thallium	NELAP	0.0010	0.0020		**< 0.0020**	mg/L	5	07/28/2023 7:54	209945
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.00006	0.00020		**< 0.00020**	mg/L	1	07/27/2023 8:46	209946

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-104 **Client Sample ID:** XPW03

Matrix: GROUNDWATER **Collection Date:** 07/26/2023 14:33

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**3.239**	mg/L	1	07/26/2023 14:33	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**7.0**	NTU	1	07/26/2023 14:33	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**-75**	mV	1	07/26/2023 14:33	R334750
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**2420**	µS/cm	1	07/26/2023 14:33	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**16.7**	°C	1	07/26/2023 14:33	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.59**	mg/L	1	07/26/2023 14:33	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**11.5**		1	07/26/2023 14:33	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/28/2023 9:14	R333270
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**118**	mg/L	1	07/28/2023 9:14	R333270
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.100		**1.26**	mg/L	1	07/27/2023 16:17	R333252
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	07/27/2023 16:22	R333252
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**< 0.010**	mg/L	1	07/28/2023 12:59	R333282
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**< 0.010**	mg/L	1	07/28/2023 12:59	R333282
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	61	100		**136**	mg/L	10	07/31/2023 23:04	R334391
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**3.2**	mg/L	1	08/14/2023 16:34	R334982
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**2.6**	mg/L	1	08/14/2023 23:51	R334982
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.37	1.00		**1.11**	mg/L	10	07/28/2023 11:03	R333259
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	1	4		**21**	mg/L	1	07/31/2023 23:00	R334401
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**20.6**	mg/L	1	08/01/2023 17:32	210142
Magnesium	NELAP	0.0055	0.0500		**< 0.0500**	mg/L	1	08/01/2023 17:32	210142
Potassium	NELAP	0.400	1.00		**21.1**	mg/L	10	08/03/2023 13:31	210142
Silicon	*	0.272	0.500		**10.8**	mg/L	10	08/04/2023 12:13	210142
Sodium	NELAP	0.0180	0.0500		**178**	mg/L	1	08/01/2023 17:32	210142
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Silicon	*	0.272	0.500		**12.0**	mg/L	10	08/04/2023 12:41	210094
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.0125	0.0250		**12.4**	mg/L	5	09/18/2023 16:19	210142
Iron	NELAP	0.012	0.025	J	**0.012**	mg/L	5	09/18/2023 16:19	210142

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-104 **Client Sample ID:** XPW03

Matrix: GROUNDWATER **Collection Date:** 07/26/2023 14:33

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Manganese	NELAP	0.0008	0.0020		**< 0.0020**	mg/L	5	09/18/2023 16:19	210142
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**14.6**	mg/L	5	07/31/2023 16:34	210094
Antimony	NELAP	0.0004	0.0010	J	**0.0005**	mg/L	5	07/29/2023 10:02	210094
Arsenic	NELAP	0.0004	0.0010		**0.0500**	mg/L	5	07/29/2023 10:02	210094
Barium	NELAP	0.0007	0.0010		**0.0603**	mg/L	5	07/29/2023 10:02	210094
Beryllium	NELAP	0.0002	0.0010		**< 0.0010**	mg/L	5	07/31/2023 16:34	210094
Boron	NELAP	0.0092	0.0250		**1.77**	mg/L	5	07/31/2023 16:34	210094
Cadmium	NELAP	0.0002	0.0010		**< 0.0010**	mg/L	5	07/29/2023 10:02	210094
Chromium	NELAP	0.0007	0.0015		**< 0.0015**	mg/L	5	07/31/2023 16:34	210094
Cobalt	NELAP	0.0001	0.0010	J	**0.0002**	mg/L	5	07/31/2023 16:34	210094
Iron	NELAP	0.0115	0.0250		**0.238**	mg/L	5	07/31/2023 16:34	210094
Lead	NELAP	0.0006	0.0010		**< 0.0010**	mg/L	5	07/29/2023 10:02	210094
Lithium	*	0.0015	0.0030		**0.121**	mg/L	5	08/02/2023 4:12	210094
Manganese	NELAP	0.0008	0.0020	B	**0.0023**	mg/L	5	07/31/2023 16:34	210094
Molybdenum	*	0.0006	0.0015		**0.122**	mg/L	5	07/29/2023 10:02	210094
Selenium	NELAP	0.0006	0.0010		**< 0.0010**	mg/L	5	08/02/2023 4:12	210094
Thallium	NELAP	0.0010	0.0020		**< 0.0020**	mg/L	5	07/29/2023 10:02	210094

Mn was detected in the MBLK at a level above the MDL and the RL. Sample result showed a low level of Mn. Sample results may be biased high by detectable levels in the MBLK. Sample is consumed.

SW-846 7470A (TOTAL)									
Mercury	NELAP	0.00006	0.00020		**< 0.00020**	mg/L	1	08/01/2023 9:57	210195

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-105 **Client Sample ID:** XPW04

Matrix: GROUNDWATER **Collection Date:** 07/24/2023 13:00

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**0.127**	mg/L	1	07/24/2023 13:00	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**8.4**	NTU	1	07/24/2023 13:00	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**-226**	mV	1	07/24/2023 13:00	R334750
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**17700**	µS/cm	1	07/24/2023 13:00	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**16.9**	°C	1	07/24/2023 13:00	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.42**	mg/L	1	07/24/2023 13:00	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**12.5**		1	07/24/2023 13:00	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/26/2023 12:05	R333138
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**337**	mg/L	1	07/26/2023 12:05	R333138
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**0.140**	mg/L	1	07/25/2023 21:05	R333082
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**0.181**	mg/L	1	07/25/2023 21:05	R333082
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**0.169**	mg/L	1	07/26/2023 0:00	R333097
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**0.243**	mg/L	1	07/26/2023 0:00	R333097
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	1230	2000		**8980**	mg/L	200	08/02/2023 12:58	R334506
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.9	2.0	H	**13.6**	mg/L	2	08/24/2023 19:50	R335506
Total Organic Carbon (TOC)	NELAP	0.9	2.0	H	**13.7**	mg/L	2	08/24/2023 18:46	R335506
Sample required re-analysis out of hold time.									
Sample result exceeds 10 times the CCB contamination. Data is reportable per the TNI Standard.									
Sample required re-analysis out of hold time.									
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.04	0.10		**1.54**	mg/L	1	07/26/2023 12:21	R333087
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	2	20		**191**	mg/L	5	07/27/2023 16:37	R333281
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**87.9**	mg/L	1	07/28/2023 21:35	210037
Magnesium	NELAP	0.0055	0.0500		**0.135**	mg/L	1	07/28/2023 21:35	210037
Potassium	NELAP	0.400	1.00		**87.7**	mg/L	10	07/28/2023 21:33	210037
Silicon	*	0.136	0.250		**37.7**	mg/L	5	08/02/2023 17:39	210037
Sodium	NELAP	0.180	0.500		**4530**	mg/L	10	08/11/2023 12:43	210037
Sample result(s) for Na exceed 10 times the CCB. Data is reportable per the TNI Standard.									
Elevated reporting limit for Fe due to high levels of target and/or non-target analytes.									

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-105 **Client Sample ID:** XPW04

Matrix: GROUNDWATER **Collection Date:** 07/24/2023 13:00

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Silicon	*	0.544	1.00	B	**43.5**	mg/L	20	07/31/2023 13:34	209945
Sample result(s) for Na exceed 10 times the CCB. Data is reportable per the TNI Standard.									
Sample result(s) for Si exceed 10 times the method blank contamination. Data is reportable per the TNI Standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**7.39**	mg/L	5	09/16/2023 16:15	209945
Antimony	NELAP	0.0004	0.0010	J	**0.0006**	mg/L	5	08/02/2023 0:48	209945
Arsenic	NELAP	0.0004	0.0010		**0.0699**	mg/L	5	09/16/2023 16:15	209945
Barium	NELAP	0.0007	0.0010		**0.0749**	mg/L	5	09/16/2023 16:15	209945
Beryllium	NELAP	0.0002	0.0010		**< 0.0010**	mg/L	5	09/16/2023 16:15	209945
Boron	NELAP	0.0092	0.0250		**4.57**	mg/L	5	09/16/2023 16:15	209945
Cadmium	NELAP	0.0002	0.0010	J	**0.0002**	mg/L	5	09/16/2023 16:15	209945
Chromium	NELAP	0.0007	0.0015		**0.0435**	mg/L	5	09/16/2023 16:15	209945
Cobalt	NELAP	0.0001	0.0010	J	**0.0005**	mg/L	5	08/02/2023 0:48	209945
Iron	NELAP	0.0115	0.0250		**0.242**	mg/L	5	09/16/2023 16:15	209945
Lead	NELAP	0.0006	0.0010		**< 0.0010**	mg/L	5	09/18/2023 11:47	209945
Lithium	*	0.0015	0.0030		**0.0324**	mg/L	5	08/02/2023 0:48	209945
Manganese	NELAP	0.0008	0.0020		**0.0030**	mg/L	5	09/16/2023 16:15	209945
Molybdenum	*	0.0006	0.0015		**0.676**	mg/L	5	09/16/2023 16:15	209945
Selenium	NELAP	0.0006	0.0010		**0.140**	mg/L	5	08/02/2023 0:48	209945
Thallium	NELAP	0.0010	0.0020		**< 0.0020**	mg/L	5	08/02/2023 0:48	209945
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.00006	0.00020		**< 0.00020**	mg/L	1	07/26/2023 15:20	209946

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-107 **Client Sample ID:** Field Blank

Matrix: AQUEOUS **Collection Date:** 08/01/2023 15:09

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**2**	mg/L	1	08/03/2023 11:49	R334529
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/03/2023 11:49	R334529
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**1**	mg/L	1	08/03/2023 11:33	R334529
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/03/2023 11:33	R334529
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**< 20**	mg/L	1	08/03/2023 11:11	R334586
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	08/02/2023 15:38	R334535
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050		**< 0.050**	mg/L	1	08/02/2023 15:43	R334535
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**< 0.010**	mg/L	1	08/02/2023 12:56	R334477
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**< 0.010**	mg/L	1	08/02/2023 12:56	R334477
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	6	10	J	**7**	mg/L	1	08/03/2023 22:58	R334559
SW-846 9036 (TOTAL)									
Sulfate	NELAP	6	10	J	**6**	mg/L	1	08/05/2023 2:19	R334639
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**< 1.0**	mg/L	1	08/14/2023 16:46	R334982
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**< 1.0**	mg/L	1	08/15/2023 0:03	R334982
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.04	0.10		**< 0.10**	mg/L	1	08/04/2023 11:09	R334593
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	1	4		**< 4**	mg/L	1	08/03/2023 22:58	R334594
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**< 4**	mg/L	1	08/05/2023 2:18	R334646
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**< 0.100**	mg/L	1	08/09/2023 19:06	210567
Magnesium	NELAP	0.0055	0.050	J	**0.0086**	mg/L	1	08/09/2023 19:06	210567
Potassium	NELAP	0.0400	0.100		**< 0.100**	mg/L	1	08/09/2023 19:06	210567
Silicon	*	0.0272	0.0500		**< 0.0500**	mg/L	1	08/09/2023 19:06	210567
Sodium	NELAP	0.0180	0.0500		**< 0.0500**	mg/L	1	08/09/2023 19:06	210567
CCV for Ca recovered outside the upper control limits. Sample results are below the reporting limit. Data is reportable per the TNI standard.									
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100		**0.243**	mg/L	1	08/04/2023 10:40	210307
Magnesium	NELAP	0.0055	0.0500		**0.0896**	mg/L	1	08/04/2023 10:40	210307
Potassium	NELAP	0.0400	0.100		**< 0.100**	mg/L	1	08/04/2023 10:40	210307
Silicon	*	0.027	0.050	J	**0.030**	mg/L	1	08/04/2023 10:40	210307
Sodium	NELAP	0.0180	0.0500		**0.134**	mg/L	1	08/04/2023 10:40	210307
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.0125	0.0250		**< 0.0250**	mg/L	5	09/14/2023 2:08	210567

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-107 **Client Sample ID:** Field Blank

Matrix: AQUEOUS **Collection Date:** 08/01/2023 15:09

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	0.0115	0.0250		**< 0.0250**	mg/L	5	09/14/2023 2:08	210567
Manganese	NELAP	0.0008	0.0020		**< 0.0020**	mg/L	5	09/14/2023 2:08	210567
PQL recovered outside upper control limits for B. Sample results are below the reporting limit. Data is reportable per the TNI Standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.012	0.025	J	**0.022**	mg/L	5	09/16/2023 2:01	210307
Antimony	NELAP	0.0004	0.0010		**< 0.0010**	mg/L	5	08/04/2023 8:28	210307
Arsenic	NELAP	0.0004	0.0010		**< 0.0010**	mg/L	5	09/16/2023 2:01	210307
Barium	NELAP	0.0007	0.0010		**0.0012**	mg/L	5	09/16/2023 2:01	210307
Beryllium	NELAP	0.0002	0.0010		**< 0.0010**	mg/L	5	09/18/2023 8:53	210307
Boron	NELAP	0.0092	0.0250		**< 0.0250**	mg/L	5	09/18/2023 8:53	210307
Cadmium	NELAP	0.0002	0.0010		**< 0.0010**	mg/L	5	09/16/2023 2:01	210307
Chromium	NELAP	0.0007	0.0015	J	**0.0007**	mg/L	5	09/16/2023 2:01	210307
Cobalt	NELAP	0.0001	0.0010	J	**0.0002**	mg/L	5	08/04/2023 8:28	210307
Iron	NELAP	0.012	0.025	J	**0.014**	mg/L	5	09/16/2023 2:01	210307
Lead	NELAP	0.0006	0.0010		**< 0.0010**	mg/L	5	09/16/2023 2:01	210307
Lithium	*	0.0015	0.0030		**< 0.0030**	mg/L	5	08/04/2023 8:28	210307
Manganese	NELAP	0.0008	0.0020		**< 0.0020**	mg/L	5	09/16/2023 2:01	210307
Molybdenum	*	0.0006	0.0015		**< 0.0015**	mg/L	5	09/18/2023 8:53	210307
Selenium	NELAP	0.0006	0.0010		**< 0.0010**	mg/L	5	08/04/2023 8:28	210307
Thallium	NELAP	0.0010	0.0020		**< 0.0020**	mg/L	5	08/04/2023 8:28	210307
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.00006	0.00020		**< 0.00020**	mg/L	1	08/04/2023 9:56	210306

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-116 **Client Sample ID:** APW02 (resample)

Matrix: GROUNDWATER **Collection Date:** 08/17/2023 11:23

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**underrange**	mg/L	1	08/17/2023 11:23	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**17**	NTU	1	08/17/2023 11:23	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**93**	mV	1	08/17/2023 11:23	R334750
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**8440**	µS/cm	1	08/17/2023 11:23	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**17.5**	°C	1	08/17/2023 11:23	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**1.60**	mg/L	1	08/17/2023 11:23	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**6.72**		1	08/17/2023 11:23	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**611**	mg/L	1	08/18/2023 13:49	R335230
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/18/2023 13:49	R335230
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**614**	mg/L	1	08/18/2023 13:41	R335230
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/18/2023 13:41	R335230
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**3660**	mg/L	1	08/21/2023 10:24	R335351
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.034**	mg/L	1	08/18/2023 15:18	R335253
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.040**	mg/L	1	08/18/2023 15:23	R335253
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**< 0.010**	mg/L	1	08/18/2023 14:35	R335237
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**0.061**	mg/L	1	08/18/2023 14:35	R335237
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	614	1000		**2900**	mg/L	100	08/23/2023 16:04	R335452
SW-846 9036 (TOTAL)									
Sulfate	NELAP	614	1000		**2860**	mg/L	100	08/23/2023 23:44	R335452
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**3.6**	mg/L	1	08/19/2023 0:10	R335281
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**4.1**	mg/L	1	08/19/2023 0:23	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	5	40		**97**	mg/L	10	08/21/2023 15:21	R335354
SW-846 9251 (TOTAL)									
Chloride	NELAP	5	40		**102**	mg/L	10	08/23/2023 23:40	R335479
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100		**491**	mg/L	1	08/18/2023 17:27	211033

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-116 **Client Sample ID:** APW02 (resample)

Matrix: GROUNDWATER **Collection Date:** 08/17/2023 11:23

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Magnesium	NELAP	0.0055	0.0500		**441**	mg/L	1	08/18/2023 17:27	211033
Potassium	NELAP	0.0400	0.100		**6.79**	mg/L	1	08/18/2023 17:27	211033
Silicon	*	0.0272	0.0500		**7.86**	mg/L	1	08/18/2023 17:27	211033
Sodium	NELAP	0.0180	0.0500		**402**	mg/L	1	08/18/2023 17:27	211033
Elevated reporting limit for Fe and Zn due to high levels of target and/or non-target analytes.									
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100	S	**475**	mg/L	1	08/23/2023 12:29	211213
Magnesium	NELAP	0.0055	0.0500	S	**429**	mg/L	1	08/23/2023 12:29	211213
Potassium	NELAP	0.0400	0.100		**6.43**	mg/L	1	08/23/2023 12:29	211213
Silicon	*	0.0272	0.0500	BS	**8.98**	mg/L	1	08/23/2023 12:29	211213
Sodium	NELAP	0.0180	0.0500	BS	**394**	mg/L	1	08/23/2023 12:29	211213
Sample result(s) for Na and Si exceed 10 times the method blank contamination. Data is reportable per the TNI Standard.									
Matrix spike control limits are not applicable due to high sample/spike ratio.									
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.0125	0.0250		**< 0.0250**	mg/L	5	09/17/2023 1:46	211033
Iron	NELAP	0.012	0.025	J	**0.021**	mg/L	5	09/17/2023 1:46	211033
Manganese	NELAP	0.0008	0.0020		**0.120**	mg/L	5	09/17/2023 1:46	211033
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250	B	**0.346**	mg/L	5	08/31/2023 17:44	211213
Iron	NELAP	0.0115	0.0250		**0.760**	mg/L	5	08/31/2023 17:44	211213
Manganese	NELAP	0.0008	0.0020		**0.287**	mg/L	5	08/31/2023 17:44	211213
LCS recovered outside upper control limits for Pb. Sample results are below the reporting limit. Data is reportable per the TNI Standard.									
Sample result for Al exceed 10 times the method blank contamination. Data is reportable per the TNI Standard.									
Matrix spike recovered outside upper control limits for Sb. Sample results are below the reporting limit. Data is reportable.									

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-117 **Client Sample ID:** APW02 Duplicate (resample)

Matrix: GROUNDWATER **Collection Date:** 08/17/2023 11:23

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FERROUS IRON BY CHEMETS KIT									
Ferrous Iron	*	0.100	0.100		**underrange**	mg/L	1	08/17/2023 11:23	R334750
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**17**	NTU	1	08/17/2023 11:23	R334750
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**93**	mV	1	08/17/2023 11:23	R334750
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**8440**	µS/cm	1	08/17/2023 11:23	R334750
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**17.5**	°C	1	08/17/2023 11:23	R334750
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**1.60**	mg/L	1	08/17/2023 11:23	R334750
SW-846 9040B FIELD									
pH	*	0	1.00		**6.72**		1	08/17/2023 11:23	R334750
STANDARD METHODS 2320 B (DISSOLVED) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**610**	mg/L	1	08/18/2023 14:06	R335230
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/18/2023 14:06	R335230
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**609**	mg/L	1	08/18/2023 13:57	R335230
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/18/2023 13:57	R335230
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**3210**	mg/L	1	08/21/2023 10:24	R335351
STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.035**	mg/L	1	08/18/2023 15:21	R335253
STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011									
Nitrogen, Nitrate (as N)	NELAP	0.009	0.050	J	**0.041**	mg/L	1	08/18/2023 15:25	R335253
STANDARD METHODS 4500-P E (DISSOLVED) 1999									
Phosphorus, Orthophosphate, Dissolved (as PO4)	*	0.005	0.010		**< 0.010**	mg/L	1	08/18/2023 14:35	R335237
STANDARD METHODS 4500-P E 1999									
Phosphorus, Orthophosphate (as PO4)	NELAP	0.005	0.010		**0.043**	mg/L	1	08/18/2023 14:35	R335237
SW-846 9036 (DISSOLVED)									
Sulfate	NELAP	614	1000		**2860**	mg/L	100	08/22/2023 0:56	R335341
SW-846 9036 (TOTAL)									
Sulfate	NELAP	614	1000		**2980**	mg/L	100	08/23/2023 23:53	R335452
SW-846 9060A									
Dissolved Organic Carbon	NELAP	0.4	1.0		**3.7**	mg/L	1	08/19/2023 0:16	R335281
Total Organic Carbon (TOC)	NELAP	0.4	1.0		**4.0**	mg/L	1	08/19/2023 0:29	R335281
SW-846 9251 (DISSOLVED)									
Chloride	NELAP	5	40		**102**	mg/L	10	08/23/2023 16:25	R335479
SW-846 9251 (TOTAL)									
Chloride	NELAP	5	40		**104**	mg/L	10	08/23/2023 23:48	R335479
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Calcium	NELAP	0.0350	0.100	S	**492**	mg/L	1	08/18/2023 17:13	211033

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Lab ID: 23070389-117 **Client Sample ID:** APW02 Duplicate (resample)

Matrix: GROUNDWATER **Collection Date:** 08/17/2023 11:23

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)									
Magnesium	NELAP	0.0055	0.0500	S	**448**	mg/L	1	08/18/2023 17:13	211033
Potassium	NELAP	0.0400	0.100		**6.71**	mg/L	1	08/18/2023 17:13	211033
Silicon	*	0.0272	0.0500	S	**7.89**	mg/L	1	08/18/2023 17:13	211033
Sodium	NELAP	0.0180	0.0500	S	**398**	mg/L	1	08/18/2023 17:13	211033
Matrix spike control limits are not applicable due to high sample/spike ratio.									
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.0350	0.100	B	**537**	mg/L	1	08/21/2023 19:25	211034
Magnesium	NELAP	0.0055	0.0500		**492**	mg/L	1	08/21/2023 19:25	211034
Potassium	NELAP	0.0400	0.100		**7.69**	mg/L	1	08/21/2023 19:25	211034
Silicon	*	0.0272	0.0500	B	**10.2**	mg/L	1	08/23/2023 9:59	211034
Sodium	NELAP	0.0180	0.0500		**473**	mg/L	1	08/21/2023 19:25	211034
Sample result(s) for Si exceed 10 times the method blank contamination. Data is reportable per the TNI Standard.									
Sample result(s) for Ca exceed 10 times the method blank contamination. Data is reportable per the TNI Standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Aluminum	NELAP	0.0125	0.0250		**< 0.0250**	mg/L	5	09/17/2023 1:51	211033
Iron	NELAP	0.012	0.025	J	**0.025**	mg/L	5	09/17/2023 1:51	211033
Manganese	NELAP	0.0008	0.0020		**0.140**	mg/L	5	09/17/2023 1:51	211033
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Aluminum	NELAP	0.0125	0.0250		**0.361**	mg/L	5	09/20/2023 13:30	212096
Iron	NELAP	0.0115	0.0250		**0.921**	mg/L	5	09/16/2023 14:42	211034
Manganese	NELAP	0.0008	0.0020		**0.0916**	mg/L	5	09/20/2023 13:30	212096

Client: Ramboll
Client Project: NEW-23Q3

Work Order: 23070389
Report Date: 13-Nov-23

Lab Sample ID	Client Sample ID	Matrix	Fractions	Collection Date
23070389-006	APW03	Groundwater	6	07/31/2023 13:47
23070389-007	APW04	Groundwater	6	07/31/2023 11:53
23070389-008	APW05	Groundwater	6	07/24/2023 13:52
23070389-009	APW05S	Groundwater	6	07/25/2023 12:53
23070389-010	APW06	Groundwater	6	07/25/2023 12:22
23070389-011	APW07	Groundwater	6	07/25/2023 10:10
23070389-012	APW08	Groundwater	6	07/31/2023 15:09
23070389-013	APW09	Groundwater	6	07/31/2023 13:32
23070389-014	APW10	Groundwater	6	07/31/2023 11:26
23070389-015	APW11	Groundwater	6	07/24/2023 14:53
23070389-016	APW12	Groundwater	6	07/24/2023 15:23
23070389-017	APW13	Groundwater	6	07/31/2023 12:14
23070389-018	APW14	Groundwater	6	07/31/2023 12:33
23070389-019	APW15	Groundwater	6	08/01/2023 8:39
23070389-020	APW16	Groundwater	6	07/31/2023 15:37
23070389-021	APW17	Groundwater	6	07/25/2023 10:36
23070389-022	APW18	Groundwater	6	07/25/2023 9:42
23070389-102	XPW01	Groundwater	6	07/24/2023 12:30
23070389-103	XPW02	Groundwater	6	07/24/2023 11:30
23070389-104	XPW03	Groundwater	6	07/26/2023 14:33
23070389-105	XPW04	Groundwater	6	07/24/2023 13:00
23070389-107	Field Blank	Aqueous	8	08/01/2023 15:09
23070389-116	APW02 (resample)	Groundwater	6	08/17/2023 11:23
23070389-117	APW02 Duplicate (resample)	Groundwater	6	08/17/2023 11:23

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
23070389-006A	APW03	07/31/2023 13:47	08/01/2023 8:05		
	Ferrous Iron by CHEMets Kit				07/31/2023 13:47
	Field Elevation Measurements				07/31/2023 13:47
	Standard Methods 2130 B Field				07/31/2023 13:47
	Standard Methods 18th Ed. 2580 B Field				07/31/2023 13:47
	Standard Methods 2320 B (Total) 1997, 2011				08/01/2023 13:40
	Standard Methods 2320 B 1997, 2011				08/01/2023 13:40
	Standard Methods 2540 C (Total) 1997, 2011				08/02/2023 9:32
	Standard Methods 2550 B Field				07/31/2023 13:47
	Standard Methods 4500-NO2 B (Total) 2000, 2011				08/01/2023 17:28
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 14:51
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 16:41
	Standard Methods 4500-O G Field				07/31/2023 13:47
	Standard Methods 4500-P E 1999				08/03/2023 11:05
	Standard Methods 4500-P E 1999, 2011				08/03/2023 11:08
	SW-846 9036 (Total)				08/04/2023 14:05
	SW-846 9040B Field				07/31/2023 13:47
	SW-846 9050A				08/09/2023 10:19
	SW-846 9214 (Total)				08/02/2023 12:49
	SW-846 9251 (Total)				08/03/2023 19:38
23070389-006B	APW03	07/31/2023 13:47	08/01/2023 8:05		
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 12:45
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 12:45
	Standard Methods 2550 B Field				07/31/2023 13:47
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				08/01/2023 17:24
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 14:14
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 16:41
	Standard Methods 4500-P E (Dissolved) 1999, 2011				08/01/2023 14:05
	Standard Methods 4500-P E (Dissolved) 1999				08/02/2023 12:56
	SW-846 9036 (Dissolved)				08/02/2023 19:13
	SW-846 9251 (Dissolved)				08/02/2023 19:08
23070389-006C	APW03	07/31/2023 13:47	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 11:24
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 16:09
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	08/04/2023 10:03
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	09/16/2023 13:10
	SW-846 7470A (Total)			08/01/2023 10:30	08/02/2023 9:04

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
23070389-006D	APW03	07/31/2023 13:47	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/02/2023 10:31	08/02/2023 16:29
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/02/2023 10:31	09/16/2023 22:46
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/02/2023 10:31	09/19/2023 10:27
23070389-006E	APW03	07/31/2023 13:47	08/01/2023 8:05		
	SW-846 9060A				08/18/2023 17:56
23070389-006F	APW03	07/31/2023 13:47	08/01/2023 8:05		
	SW-846 9060A				08/10/2023 1:47
23070389-007A	APW04	07/31/2023 11:53	08/01/2023 8:05		
	Ferrous Iron by CHEMets Kit				07/31/2023 11:53
	Field Elevation Measurements				07/31/2023 11:53
	Standard Methods 2130 B Field				07/31/2023 11:53
	Standard Methods 18th Ed. 2580 B Field				07/31/2023 11:53
	Standard Methods 2320 B (Total) 1997, 2011				08/01/2023 13:47
	Standard Methods 2320 B 1997, 2011				08/01/2023 13:47
	Standard Methods 2540 C (Total) 1997, 2011				08/02/2023 10:47
	Standard Methods 2550 B Field				07/31/2023 11:53
	Standard Methods 4500-NO2 B (Total) 2000, 2011				08/01/2023 17:28
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 14:53
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 16:41
	Standard Methods 4500-O G Field				07/31/2023 11:53
	Standard Methods 4500-P E 1999				08/02/2023 12:56
	Standard Methods 4500-P E 1999, 2011				08/01/2023 13:41
	SW-846 9036 (Total)				08/04/2023 14:31
	SW-846 9040B Field				07/31/2023 11:53
	SW-846 9050A				08/09/2023 10:22
	SW-846 9214 (Total)				08/02/2023 12:51
	SW-846 9251 (Total)				08/03/2023 20:15
23070389-007B	APW04	07/31/2023 11:53	08/01/2023 8:05		
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 12:51
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 12:51
	Standard Methods 2550 B Field				07/31/2023 11:53
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				08/01/2023 17:24
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 14:16
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 16:41
	Standard Methods 4500-P E (Dissolved) 1999, 2011				08/01/2023 14:07
	Standard Methods 4500-P E (Dissolved) 1999				08/02/2023 12:56

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	SW-846 9036 (Dissolved)				08/03/2023 16:38
	SW-846 9251 (Dissolved)				08/02/2023 19:16
23070389-007C	APW04	07/31/2023 11:53	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 11:25
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 16:10
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	08/04/2023 12:20
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	09/16/2023 13:15
	SW-846 7470A (Total)			08/01/2023 10:30	08/02/2023 9:11
23070389-007D	APW04	07/31/2023 11:53	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/02/2023 10:31	08/02/2023 16:30
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/02/2023 10:31	09/16/2023 22:52
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/02/2023 10:31	09/19/2023 13:41
23070389-007E	APW04	07/31/2023 11:53	08/01/2023 8:05		
	SW-846 9060A				08/18/2023 18:02
23070389-007F	APW04	07/31/2023 11:53	08/01/2023 8:05		
	SW-846 9060A				08/10/2023 1:53
23070389-008A	APW05	07/24/2023 13:52	07/25/2023 8:40		
	Ferrous Iron by CHEMets Kit				07/24/2023 13:52
	Field Elevation Measurements				07/24/2023 13:52
	Standard Methods 2130 B Field				07/24/2023 13:52
	Standard Methods 18th Ed. 2580 B Field				07/24/2023 13:52
	Standard Methods 2320 B (Total) 1997, 2011				07/26/2023 10:36
	Standard Methods 2320 B 1997, 2011				07/26/2023 10:36
	Standard Methods 2510 B Field				07/24/2023 13:52
	Standard Methods 2540 C (Total) 1997, 2011				07/26/2023 9:18
	Standard Methods 2550 B Field				07/24/2023 13:52
	Standard Methods 4500-NO2 B (Total) 2000, 2011				07/25/2023 15:43
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/25/2023 19:19
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/25/2023 21:05
	Standard Methods 4500-O G Field				07/24/2023 13:52
	Standard Methods 4500-P E 1999				07/26/2023 0:00
	Standard Methods 4500-P E 1999, 2011				07/26/2023 7:33
	SW-846 9036 (Total)				07/27/2023 17:21
	SW-846 9040B Field				07/24/2023 13:52
	SW-846 9214 (Total)				07/26/2023 12:13
	SW-846 9251 (Total)				07/27/2023 17:22
23070389-008B	APW05	07/24/2023 13:52	07/25/2023 8:40		

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/26/2023 11:29
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/26/2023 11:29
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				07/25/2023 15:45
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/25/2023 19:52
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/25/2023 21:05
	Standard Methods 4500-P E (Dissolved) 1999, 2011				07/26/2023 7:34
	Standard Methods 4500-P E (Dissolved) 1999				07/26/2023 0:00
	SW-846 9036 (Dissolved)				07/31/2023 12:14
	SW-846 9251 (Dissolved)				07/27/2023 13:28
23070389-008C	APW05	07/24/2023 13:52	07/25/2023 8:40		
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/25/2023 17:45	07/26/2023 14:00
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/25/2023 17:45	08/02/2023 0:22
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/25/2023 17:45	09/16/2023 15:53
	SW-846 7470A (Total)			07/25/2023 18:14	07/26/2023 14:59
23070389-008D	APW05	07/24/2023 13:52	07/25/2023 8:40		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	07/28/2023 20:44
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	08/02/2023 17:14
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/26/2023 16:58	09/16/2023 17:20
23070389-008E	APW05	07/24/2023 13:52	07/25/2023 8:40		
	SW-846 9060A				08/18/2023 18:09
23070389-008F	APW05	07/24/2023 13:52	07/25/2023 8:40		
	SW-846 9060A				08/10/2023 2:00
23070389-009A	APW05S	07/25/2023 12:53	07/26/2023 8:15		
	Ferrous Iron by CHEMets Kit				07/25/2023 12:53
	Field Elevation Measurements				07/25/2023 12:53
	Standard Methods 2130 B Field				07/25/2023 12:53
	Standard Methods 18th Ed. 2580 B Field				07/25/2023 12:53
	Standard Methods 2320 B (Total) 1997, 2011				07/27/2023 10:08
	Standard Methods 2320 B 1997, 2011				07/27/2023 10:08
	Standard Methods 2540 C (Total) 1997, 2011				07/27/2023 9:28
	Standard Methods 2550 B Field				07/25/2023 12:53
	Standard Methods 4500-NO2 B (Total) 2000, 2011				07/26/2023 18:53
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/26/2023 17:38
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/26/2023 17:38
	Standard Methods 4500-O G Field				07/25/2023 12:53
	Standard Methods 4500-P E 1999				07/26/2023 15:37
	Standard Methods 4500-P E 1999, 2011				07/26/2023 15:26

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Sample ID	Client Sample ID	Collection Date	Received Date	Prep Date/Time	Analysis Date/Time
	Test Name				
	SW-846 9036 (Total)				08/03/2023 17:02
	SW-846 9040B Field				07/25/2023 12:53
	SW-846 9050A				08/09/2023 10:42
	SW-846 9214 (Total)				07/27/2023 9:44
	SW-846 9251 (Total)				08/01/2023 0:09
23070389-009B	APW05S	07/25/2023 12:53	07/26/2023 8:15		
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/27/2023 11:35
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/27/2023 11:35
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				07/26/2023 18:42
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/26/2023 16:41
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/26/2023 16:41
	Standard Methods 4500-P E (Dissolved) 1999, 2011				07/26/2023 15:33
	Standard Methods 4500-P E (Dissolved) 1999				07/26/2023 15:37
	SW-846 9036 (Dissolved)				07/31/2023 12:28
	SW-846 9251 (Dissolved)				07/27/2023 13:41
23070389-009C	APW05S	07/25/2023 12:53	07/26/2023 8:15		
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/27/2023 14:44	08/01/2023 18:05
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/27/2023 14:44	08/04/2023 12:14
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	07/29/2023 9:37
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	07/31/2023 16:08
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	08/02/2023 3:47
	SW-846 7470A (Total)			08/02/2023 12:13	08/03/2023 11:28
23070389-009D	APW05S	07/25/2023 12:53	07/26/2023 8:15		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	07/28/2023 20:45
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	08/02/2023 16:58
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/26/2023 16:58	09/16/2023 17:41
23070389-009E	APW05S	07/25/2023 12:53	07/26/2023 8:15		
	SW-846 9060A				08/18/2023 18:15
23070389-009F	APW05S	07/25/2023 12:53	07/26/2023 8:15		
	SW-846 9060A				08/10/2023 2:06
23070389-010A	APW06	07/25/2023 12:22	07/26/2023 8:15		
	Ferrous Iron by CHEMets Kit				07/25/2023 12:22
	Field Elevation Measurements				07/25/2023 12:22
	Standard Methods 2130 B Field				07/25/2023 12:22
	Standard Methods 18th Ed. 2580 B Field				07/25/2023 12:22
	Standard Methods 2320 B (Total) 1997, 2011				07/27/2023 10:16
	Standard Methods 2320 B 1997, 2011				07/27/2023 10:16

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	Standard Methods 2510 B Field				07/25/2023 12:22
	Standard Methods 2540 C (Total) 1997, 2011				07/27/2023 9:28
	Standard Methods 2550 B Field				07/25/2023 12:22
	Standard Methods 4500-NO2 B (Total) 2000, 2011				07/26/2023 18:53
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/26/2023 17:47
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/26/2023 17:47
	Standard Methods 4500-O G Field				07/25/2023 12:22
	Standard Methods 4500-P E 1999				07/26/2023 15:37
	Standard Methods 4500-P E 1999, 2011				07/26/2023 15:27
	SW-846 9036 (Total)				08/02/2023 21:00
	SW-846 9040B Field				07/25/2023 12:22
	SW-846 9214 (Total)				07/27/2023 9:46
	SW-846 9251 (Total)				08/02/2023 21:00
23070389-010B	APW06	07/25/2023 12:22	07/26/2023 8:15		
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/27/2023 11:43
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/27/2023 11:43
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				07/26/2023 18:43
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/26/2023 16:43
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/26/2023 16:43
	Standard Methods 4500-P E (Dissolved) 1999, 2011				07/26/2023 15:33
	Standard Methods 4500-P E (Dissolved) 1999				07/26/2023 15:37
	SW-846 9036 (Dissolved)				07/31/2023 12:30
	SW-846 9251 (Dissolved)				07/27/2023 13:44
23070389-010C	APW06	07/25/2023 12:22	07/26/2023 8:15		
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/27/2023 14:44	08/01/2023 18:06
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/27/2023 14:44	08/04/2023 12:37
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	07/29/2023 10:41
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	07/31/2023 16:40
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	08/02/2023 2:30
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/02/2023 12:31	08/04/2023 8:16
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/02/2023 12:31	09/15/2023 23:08
	SW-846 7470A (Total)			08/02/2023 12:13	08/03/2023 11:30
23070389-010D	APW06	07/25/2023 12:22	07/26/2023 8:15		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	07/28/2023 20:50
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	08/02/2023 17:15
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/26/2023 16:58	09/16/2023 17:25
23070389-010E	APW06	07/25/2023 12:22	07/26/2023 8:15		

Client: Ramboll **Work Order:** 23070389

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	SW-846 9060A				08/18/2023 18:22
23070389-010F	APW06	07/25/2023 12:22	07/26/2023 8:15		
	SW-846 9060A				08/10/2023 2:14
23070389-011A	APW07	07/25/2023 10:10	07/26/2023 8:15		
	Ferrous Iron by CHEMets Kit				07/25/2023 10:10
	Field Elevation Measurements				07/25/2023 10:10
	Standard Methods 2130 B Field				07/25/2023 10:10
	Standard Methods 18th Ed. 2580 B Field				07/25/2023 10:10
	Standard Methods 2320 B (Total) 1997, 2011				07/27/2023 10:24
	Standard Methods 2320 B 1997, 2011				07/27/2023 10:24
	Standard Methods 2540 C (Total) 1997, 2011				07/27/2023 9:28
	Standard Methods 2550 B Field				07/25/2023 10:10
	Standard Methods 4500-NO2 B (Total) 2000, 2011				07/26/2023 18:54
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/26/2023 17:49
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/26/2023 17:49
	Standard Methods 4500-O G Field				07/25/2023 10:10
	Standard Methods 4500-P E 1999				07/26/2023 15:37
	Standard Methods 4500-P E 1999, 2011				07/26/2023 15:27
	SW-846 9036 (Total)				08/02/2023 21:07
	SW-846 9040B Field				07/25/2023 10:10
	SW-846 9050A				08/09/2023 10:04
	SW-846 9214 (Total)				07/27/2023 9:47
	SW-846 9251 (Total)				08/02/2023 21:14
23070389-011B	APW07	07/25/2023 10:10	07/26/2023 8:15		
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/27/2023 11:51
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/27/2023 11:51
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				07/26/2023 18:43
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/26/2023 16:45
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/26/2023 16:45
	Standard Methods 4500-P E (Dissolved) 1999, 2011				07/26/2023 15:34
	Standard Methods 4500-P E (Dissolved) 1999				07/26/2023 15:37
	SW-846 9036 (Dissolved)				07/27/2023 13:51
	SW-846 9251 (Dissolved)				07/27/2023 13:57
23070389-011C	APW07	07/25/2023 10:10	07/26/2023 8:15		
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/27/2023 14:44	08/01/2023 18:08
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/27/2023 14:44	08/04/2023 12:14
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	07/29/2023 9:43

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	07/31/2023 16:14
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	08/02/2023 3:53
	SW-846 7470A (Total)			08/02/2023 12:13	08/03/2023 11:32
23070389-011D	APW07	07/25/2023 10:10	07/26/2023 8:15		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	07/28/2023 20:52
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	08/02/2023 17:17
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/26/2023 16:58	09/16/2023 17:31
23070389-011E	APW07	07/25/2023 10:10	07/26/2023 8:15		
	SW-846 9060A				08/18/2023 19:00
23070389-011F	APW07	07/25/2023 10:10	07/26/2023 8:15		
	SW-846 9060A				08/15/2023 1:38
23070389-012A	APW08	07/31/2023 15:09	08/01/2023 8:05		
	Ferrous Iron by CHEMets Kit				07/31/2023 15:09
	Field Elevation Measurements				07/31/2023 15:09
	Standard Methods 2130 B Field				07/31/2023 15:09
	Standard Methods 18th Ed. 2580 B Field				07/31/2023 15:09
	Standard Methods 2320 B (Total) 1997, 2011				08/01/2023 13:54
	Standard Methods 2320 B 1997, 2011				08/01/2023 13:54
	Standard Methods 2540 C (Total) 1997, 2011				08/02/2023 10:47
	Standard Methods 2550 B Field				07/31/2023 15:09
	Standard Methods 4500-NO2 B (Total) 2000, 2011				08/01/2023 17:29
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 14:55
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 16:41
	Standard Methods 4500-O G Field				07/31/2023 15:09
	Standard Methods 4500-P E 1999				08/02/2023 12:56
	Standard Methods 4500-P E 1999, 2011				08/01/2023 13:42
	SW-846 9036 (Total)				08/04/2023 14:35
	SW-846 9040B Field				07/31/2023 15:09
	SW-846 9050A				08/09/2023 10:14
	SW-846 9214 (Total)				08/02/2023 12:54
	SW-846 9251 (Total)				08/03/2023 20:29
23070389-012B	APW08	07/31/2023 15:09	08/01/2023 8:05		
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 12:58
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 12:58
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				08/01/2023 17:25
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 14:18
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 16:41

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	Standard Methods 4500-P E (Dissolved) 1999, 2011				08/01/2023 14:08
	Standard Methods 4500-P E (Dissolved) 1999				08/02/2023 12:56
	SW-846 9036 (Dissolved)				08/03/2023 16:46
	SW-846 9251 (Dissolved)				08/02/2023 19:30
23070389-012C	APW08	07/31/2023 15:09	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 11:26
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 16:11
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	08/04/2023 14:43
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	09/16/2023 13:21
	SW-846 7470A (Total)			08/01/2023 10:30	08/02/2023 9:13
23070389-012D	APW08	07/31/2023 15:09	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/02/2023 10:31	08/02/2023 16:35
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/02/2023 10:31	08/03/2023 15:39
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/02/2023 10:31	09/16/2023 22:57
23070389-012E	APW08	07/31/2023 15:09	08/01/2023 8:05		
	SW-846 9060A				08/18/2023 19:06
23070389-012F	APW08	07/31/2023 15:09	08/01/2023 8:05		
	SW-846 9060A				08/15/2023 1:44
23070389-013A	APW09	07/31/2023 13:32	08/01/2023 8:05		
	Ferrous Iron by CHEMets Kit				07/31/2023 13:32
	Field Elevation Measurements				07/31/2023 13:32
	Standard Methods 2130 B Field				07/31/2023 13:32
	Standard Methods 18th Ed. 2580 B Field				07/31/2023 13:32
	Standard Methods 2320 B (Total) 1997, 2011				08/01/2023 14:01
	Standard Methods 2320 B 1997, 2011				08/01/2023 14:01
	Standard Methods 2540 C (Total) 1997, 2011				08/02/2023 10:47
	Standard Methods 2550 B Field				07/31/2023 13:32
	Standard Methods 4500-NO2 B (Total) 2000, 2011				08/01/2023 17:29
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 14:58
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 16:41
	Standard Methods 4500-O G Field				07/31/2023 13:32
	Standard Methods 4500-P E 1999				08/02/2023 12:56
	Standard Methods 4500-P E 1999, 2011				08/01/2023 13:42
	SW-846 9036 (Total)				08/03/2023 20:30
	SW-846 9040B Field				07/31/2023 13:32
	SW-846 9050A				08/09/2023 10:08
	SW-846 9214 (Total)				08/02/2023 12:56

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	SW-846 9251 (Total)				08/03/2023 20:37
23070389-013B	APW09	07/31/2023 13:32	08/01/2023 8:05		
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 13:05
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 13:05
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				08/01/2023 17:26
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 14:26
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 16:41
	Standard Methods 4500-P E (Dissolved) 1999, 2011				08/01/2023 14:09
	Standard Methods 4500-P E (Dissolved) 1999				08/02/2023 12:56
	SW-846 9036 (Dissolved)				08/02/2023 19:31
	SW-846 9251 (Dissolved)				08/02/2023 19:38
23070389-013C	APW09	07/31/2023 13:32	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 11:26
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 16:11
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	08/04/2023 12:08
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	09/16/2023 13:26
	SW-846 7470A (Total)			08/01/2023 10:30	08/02/2023 9:20
23070389-013D	APW09	07/31/2023 13:32	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/02/2023 10:31	08/02/2023 16:36
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/02/2023 10:31	08/03/2023 15:39
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/02/2023 10:31	09/16/2023 23:03
23070389-013E	APW09	07/31/2023 13:32	08/01/2023 8:05		
	SW-846 9060A				08/18/2023 19:12
23070389-013F	APW09	07/31/2023 13:32	08/01/2023 8:05		
	SW-846 9060A				08/14/2023 12:58
23070389-014A	APW10	07/31/2023 11:26	08/01/2023 8:05		
	Ferrous Iron by CHEMets Kit				07/31/2023 11:26
	Field Elevation Measurements				07/31/2023 11:26
	Standard Methods 2130 B Field				07/31/2023 11:26
	Standard Methods 18th Ed. 2580 B Field				07/31/2023 11:26
	Standard Methods 2320 B (Total) 1997, 2011				08/01/2023 14:09
	Standard Methods 2320 B 1997, 2011				08/01/2023 14:09
	Standard Methods 2540 C (Total) 1997, 2011				08/02/2023 10:48
	Standard Methods 2550 B Field				07/31/2023 11:26
	Standard Methods 4500-NO2 B (Total) 2000, 2011				08/01/2023 17:30
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 15:06
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 16:41

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	Standard Methods 4500-O G Field				07/31/2023 11:26
	Standard Methods 4500-P E 1999				08/02/2023 12:56
	Standard Methods 4500-P E 1999, 2011				08/01/2023 13:43
	SW-846 9036 (Total)				08/03/2023 20:44
	SW-846 9040B Field				07/31/2023 11:26
	SW-846 9050A				08/09/2023 10:17
	SW-846 9214 (Total)				08/02/2023 12:59
	SW-846 9251 (Total)				08/03/2023 20:39
23070389-014B	APW10	07/31/2023 11:26	08/01/2023 8:05		
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 13:12
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 13:12
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				08/01/2023 17:26
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 14:29
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 16:41
	Standard Methods 4500-P E (Dissolved) 1999, 2011				08/01/2023 14:09
	Standard Methods 4500-P E (Dissolved) 1999				08/02/2023 12:56
	SW-846 9036 (Dissolved)				08/02/2023 19:45
	SW-846 9251 (Dissolved)				08/02/2023 19:40
23070389-014C	APW10	07/31/2023 11:26	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 11:40
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 16:24
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	08/04/2023 12:26
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	08/08/2023 9:43
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	09/16/2023 13:37
	SW-846 7470A (Total)			08/01/2023 10:30	08/02/2023 9:22
23070389-014D	APW10	07/31/2023 11:26	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/02/2023 10:31	08/02/2023 16:37
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/02/2023 10:31	09/16/2023 23:08
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/02/2023 10:31	09/18/2023 16:46
23070389-014E	APW10	07/31/2023 11:26	08/01/2023 8:05		
	SW-846 9060A				08/18/2023 19:50
23070389-014F	APW10	07/31/2023 11:26	08/01/2023 8:05		
	SW-846 9060A				08/14/2023 14:20
23070389-015A	APW11	07/24/2023 14:53	07/25/2023 8:40		
	Ferrous Iron by CHEMets Kit				07/24/2023 14:53
	Field Elevation Measurements				07/24/2023 14:53
	Standard Methods 2130 B Field				07/24/2023 14:53

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	Standard Methods 18th Ed. 2580 B Field				07/24/2023 14:53
	Standard Methods 2320 B (Total) 1997, 2011				07/26/2023 10:43
	Standard Methods 2320 B 1997, 2011				07/26/2023 10:43
	Standard Methods 2510 B Field				07/24/2023 14:53
	Standard Methods 2540 C (Total) 1997, 2011				07/26/2023 9:18
	Standard Methods 2550 B Field				07/24/2023 14:53
	Standard Methods 4500-NO2 B (Total) 2000, 2011				07/25/2023 15:43
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/25/2023 19:21
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/25/2023 21:05
	Standard Methods 4500-O G Field				07/24/2023 14:53
	Standard Methods 4500-P E 1999				07/26/2023 0:00
	Standard Methods 4500-P E 1999, 2011				07/26/2023 7:35
	SW-846 9036 (Total)				07/31/2023 14:47
	SW-846 9040B Field				07/24/2023 14:53
	SW-846 9214 (Total)				07/26/2023 12:14
	SW-846 9251 (Total)				07/27/2023 17:33
23070389-015B	APW11	07/24/2023 14:53	07/25/2023 8:40		
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/26/2023 11:37
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/26/2023 11:37
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				07/25/2023 15:46
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/25/2023 19:54
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/25/2023 21:05
	Standard Methods 4500-P E (Dissolved) 1999, 2011				07/26/2023 7:36
	Standard Methods 4500-P E (Dissolved) 1999				07/26/2023 0:00
	SW-846 9036 (Dissolved)				07/27/2023 14:21
	SW-846 9251 (Dissolved)				07/27/2023 14:16
23070389-015C	APW11	07/24/2023 14:53	07/25/2023 8:40		
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/25/2023 17:45	07/26/2023 14:02
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/25/2023 17:45	08/02/2023 0:29
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/25/2023 17:45	09/16/2023 15:58
	SW-846 7470A (Total)			07/25/2023 18:14	07/26/2023 15:02
23070389-015D	APW11	07/24/2023 14:53	07/25/2023 8:40		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	07/28/2023 20:54
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	08/02/2023 17:18
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/26/2023 16:58	09/16/2023 17:36
23070389-015E	APW11	07/24/2023 14:53	07/25/2023 8:40		
	SW-846 9060A				08/18/2023 19:56

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
23070389-015F	APW11	07/24/2023 14:53	07/25/2023 8:40		
	SW-846 9060A				08/14/2023 14:27
23070389-016A	APW12	07/24/2023 15:23	07/25/2023 8:40		
	Ferrous Iron by CHEMets Kit				07/24/2023 15:23
	Field Elevation Measurements				07/24/2023 15:23
	Standard Methods 2130 B Field				07/24/2023 15:23
	Standard Methods 18th Ed. 2580 B Field				07/24/2023 15:23
	Standard Methods 2320 B (Total) 1997, 2011				07/26/2023 10:51
	Standard Methods 2320 B 1997, 2011				07/26/2023 10:51
	Standard Methods 2510 B Field				07/24/2023 15:23
	Standard Methods 2540 C (Total) 1997, 2011				07/26/2023 9:19
	Standard Methods 2550 B Field				07/24/2023 15:23
	Standard Methods 4500-NO2 B (Total) 2000, 2011				07/25/2023 15:44
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/25/2023 19:37
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/25/2023 21:05
	Standard Methods 4500-O G Field				07/24/2023 15:23
	Standard Methods 4500-P E 1999				07/26/2023 0:00
	Standard Methods 4500-P E 1999, 2011				07/26/2023 7:38
	SW-846 9036 (Total)				07/31/2023 15:07
	SW-846 9040B Field				07/24/2023 15:23
	SW-846 9214 (Total)				07/26/2023 12:16
	SW-846 9251 (Total)				07/27/2023 18:10
23070389-016B	APW12	07/24/2023 15:23	07/25/2023 8:40		
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/26/2023 11:44
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/26/2023 11:44
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				07/25/2023 15:47
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/25/2023 20:14
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/25/2023 21:05
	Standard Methods 4500-P E (Dissolved) 1999, 2011				07/26/2023 7:40
	Standard Methods 4500-P E (Dissolved) 1999				07/26/2023 0:00
	SW-846 9036 (Dissolved)				07/31/2023 12:39
	SW-846 9251 (Dissolved)				07/27/2023 14:24
23070389-016C	APW12	07/24/2023 15:23	07/25/2023 8:40		
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/25/2023 17:45	07/26/2023 14:22
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/25/2023 17:45	08/02/2023 0:35
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/25/2023 17:45	09/16/2023 16:04
	SW-846 7470A (Total)			07/25/2023 18:14	07/26/2023 15:13

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
23070389-016D	APW12	07/24/2023 15:23	07/25/2023 8:40		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	07/28/2023 20:55
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	08/02/2023 17:20
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/26/2023 16:58	09/16/2023 18:20
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/26/2023 16:58	09/18/2023 11:53
23070389-016E	APW12	07/24/2023 15:23	07/25/2023 8:40		
	SW-846 9060A				08/18/2023 20:35
23070389-016F	APW12	07/24/2023 15:23	07/25/2023 8:40		
	SW-846 9060A				08/14/2023 14:33
23070389-017A	APW13	07/31/2023 12:14	08/01/2023 8:05		
	Ferrous Iron by CHEMets Kit				07/31/2023 12:14
	Field Elevation Measurements				07/31/2023 12:14
	Standard Methods 2130 B Field				07/31/2023 12:14
	Standard Methods 18th Ed. 2580 B Field				07/31/2023 12:14
	Standard Methods 2320 B (Total) 1997, 2011				08/01/2023 14:16
	Standard Methods 2320 B 1997, 2011				08/01/2023 14:16
	Standard Methods 2540 C (Total) 1997, 2011				08/02/2023 10:48
	Standard Methods 2550 B Field				07/31/2023 12:14
	Standard Methods 4500-NO2 B (Total) 2000, 2011				08/01/2023 17:30
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 15:09
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 16:41
	Standard Methods 4500-O G Field				07/31/2023 12:14
	Standard Methods 4500-P E 1999				08/02/2023 12:56
	Standard Methods 4500-P E 1999, 2011				08/01/2023 13:43
	SW-846 9036 (Total)				08/03/2023 21:05
	SW-846 9040B Field				07/31/2023 12:14
	SW-846 9050A				08/09/2023 10:13
	SW-846 9214 (Total)				08/02/2023 13:01
	SW-846 9251 (Total)				08/03/2023 21:06
23070389-017B	APW13	07/31/2023 12:14	08/01/2023 8:05		
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 13:19
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 13:19
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				08/01/2023 17:27
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 14:31
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 16:41
	Standard Methods 4500-P E (Dissolved) 1999, 2011				08/01/2023 14:09
	Standard Methods 4500-P E (Dissolved) 1999				08/02/2023 12:56

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	SW-846 9036 (Dissolved)				08/02/2023 20:09
	SW-846 9251 (Dissolved)				08/02/2023 20:10
23070389-017C	APW13	07/31/2023 12:14	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 11:42
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 16:12
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	08/04/2023 12:14
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	09/16/2023 13:31
	SW-846 7470A (Total)			08/01/2023 10:30	08/02/2023 9:24
23070389-017D	APW13	07/31/2023 12:14	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/02/2023 10:31	08/02/2023 16:38
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/02/2023 10:31	09/16/2023 23:13
23070389-017E	APW13	07/31/2023 12:14	08/01/2023 8:05		
	SW-846 9060A				08/18/2023 20:41
23070389-017F	APW13	07/31/2023 12:14	08/01/2023 8:05		
	SW-846 9060A				08/14/2023 14:39
23070389-018A	APW14	07/31/2023 12:33	08/01/2023 8:05		
	Ferrous Iron by CHEMets Kit				07/31/2023 12:33
	Field Elevation Measurements				07/31/2023 12:33
	Standard Methods 2130 B Field				07/31/2023 12:33
	Standard Methods 18th Ed. 2580 B Field				07/31/2023 12:33
	Standard Methods 2320 B (Total) 1997, 2011				08/01/2023 14:23
	Standard Methods 2320 B 1997, 2011				08/01/2023 14:23
	Standard Methods 2540 C (Total) 1997, 2011				08/02/2023 11:11
	Standard Methods 2550 B Field				07/31/2023 12:33
	Standard Methods 4500-NO2 B (Total) 2000, 2011				08/01/2023 17:38
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 15:11
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 16:41
	Standard Methods 4500-O G Field				07/31/2023 12:33
	Standard Methods 4500-P E 1999				08/02/2023 12:56
	Standard Methods 4500-P E 1999, 2011				08/01/2023 13:44
	SW-846 9036 (Total)				08/03/2023 21:13
	SW-846 9040B Field				07/31/2023 12:33
	SW-846 9050A				08/09/2023 10:11
	SW-846 9214 (Total)				08/02/2023 13:03
	SW-846 9251 (Total)				08/03/2023 21:09
23070389-018B	APW14	07/31/2023 12:33	08/01/2023 8:05		
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 13:26

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 13:26
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				08/01/2023 17:27
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 14:33
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 16:41
	Standard Methods 4500-P E (Dissolved) 1999, 2011				08/01/2023 14:12
	Standard Methods 4500-P E (Dissolved) 1999				08/02/2023 12:56
	SW-846 9036 (Dissolved)				08/02/2023 20:17
	SW-846 9251 (Dissolved)				08/02/2023 20:12
23070389-018C	APW14	07/31/2023 12:33	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 11:43
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 16:13
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	08/04/2023 15:01
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	08/08/2023 9:15
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	09/16/2023 14:48
	SW-846 7470A (Total)			08/01/2023 10:30	08/02/2023 9:26
23070389-018D	APW14	07/31/2023 12:33	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/02/2023 10:31	08/02/2023 16:38
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/02/2023 10:31	08/03/2023 15:40
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/02/2023 10:31	09/17/2023 0:24
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/02/2023 10:31	09/18/2023 18:08
23070389-018E	APW14	07/31/2023 12:33	08/01/2023 8:05		
	SW-846 9060A				08/18/2023 20:47
23070389-018F	APW14	07/31/2023 12:33	08/01/2023 8:05		
	SW-846 9060A				08/14/2023 14:45
23070389-019A	APW15	08/01/2023 8:39	08/02/2023 10:00		
	Ferrous Iron by CHEMets Kit				08/01/2023 8:39
	Field Elevation Measurements				08/01/2023 8:39
	Standard Methods 2130 B Field				08/01/2023 8:39
	Standard Methods 18th Ed. 2580 B Field				08/01/2023 8:39
	Standard Methods 2320 B (Total) 1997, 2011				08/03/2023 10:35
	Standard Methods 2320 B 1997, 2011				08/03/2023 10:35
	Standard Methods 2510 B Field				08/01/2023 8:39
	Standard Methods 2540 C (Total) 1997, 2011				08/03/2023 10:28
	Standard Methods 2550 B Field				08/01/2023 8:39
	Standard Methods 4500-NO2 B (Total) 2000, 2011				08/02/2023 15:00
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/02/2023 15:41
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/02/2023 15:41

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	Standard Methods 4500-O G Field				08/01/2023 8:39
	Standard Methods 4500-P E 1999				08/02/2023 12:56
	Standard Methods 4500-P E 1999, 2011				08/02/2023 12:49
	SW-846 9036 (Total)				08/05/2023 1:58
	SW-846 9040B Field				08/01/2023 8:39
	SW-846 9214 (Total)				08/04/2023 11:04
	SW-846 9251 (Total)				08/08/2023 12:16
23070389-019B	APW15	08/01/2023 8:39	08/02/2023 10:00		
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/03/2023 11:41
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/03/2023 11:41
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				08/02/2023 14:56
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/02/2023 15:07
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/02/2023 15:07
	Standard Methods 4500-P E (Dissolved) 1999, 2011				08/02/2023 12:49
	Standard Methods 4500-P E (Dissolved) 1999				08/02/2023 12:56
	SW-846 9036 (Dissolved)				08/03/2023 23:05
	SW-846 9251 (Dissolved)				08/03/2023 23:11
23070389-019C	APW15	08/01/2023 8:39	08/02/2023 10:00		
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/02/2023 12:31	08/04/2023 10:55
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/02/2023 12:31	08/04/2023 8:22
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/02/2023 12:31	09/15/2023 23:51
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/02/2023 12:31	09/18/2023 8:21
	SW-846 7470A (Total)			08/02/2023 12:13	08/03/2023 11:39
23070389-019D	APW15	08/01/2023 8:39	08/02/2023 10:00		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/08/2023 14:17	08/09/2023 17:33
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/08/2023 14:17	09/14/2023 1:47
23070389-019E	APW15	08/01/2023 8:39	08/02/2023 10:00		
	SW-846 9060A				08/24/2023 17:37
23070389-019F	APW15	08/01/2023 8:39	08/02/2023 10:00		
	SW-846 9060A				08/24/2023 19:31
23070389-020A	APW16	07/31/2023 15:37	08/01/2023 8:05		
	Ferrous Iron by CHEMets Kit				07/31/2023 15:37
	Field Elevation Measurements				07/31/2023 15:37
	Standard Methods 2130 B Field				07/31/2023 15:37
	Standard Methods 18th Ed. 2580 B Field				07/31/2023 15:37
	Standard Methods 2320 B (Total) 1997, 2011				08/01/2023 14:29
	Standard Methods 2320 B 1997, 2011				08/01/2023 14:29

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	Standard Methods 2510 B Field				07/31/2023 15:37
	Standard Methods 2540 C (Total) 1997, 2011				08/02/2023 11:11
	Standard Methods 2550 B Field				07/31/2023 15:37
	Standard Methods 4500-NO2 B (Total) 2000, 2011				08/01/2023 17:38
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 15:26
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/01/2023 16:41
	Standard Methods 4500-O G Field				07/31/2023 15:37
	Standard Methods 4500-P E 1999				08/02/2023 12:56
	Standard Methods 4500-P E 1999, 2011				08/01/2023 13:44
	SW-846 9036 (Total)				08/03/2023 21:15
	SW-846 9040B Field				07/31/2023 15:37
	SW-846 9214 (Total)				08/02/2023 13:05
	SW-846 9251 (Total)				08/03/2023 21:22
23070389-020B	APW16	07/31/2023 15:37	08/01/2023 8:05		
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 13:33
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/01/2023 13:33
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				08/01/2023 17:28
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 14:36
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/01/2023 16:41
	Standard Methods 4500-P E (Dissolved) 1999, 2011				08/01/2023 14:12
	Standard Methods 4500-P E (Dissolved) 1999				08/02/2023 12:56
	SW-846 9036 (Dissolved)				08/02/2023 20:19
	SW-846 9251 (Dissolved)				08/02/2023 20:26
23070389-020C	APW16	07/31/2023 15:37	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 11:44
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/01/2023 10:59	08/02/2023 16:26
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	08/04/2023 15:06
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/01/2023 10:59	09/16/2023 14:53
	SW-846 7470A (Total)			08/01/2023 10:30	08/02/2023 9:29
23070389-020D	APW16	07/31/2023 15:37	08/01/2023 8:05		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/02/2023 10:31	08/02/2023 16:39
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/02/2023 10:31	08/03/2023 15:41
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/02/2023 10:31	09/17/2023 0:29
23070389-020E	APW16	07/31/2023 15:37	08/01/2023 8:05		
	SW-846 9060A				08/18/2023 21:31
23070389-020F	APW16	07/31/2023 15:37	08/01/2023 8:05		
	SW-846 9060A				08/14/2023 14:59

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
23070389-021A	APW17	07/25/2023 10:36	07/26/2023 8:15		
	Ferrous Iron by CHEMets Kit				07/25/2023 10:36
	Field Elevation Measurements				07/25/2023 10:36
	Standard Methods 2130 B Field				07/25/2023 10:36
	Standard Methods 18th Ed. 2580 B Field				07/25/2023 10:36
	Standard Methods 2320 B (Total) 1997, 2011				07/27/2023 10:32
	Standard Methods 2320 B 1997, 2011				07/27/2023 10:32
	Standard Methods 2540 C (Total) 1997, 2011				07/27/2023 10:22
	Standard Methods 2550 B Field				07/25/2023 10:36
	Standard Methods 4500-NO2 B (Total) 2000, 2011				07/26/2023 18:54
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/26/2023 17:51
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/26/2023 17:51
	Standard Methods 4500-O G Field				07/25/2023 10:36
	Standard Methods 4500-P E 1999				07/26/2023 15:37
	Standard Methods 4500-P E 1999, 2011				07/26/2023 15:28
	SW-846 9036 (Total)				08/03/2023 17:32
	SW-846 9040B Field				07/25/2023 10:36
	SW-846 9050A				08/09/2023 10:05
	SW-846 9214 (Total)				07/27/2023 9:53
	SW-846 9251 (Total)				08/02/2023 21:30
23070389-021B	APW17	07/25/2023 10:36	07/26/2023 8:15		
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/27/2023 11:59
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/27/2023 11:59
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				07/26/2023 18:43
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/26/2023 17:01
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/26/2023 17:01
	Standard Methods 4500-P E (Dissolved) 1999, 2011				07/26/2023 15:34
	Standard Methods 4500-P E (Dissolved) 1999				07/26/2023 15:37
	SW-846 9036 (Dissolved)				07/27/2023 14:37
	SW-846 9251 (Dissolved)				07/27/2023 14:37
23070389-021C	APW17	07/25/2023 10:36	07/26/2023 8:15		
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/27/2023 14:44	08/01/2023 18:12
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/27/2023 14:44	08/04/2023 17:00
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	07/29/2023 9:49
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	07/31/2023 16:21
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	08/02/2023 3:59
	SW-846 7470A (Total)			08/02/2023 12:13	08/03/2023 11:41

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
23070389-021D	APW17	07/25/2023 10:36	07/26/2023 8:15		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	07/28/2023 20:57
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	08/02/2023 17:22
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/26/2023 16:58	09/16/2023 18:25
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/26/2023 16:58	09/18/2023 12:25
23070389-021E	APW17	07/25/2023 10:36	07/26/2023 8:15		
	SW-846 9060A				08/18/2023 22:10
23070389-021F	APW17	07/25/2023 10:36	07/26/2023 8:15		
	SW-846 9060A				08/14/2023 16:08
23070389-022A	APW18	07/25/2023 9:42	07/26/2023 8:15		
	Ferrous Iron by CHEMets Kit				07/25/2023 10:04
	Field Elevation Measurements				07/25/2023 10:04
	Standard Methods 2130 B Field				07/25/2023 10:04
	Standard Methods 18th Ed. 2580 B Field				07/25/2023 10:04
	Standard Methods 2320 B (Total) 1997, 2011				07/27/2023 10:41
	Standard Methods 2320 B 1997, 2011				07/27/2023 10:41
	Standard Methods 2510 B Field				07/25/2023 10:04
	Standard Methods 2540 C (Total) 1997, 2011				07/27/2023 10:23
	Standard Methods 2550 B Field				07/25/2023 10:04
	Standard Methods 4500-NO2 B (Total) 2000, 2011				07/26/2023 18:55
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/26/2023 17:53
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/26/2023 17:53
	Standard Methods 4500-O G Field				07/25/2023 10:04
	Standard Methods 4500-P E 1999				07/26/2023 15:37
	Standard Methods 4500-P E 1999, 2011				07/26/2023 15:29
	SW-846 9036 (Total)				08/03/2023 17:43
	SW-846 9040B Field				07/25/2023 10:04
	SW-846 9214 (Total)				07/27/2023 9:55
	SW-846 9251 (Total)				08/02/2023 21:35
23070389-022B	APW18	07/25/2023 9:42	07/26/2023 8:15		
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/27/2023 12:07
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/27/2023 12:07
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				07/26/2023 18:44
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/26/2023 17:09
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/26/2023 17:09
	Standard Methods 4500-P E (Dissolved) 1999, 2011				07/26/2023 15:36
	Standard Methods 4500-P E (Dissolved) 1999				07/26/2023 15:37

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	SW-846 9036 (Dissolved)				07/27/2023 14:38
	SW-846 9251 (Dissolved)				07/27/2023 14:40
23070389-022C	APW18	07/25/2023 9:42	07/26/2023 8:15		
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/27/2023 14:44	08/01/2023 18:13
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/27/2023 14:44	08/04/2023 12:40
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	07/29/2023 9:56
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	07/31/2023 16:27
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	08/02/2023 4:06
	SW-846 7470A (Total)			08/02/2023 12:13	08/03/2023 11:44
23070389-022D	APW18	07/25/2023 9:42	07/26/2023 8:15		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	07/28/2023 21:08
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	08/02/2023 17:23
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/26/2023 16:58	09/16/2023 18:30
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/26/2023 16:58	09/18/2023 12:31
23070389-022E	APW18	07/25/2023 9:42	07/26/2023 8:15		
	SW-846 9060A				08/18/2023 22:16
23070389-022F	APW18	07/25/2023 9:42	07/26/2023 8:15		
	SW-846 9060A				08/14/2023 16:15
23070389-102A	XPW01	07/24/2023 12:30	07/25/2023 8:40		
	Ferrous Iron by CHEMets Kit				07/24/2023 12:30
	Field Elevation Measurements				07/24/2023 12:30
	Standard Methods 2130 B Field				07/24/2023 12:30
	Standard Methods 18th Ed. 2580 B Field				07/24/2023 12:30
	Standard Methods 2320 B (Total) 1997, 2011				07/27/2023 14:49
	Standard Methods 2320 B 1997, 2011				07/27/2023 14:49
	Standard Methods 2510 B Field				07/24/2023 12:30
	Standard Methods 2540 C (Total) 1997, 2011				07/26/2023 9:37
	Standard Methods 2550 B Field				07/24/2023 12:30
	Standard Methods 4500-NO2 B (Total) 2000, 2011				07/25/2023 15:44
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/25/2023 19:46
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/25/2023 21:05
	Standard Methods 4500-O G Field				07/24/2023 12:30
	Standard Methods 4500-P E 1999				07/26/2023 0:00
	Standard Methods 4500-P E 1999, 2011				07/26/2023 7:42
	SW-846 9036 (Total)				08/02/2023 13:45
	SW-846 9040B Field				07/24/2023 12:30
	SW-846 9214 (Total)				07/26/2023 12:18

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	SW-846 9251 (Total)				07/27/2023 18:24
23070389-102B	XPW01	07/24/2023 12:30	07/25/2023 8:40		
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/27/2023 14:55
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/27/2023 14:55
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				07/25/2023 15:52
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/25/2023 20:17
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/25/2023 21:05
	Standard Methods 4500-P E (Dissolved) 1999, 2011				07/26/2023 7:43
	Standard Methods 4500-P E (Dissolved) 1999				07/26/2023 0:00
	SW-846 9036 (Dissolved)				08/02/2023 18:15
	SW-846 9251 (Dissolved)				07/27/2023 15:49
23070389-102C	XPW01	07/24/2023 12:30	07/25/2023 8:40		
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/25/2023 17:45	07/26/2023 14:24
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/25/2023 17:45	07/28/2023 18:27
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/25/2023 17:45	07/31/2023 13:37
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/25/2023 17:45	08/02/2023 0:41
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/25/2023 17:45	09/16/2023 16:09
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/25/2023 17:45	09/18/2023 11:42
	SW-846 7470A (Total)			07/25/2023 18:14	07/26/2023 15:15
23070389-102D	XPW01	07/24/2023 12:30	07/25/2023 8:40		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	07/28/2023 21:16
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	07/28/2023 21:18
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	08/02/2023 17:25
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/26/2023 16:58	09/16/2023 18:58
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/26/2023 16:58	09/18/2023 12:58
23070389-102E	XPW01	07/24/2023 12:30	07/25/2023 8:40		
	SW-846 9060A				08/18/2023 22:41
23070389-102F	XPW01	07/24/2023 12:30	07/25/2023 8:40		
	SW-846 9060A				08/24/2023 19:37
23070389-103A	XPW02	07/24/2023 11:30	07/25/2023 8:40		
	Ferrous Iron by CHEMets Kit				07/24/2023 11:30
	Field Elevation Measurements				07/24/2023 11:30
	Standard Methods 2130 B Field				07/24/2023 11:30
	Standard Methods 18th Ed. 2580 B Field				07/24/2023 11:30
	Standard Methods 2320 B (Total) 1997, 2011				07/26/2023 11:06
	Standard Methods 2320 B 1997, 2011				07/26/2023 11:06
	Standard Methods 2510 B Field				07/24/2023 11:30

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	Standard Methods 2540 C (Total) 1997, 2011				07/26/2023 9:37
	Standard Methods 2550 B Field				07/24/2023 11:30
	Standard Methods 4500-NO2 B (Total) 2000, 2011				07/25/2023 15:44
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/25/2023 19:48
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/25/2023 21:05
	Standard Methods 4500-O G Field				07/24/2023 11:30
	Standard Methods 4500-P E 1999				07/26/2023 0:00
	Standard Methods 4500-P E 1999, 2011				07/26/2023 7:45
	SW-846 9036 (Total)				07/27/2023 18:31
	SW-846 9040B Field				07/24/2023 11:30
	SW-846 9214 (Total)				07/26/2023 12:19
	SW-846 9251 (Total)				07/27/2023 18:26
23070389-103B	XPW02	07/24/2023 11:30	07/25/2023 8:40		
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/26/2023 12:00
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/26/2023 12:00
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				07/25/2023 15:48
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/25/2023 20:19
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/25/2023 21:05
	Standard Methods 4500-P E (Dissolved) 1999, 2011				07/26/2023 7:46
	Standard Methods 4500-P E (Dissolved) 1999				07/26/2023 0:00
	SW-846 9036 (Dissolved)				07/27/2023 16:20
	SW-846 9251 (Dissolved)				07/27/2023 16:16
23070389-103C	XPW02	07/24/2023 11:30	07/25/2023 8:40		
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/25/2023 17:45	07/26/2023 14:28
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/25/2023 17:45	07/28/2023 18:28
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/25/2023 17:45	07/28/2023 7:54
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/25/2023 17:45	09/16/2023 16:20
	SW-846 7470A (Total)			07/25/2023 18:14	07/27/2023 8:46
23070389-103D	XPW02	07/24/2023 11:30	07/25/2023 8:40		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	07/28/2023 21:19
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	07/28/2023 21:21
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	08/02/2023 17:35
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/26/2023 16:58	09/16/2023 19:03
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/26/2023 16:58	09/18/2023 13:03
23070389-103E	XPW02	07/24/2023 11:30	07/25/2023 8:40		
	SW-846 9060A				08/18/2023 23:01
23070389-103F	XPW02	07/24/2023 11:30	07/25/2023 8:40		

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	SW-846 9060A				08/14/2023 16:27
23070389-104A	XPW03	07/26/2023 14:33	07/26/2023 18:05		
	Ferrous Iron by CHEMets Kit				07/26/2023 14:33
	Field Elevation Measurements				07/26/2023 14:33
	Standard Methods 2130 B Field				07/26/2023 14:33
	Standard Methods 18th Ed. 2580 B Field				07/26/2023 14:33
	Standard Methods 2320 B (Total) 1997, 2011				07/28/2023 10:27
	Standard Methods 2320 B 1997, 2011				07/28/2023 10:27
	Standard Methods 2510 B Field				07/26/2023 14:33
	Standard Methods 2540 C (Total) 1997, 2011				08/01/2023 11:14
	Standard Methods 2550 B Field				07/26/2023 14:33
	Standard Methods 4500-NO2 B (Total) 2000, 2011				07/27/2023 16:51
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/27/2023 16:22
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/27/2023 16:22
	Standard Methods 4500-O G Field				07/26/2023 14:33
	Standard Methods 4500-P E 1999				07/28/2023 12:59
	Standard Methods 4500-P E 1999, 2011				07/28/2023 13:01
	SW-846 9036 (Total)				08/03/2023 21:29
	SW-846 9040B Field				07/26/2023 14:33
	SW-846 9214 (Total)				07/28/2023 11:03
	SW-846 9251 (Total)				08/03/2023 21:25
23070389-104B	XPW03	07/26/2023 14:33	07/26/2023 18:05		
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/28/2023 9:14
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/28/2023 9:14
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				07/27/2023 16:50
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/27/2023 16:17
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/27/2023 16:17
	Standard Methods 4500-P E (Dissolved) 1999, 2011				07/28/2023 13:01
	Standard Methods 4500-P E (Dissolved) 1999				07/28/2023 12:59
	SW-846 9036 (Dissolved)				07/31/2023 23:04
	SW-846 9251 (Dissolved)				07/31/2023 23:00
23070389-104C	XPW03	07/26/2023 14:33	07/26/2023 18:05		
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/27/2023 14:44	08/01/2023 18:27
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/27/2023 14:44	08/03/2023 15:30
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/27/2023 14:44	08/04/2023 12:41
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	07/29/2023 10:02
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	07/31/2023 16:34
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/27/2023 14:44	08/02/2023 4:12

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	SW-846 7470A (Total)			07/31/2023 12:42	08/01/2023 9:57
23070389-104D	XPW03	07/26/2023 14:33	07/26/2023 18:05		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/28/2023 11:50	08/01/2023 17:32
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/28/2023 11:50	08/03/2023 13:31
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/28/2023 11:50	08/04/2023 12:13
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			07/28/2023 11:50	09/18/2023 16:19
23070389-104E	XPW03	07/26/2023 14:33	07/26/2023 18:05		
	SW-846 9060A				08/14/2023 23:51
23070389-104F	XPW03	07/26/2023 14:33	07/26/2023 18:05		
	SW-846 9060A				08/14/2023 16:34
23070389-105A	XPW04	07/24/2023 13:00	07/25/2023 8:40		
	Ferrous Iron by CHEMets Kit				07/24/2023 13:00
	Field Elevation Measurements				07/24/2023 13:00
	Standard Methods 2130 B Field				07/24/2023 13:00
	Standard Methods 18th Ed. 2580 B Field				07/24/2023 13:00
	Standard Methods 2320 B (Total) 1997, 2011				07/26/2023 11:18
	Standard Methods 2320 B 1997, 2011				07/26/2023 11:18
	Standard Methods 2510 B Field				07/24/2023 13:00
	Standard Methods 2540 C (Total) 1997, 2011				07/27/2023 11:34
	Standard Methods 2550 B Field				07/24/2023 13:00
	Standard Methods 4500-NO2 B (Total) 2000, 2011				07/25/2023 15:44
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/25/2023 19:50
	Standard Methods 4500-NO3 F (Total) 2000, 2011				07/25/2023 21:05
	Standard Methods 4500-O G Field				07/24/2023 13:00
	Standard Methods 4500-P E 1999				07/26/2023 0:00
	Standard Methods 4500-P E 1999, 2011				07/26/2023 7:48
	SW-846 9036 (Total)				08/02/2023 14:07
	SW-846 9040B Field				07/24/2023 13:00
	SW-846 9214 (Total)				07/26/2023 12:21
	SW-846 9251 (Total)				07/27/2023 19:01
23070389-105B	XPW04	07/24/2023 13:00	07/25/2023 8:40		
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/26/2023 12:05
	Standard Methods 2320 B (Dissolved) 1997, 2011				07/26/2023 12:05
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				07/25/2023 15:52
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/25/2023 20:21
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				07/25/2023 21:05
	Standard Methods 4500-P E (Dissolved) 1999, 2011				07/26/2023 7:48

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	Standard Methods 4500-P E (Dissolved) 1999				07/26/2023 0:00
	SW-846 9036 (Dissolved)				08/02/2023 12:58
	SW-846 9251 (Dissolved)				07/27/2023 16:37
23070389-105C	XPW04	07/24/2023 13:00	07/25/2023 8:40		
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/25/2023 17:45	07/26/2023 14:34
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/25/2023 17:45	07/28/2023 18:17
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/25/2023 17:45	07/31/2023 13:34
	SW-846 3005A, 6010B, Metals by ICP (Total)			07/25/2023 17:45	08/11/2023 12:45
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/25/2023 17:45	08/02/2023 0:48
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/25/2023 17:45	09/16/2023 16:15
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			07/25/2023 17:45	09/18/2023 11:47
	SW-846 7470A (Total)			07/25/2023 18:14	07/26/2023 15:20
23070389-105D	XPW04	07/24/2023 13:00	07/25/2023 8:40		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	07/28/2023 21:33
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	07/28/2023 21:35
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	08/02/2023 17:39
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	08/02/2023 17:40
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			07/26/2023 16:58	08/11/2023 12:43
23070389-105E	XPW04	07/24/2023 13:00	07/25/2023 8:40		
	SW-846 9060A				08/24/2023 18:46
23070389-105F	XPW04	07/24/2023 13:00	07/25/2023 8:40		
	SW-846 9060A				08/24/2023 19:50
23070389-107A	Field Blank	08/01/2023 15:09	08/02/2023 10:00		
	Standard Methods 2320 B (Total) 1997, 2011				08/03/2023 11:33
	Standard Methods 2320 B 1997, 2011				08/03/2023 11:33
	Standard Methods 2540 C (Total) 1997, 2011				08/03/2023 11:11
	Standard Methods 4500-NO2 B (Total) 2000, 2011				08/02/2023 15:01
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/02/2023 15:43
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/02/2023 15:43
	Standard Methods 4500-P E 1999				08/02/2023 12:56
	Standard Methods 4500-P E 1999, 2011				08/02/2023 12:51
	SW-846 9036 (Total)				08/05/2023 2:19
	SW-846 9214 (Total)				08/04/2023 11:09
	SW-846 9251 (Total)				08/05/2023 2:18
23070389-107B	Field Blank	08/01/2023 15:09	08/02/2023 10:00		
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/03/2023 11:49
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/03/2023 11:49

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				08/02/2023 14:58
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/02/2023 15:38
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/02/2023 15:38
	Standard Methods 4500-P E (Dissolved) 1999, 2011				08/02/2023 12:51
	Standard Methods 4500-P E (Dissolved) 1999				08/02/2023 12:56
	SW-846 9036 (Dissolved)				08/03/2023 22:58
	SW-846 9214 (Dissolved)				08/04/2023 11:17
	SW-846 9251 (Dissolved)				08/03/2023 22:58
23070389-107C	Field Blank	08/01/2023 15:09	08/02/2023 10:00		
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/02/2023 12:31	08/04/2023 10:40
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/02/2023 12:31	08/04/2023 8:28
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/02/2023 12:31	09/16/2023 2:01
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/02/2023 12:31	09/18/2023 8:53
	SW-846 7470A (Total)			08/03/2023 10:35	08/04/2023 9:56
23070389-107D	Field Blank	08/01/2023 15:09	08/02/2023 10:00		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/08/2023 14:17	08/09/2023 19:06
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/08/2023 14:17	08/11/2023 11:41
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/08/2023 14:17	09/14/2023 2:08
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/08/2023 14:17	09/14/2023 22:25
	SW-846 7470A (Dissolved)			08/03/2023 10:35	08/04/2023 9:58
23070389-107E	Field Blank	08/01/2023 15:09	08/02/2023 10:00		
	SW-846 9012A (Total)			08/07/2023 12:57	08/08/2023 10:10
23070389-107F	Field Blank	08/01/2023 15:09	08/02/2023 10:00		
	SW-846 9060A				08/15/2023 0:03
23070389-107G	Field Blank	08/01/2023 15:09	08/02/2023 10:00		
	SW-846 9060A				08/14/2023 16:46
23070389-107H	Field Blank	08/01/2023 15:09	08/02/2023 10:00		
	EPA 600 350.1 (Dissolved)				08/02/2023 17:00
23070389-116A	APW02 (resample)	08/17/2023 11:23	08/17/2023 14:00		
	Ferrous Iron by CHEMets Kit				08/17/2023 11:23
	Field Elevation Measurements				08/17/2023 11:23
	Standard Methods 2130 B Field				08/17/2023 11:23
	Standard Methods 18th Ed. 2580 B Field				08/17/2023 11:23
	Standard Methods 2320 B (Total) 1997, 2011				08/18/2023 13:41
	Standard Methods 2320 B 1997, 2011				08/18/2023 13:41
	Standard Methods 2510 B Field				08/17/2023 11:23
	Standard Methods 2540 C (Total) 1997, 2011				08/21/2023 10:24

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	Standard Methods 2550 B Field				08/17/2023 11:23
	Standard Methods 4500-NO2 B (Total) 2000, 2011				08/18/2023 20:31
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/18/2023 15:23
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/18/2023 15:23
	Standard Methods 4500-O G Field				08/17/2023 11:23
	Standard Methods 4500-P E 1999				08/18/2023 14:35
	Standard Methods 4500-P E 1999, 2011				08/18/2023 9:15
	SW-846 9036 (Total)				08/23/2023 23:44
	SW-846 9040B Field				08/17/2023 11:23
	SW-846 9214 (Total)				08/21/2023 9:07
	SW-846 9251 (Total)				08/23/2023 23:40
23070389-116B	APW02 (resample)	08/17/2023 11:23	08/17/2023 14:00		
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/18/2023 13:49
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/18/2023 13:49
	Standard Methods 2550 B Field				08/17/2023 11:23
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				08/18/2023 20:30
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/18/2023 15:18
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/18/2023 15:18
	Standard Methods 4500-P E (Dissolved) 1999, 2011				08/18/2023 9:18
	Standard Methods 4500-P E (Dissolved) 1999				08/18/2023 14:35
	SW-846 9036 (Dissolved)				08/23/2023 16:04
	SW-846 9251 (Dissolved)				08/21/2023 15:21
23070389-116C	APW02 (resample)	08/17/2023 11:23	08/17/2023 14:00		
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/22/2023 15:19	08/23/2023 12:29
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/22/2023 15:19	08/31/2023 17:44
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/22/2023 15:19	09/10/2023 19:25
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/22/2023 15:19	09/16/2023 14:58
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			09/18/2023 13:03	09/20/2023 1:35
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			09/18/2023 13:03	09/20/2023 13:19
	SW-846 7470A (Total)			08/22/2023 10:04	08/23/2023 20:55
23070389-116D	APW02 (resample)	08/17/2023 11:23	08/17/2023 14:00		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/17/2023 18:38	08/18/2023 17:27
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/17/2023 18:38	08/22/2023 11:13
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/17/2023 18:38	09/17/2023 1:46
23070389-116E	APW02 (resample)	08/17/2023 11:23	08/17/2023 14:00		
	SW-846 9060A				08/19/2023 0:23
23070389-116F	APW02 (resample)	08/17/2023 11:23	08/17/2023 14:00		

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Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	SW-846 9060A				08/19/2023 0:10
23070389-117A	APW02 Duplicate (resample)	08/17/2023 11:23	08/17/2023 14:00		
	Ferrous Iron by CHEMets Kit				08/17/2023 11:23
	Field Elevation Measurements				08/17/2023 11:23
	Standard Methods 2130 B Field				08/17/2023 11:23
	Standard Methods 18th Ed. 2580 B Field				08/17/2023 11:23
	Standard Methods 2320 B (Total) 1997, 2011				08/18/2023 13:57
	Standard Methods 2320 B 1997, 2011				08/18/2023 13:57
	Standard Methods 2510 B Field				08/17/2023 11:23
	Standard Methods 2540 C (Total) 1997, 2011				08/21/2023 10:24
	Standard Methods 2550 B Field				08/17/2023 11:23
	Standard Methods 4500-NO2 B (Total) 2000, 2011				08/18/2023 20:31
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/18/2023 15:25
	Standard Methods 4500-NO3 F (Total) 2000, 2011				08/18/2023 15:25
	Standard Methods 4500-O G Field				08/17/2023 11:23
	Standard Methods 4500-P E 1999				08/18/2023 14:35
	Standard Methods 4500-P E 1999, 2011				08/18/2023 9:20
	SW-846 9036 (Total)				08/23/2023 23:53
	SW-846 9040B Field				08/17/2023 11:23
	SW-846 9214 (Total)				08/21/2023 9:10
	SW-846 9251 (Total)				08/23/2023 23:48
23070389-117B	APW02 Duplicate (resample)	08/17/2023 11:23	08/17/2023 14:00		
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/18/2023 14:06
	Standard Methods 2320 B (Dissolved) 1997, 2011				08/18/2023 14:06
	Standard Methods 2550 B Field				08/17/2023 11:23
	Standard Methods 4500-NO2 B (Dissolved) 2000, 2011				08/18/2023 20:30
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/18/2023 15:21
	Standard Methods 4500-NO3 F (Dissolved) 2000, 2011				08/18/2023 15:21
	Standard Methods 4500-P E (Dissolved) 1999, 2011				08/18/2023 9:24
	Standard Methods 4500-P E (Dissolved) 1999				08/18/2023 14:35
	SW-846 9036 (Dissolved)				08/22/2023 0:56
	SW-846 9251 (Dissolved)				08/23/2023 16:25
23070389-117C	APW02 Duplicate (resample)	08/17/2023 11:23	08/17/2023 14:00		
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/18/2023 10:00	08/21/2023 19:25
	SW-846 3005A, 6010B, Metals by ICP (Total)			08/18/2023 10:00	08/23/2023 9:59
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/18/2023 10:00	08/30/2023 14:10
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			08/18/2023 10:00	09/16/2023 14:42
	SW-846 3005A, 6020A, Metals by ICPMS (Total)			09/18/2023 10:24	09/20/2023 13:30

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	SW-846 7470A (Total)			08/22/2023 10:04	08/23/2023 20:57
23070389-117D	APW02 Duplicate (resample)	08/17/2023 11:23	08/17/2023 14:00		
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/17/2023 18:38	08/18/2023 17:13
	SW-846 3005A, 6010B, Metals by ICP (Dissolved)			08/17/2023 18:38	08/22/2023 11:15
	SW-846 3005A, 6020A, Metals by ICPMS (Dissolved)			08/17/2023 18:38	09/17/2023 1:51
23070389-117E	APW02 Duplicate (resample)	08/17/2023 11:23	08/17/2023 14:00		
	SW-846 9060A				08/19/2023 0:29
23070389-117F	APW02 Duplicate (resample)	08/17/2023 11:23	08/17/2023 14:00		
	SW-846 9060A				08/19/2023 0:16

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 2510 B FIELD

Batch R334750 **SampType:** LCS Units **µS/cm**
SampID: LCS-1 230724

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1380**	1412	0	98.1	90	110	07/24/2023

Batch R334750 **SampType:** LCS Units **µS/cm**
SampID: LCS-10 230817

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1430**	1412	0	101.3	90	110	08/17/2023

Batch R334750 **SampType:** LCS Units **µS/cm**
SampID: LCS-2 230725

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	100.0	90	110	07/25/2023

Batch R334750 **SampType:** LCS Units **µS/cm**
SampID: LCS-3 230725

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	100.1	90	110	07/25/2023

Batch R334750 **SampType:** LCS Units **µS/cm**
SampID: LCS-4 230726

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1420**	1412	0	100.2	90	110	07/26/2023

Batch R334750 **SampType:** LCS Units **µS/cm**
SampID: LCS-6 230727

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1420**	1412	0	100.9	90	110	07/27/2023

Batch R334750 **SampType:** LCS Units **µS/cm**
SampID: LCS-7 230731

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1420**	1412	0	100.7	90	110	07/31/2023

Batch R334750 **SampType:** LCS Units **µS/cm**
SampID: LCS-8 230801

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1420**	1412	0	100.4	90	110	08/01/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 2510 B FIELD

Batch R334750 **SampType:** LCS Units µS/cm

SampID: LCS-9 230816

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1420**	1412	0	100.9	90	110	08/16/2023

SW-846 9040B FIELD

Batch R334750 **SampType:** LCS Units

SampID: LCS- 2 230725

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.03**	7.000	0	100.4	98.57	101.4	07/25/2023

Batch R334750 **SampType:** LCS Units

SampID: LCS-1 230724

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**6.98**	7.000	0	99.7	98.57	101.4	07/24/2023

Batch R334750 **SampType:** LCS Units

SampID: LCS-10 230817

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.02**	7.000	0	100.3	98.57	101.4	08/17/2023

Batch R334750 **SampType:** LCS Units

SampID: LCS-3 230725

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.02**	7.000	0	100.3	98.57	101.4	07/25/2023

Batch R334750 **SampType:** LCS Units

SampID: LCS-4 230726

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.03**	7.000	0	100.4	98.57	101.4	07/26/2023

Batch R334750 **SampType:** LCS Units

SampID: LCS-5 230727

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.01**	7.000	0	100.1	98.57	101.4	07/27/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9040B FIELD

Batch R334750 **SampType:** LCS Units

SampID: LCS-6 230727

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.02**	7.000	0	100.3	98.57	101.4	07/27/2023

Batch R334750 **SampType:** LCS Units

SampID: LCS-7 230731

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.03**	7.000	0	100.4	98.57	101.4	07/31/2023

Batch R334750 **SampType:** LCS Units

SampID: LCS-8 230801

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.02**	7.000	0	100.3	98.57	101.4	08/01/2023

Batch R334750 **SampType:** LCS Units

SampID: LCS-9 230816

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.02**	7.000	0	100.3	98.57	101.4	08/16/2023

EPA 600 350.1 (DISSOLVED)

Batch R333244 **SampType:** MBLK Units **mg/L**

SampID: MB-R333244

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**< 0.10**	0.0270	0	0	-100	100	07/28/2023

Batch R333244 **SampType:** LCS Units **mg/L**

SampID: LCS-R333244

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.01**	1.000	0	100.9	90	110	07/28/2023

Batch R333244 **SampType:** MS Units **mg/L**

SampID: 23070389-043EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.98**	2.000	0.1180	93.0	90	110	07/28/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

EPA 600 350.1 (DISSOLVED)

Batch R333244 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-043EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.99**	2.000	0.1180	93.6	1.978	0.55	07/28/2023

Batch R333244 **SampType:** MS Units **mg/L**
SampID: 23070389-054EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.89**	2.000	0.05000	92.2	90	110	07/28/2023

Batch R333244 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-054EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.88**	2.000	0.05000	91.4	1.894	0.90	07/28/2023

Batch R333317 **SampType:** MBLK Units **mg/L**
SampID: MB-R333317

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**< 0.10**	0.0270	0	0	-100	100	07/31/2023

Batch R333317 **SampType:** LCS Units **mg/L**
SampID: LCS-R333317

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.02**	1.000	0	102.1	90	110	07/31/2023

Batch R333317 **SampType:** MS Units **mg/L**
SampID: 23070389-028EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.54**	2.000	0.7110	91.4	90	110	07/31/2023

Batch R333317 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-028EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.56**	2.000	0.7110	92.2	2.539	0.63	07/31/2023

Batch R334442 **SampType:** MBLK Units **mg/L**
SampID: MB-R334442

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**< 0.10**	0.0270	0	0	-100	100	08/02/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

EPA 600 350.1 (DISSOLVED)

Batch R334442 **SampType:** LCS Units **mg/L**
SampID: LCS-R334442

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.02**	1.000	0	101.5	90	110	08/02/2023

Batch R334442 **SampType:** MS Units **mg/L**
SampID: 23070389-048EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.92**	2.000	0	96.2	90	110	08/02/2023

Batch R334442 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-048EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.92**	2.000	0	95.8	1.925	0.52	08/02/2023

Batch R335212 **SampType:** MBLK Units **mg/L**
SampID: MB-R335212

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**< 0.10**	0.0270	0	0	-100	100	08/18/2023

Batch R335212 **SampType:** LCS Units **mg/L**
SampID: LCS-R335212

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.02**	1.000	0	102.1	90	110	08/18/2023

Batch R335212 **SampType:** MS Units **mg/L**
SampID: 23070389-112EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.86**	2.000	0	93.2	90	110	08/18/2023

Batch R335212 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-112EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.83**	2.000	0	91.7	1.863	1.62	08/18/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 2540 C (TOTAL) 1997, 2011

Batch R333199 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	07/26/2023

Batch R333199 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**976**	1000	0	97.6	90	110	07/26/2023

Batch R333199 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 23070389-103ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20		**358**				360.0	0.56	07/26/2023

Batch R333268 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	07/27/2023

Batch R333268 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**954**	1000	0	95.4	90	110	07/27/2023

Batch R333268 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 23070389-005ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20		**3020**				2882	4.61	07/27/2023

Batch R334473 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	08/01/2023
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	08/01/2023
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	08/01/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 2540 C (TOTAL) 1997, 2011

Batch R334473 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**912**	1000	0	91.2	90	110	08/01/2023
Total Dissolved Solids		20		**972**	1000	0	97.2	90	110	08/01/2023
Total Dissolved Solids		20		**978**	1000	0	97.8	90	110	08/01/2023

Batch R334473 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 23070389-002ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		50		**2050**				2140	4.30	08/01/2023

Batch R334473 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 23070389-100ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		50		**1240**				1225	0.81	08/01/2023

Batch R334530 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	08/02/2023

Batch R334530 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**930**	1000	0	93.0	90	110	08/02/2023

Batch R334530 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 23070389-014ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20		**1060**				1056	0.19	08/02/2023

Batch R334586 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	08/03/2023
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	08/03/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 2540 C (TOTAL) 1997, 2011

Batch R334586 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**936**	1000	0	93.6	90	110	08/03/2023
Total Dissolved Solids		20		**928**	1000	0	92.8	90	110	08/03/2023

Batch R334586 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 23070389-025ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		50		**875**				875.0	0.00	08/03/2023

Batch R334586 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 23070389-052ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		50		**985**				985.0	0.00	08/03/2023

Batch R335351 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	08/21/2023

Batch R335351 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**966**	1000	0	96.6	90	110	08/21/2023

Batch R335351 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 23070389-112ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20		**558**				548.0	1.81	08/21/2023

STANDARD METHODS 4500-NO2 B (DISSOLVED) 2000, 2011

Batch R333091 **SampType:** MS Units **mg/L**
SampID: 23070389-016BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.46**	0.5000	0	92.0	85	115	07/25/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-NO2 B (DISSOLVED) 2000, 2011

Batch R333091 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-016BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.51**	0.5000	0	101.6	0.4600	9.92	07/25/2023

Batch R333091 **SampType:** MS Units **mg/L**

SampID: 23070389-103BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.46**	0.5000	0	93.0	85	115	07/25/2023

Batch R333091 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-103BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.44**	0.5000	0	87.0	0.4650	6.67	07/25/2023

Batch R333148 **SampType:** MS Units **mg/L**

SampID: 23070389-005BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.50**	0.5000	0	100.6	85	115	07/26/2023

Batch R333148 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-005BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.49**	0.5000	0	98.0	0.5030	2.62	07/26/2023

Batch R333148 **SampType:** MS Units **mg/L**

SampID: 23070389-009BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.50**	0.5000	0	99.0	85	115	07/26/2023

Batch R333148 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-009BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.50**	0.5000	0	99.2	0.4950	0.20	07/26/2023

Batch R333148 **SampType:** MS Units **mg/L**

SampID: 23070389-043BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.49**	0.5000	0	98.8	85	115	07/27/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-NO2 B (DISSOLVED) 2000, 2011

Batch R333148 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-043BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.46**	0.5000	0	92.2	0.4940	6.91	07/27/2023

Batch R333292 **SampType:** MS Units **mg/L**
SampID: 23070389-100BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.51**	0.5000	0	101.4	85	115	07/28/2023

Batch R333292 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-100BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.51**	0.5000	0	101.4	0.5070	0.00	07/28/2023

Batch R334350 **SampType:** MS Units **mg/L**
SampID: 23070389-006BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.51**	0.5000	0	101.4	85	115	08/01/2023

Batch R334350 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-006BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.50**	0.5000	0	101.0	0.5070	0.40	08/01/2023

Batch R334350 **SampType:** MS Units **mg/L**
SampID: 23070389-007BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.50**	0.5000	0	100.0	85	115	08/01/2023

Batch R334350 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-007BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.50**	0.5000	0	100.8	0.5000	0.80	08/01/2023

Batch R334479 **SampType:** MS Units **mg/L**
SampID: 23070389-019BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.49**	0.5000	0	98.4	85	115	08/02/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-NO2 B (DISSOLVED) 2000, 2011

Batch R334479 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-019BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.49**	0.5000	0	98.4	0.4920	0.00	08/02/2023

Batch R335184 **SampType:** MS Units **mg/L**

SampID: 23070389-111BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.54**	0.5000	0	108.6	85	115	08/17/2023

Batch R335184 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-111BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.54**	0.5000	0	108.2	0.5430	0.37	08/17/2023

Batch R335184 **SampType:** MS Units **mg/L**

SampID: 23070389-112BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.54**	0.5000	0	108.2	85	115	08/17/2023

Batch R335184 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-112BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.54**	0.5000	0	108.2	0.5410	0.00	08/17/2023

Batch R335231 **SampType:** MS Units **mg/L**

SampID: 23070389-116BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.53**	0.5000	0	106.4	85	115	08/18/2023

Batch R335231 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-116BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.53**	0.5000	0	105.8	0.5320	0.57	08/18/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-NO2 B (TOTAL) 2000, 2011

Batch R333091 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	07/25/2023
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	07/25/2023

Batch R333091 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.25		**1.24**	1.250	0	98.8	90	110	07/25/2023
Nitrogen, Nitrite (as N)		0.25		**1.24**	1.250	0	98.8	90	110	07/25/2023

Batch R333148 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	07/26/2023
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	07/26/2023

Batch R333148 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.25		**1.27**	1.250	0	101.6	90	110	07/26/2023
Nitrogen, Nitrite (as N)		0.25		**1.27**	1.250	0	101.6	90	110	07/26/2023

Batch R333292 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	07/28/2023

Batch R333292 **SampType:** MBLK Units **mg/Kg**
SampID: MB-R333292

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.50		**< 0.50**	0.0250	0	0	-100	100	07/28/2023

Batch R333292 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.25		**1.24**	1.250	0	99.2	90	110	07/28/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-NO2 B (TOTAL) 2000, 2011

Batch R333292 **SampType:** LCS Units **mg/Kg**
SampID: LCS-R333292

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		2.50	J	**1.2**	1.250	0	99.2	90	110	07/28/2023

Batch R334350 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	07/31/2023
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	07/31/2023

Batch R334350 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.25		**1.24**	1.250	0	98.8	90	110	07/31/2023
Nitrogen, Nitrite (as N)		0.25		**1.24**	1.250	0	98.8	90	110	07/31/2023

Batch R334479 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	08/02/2023
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	08/02/2023

Batch R334479 **SampType:** MBLK Units **mg/Kg**
SampID: MBLK-230720

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.50		**< 0.50**	0.0250	0	0	-100	100	08/02/2023

Batch R334479 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.25		**1.20**	1.250	0	96.4	90	110	08/02/2023
Nitrogen, Nitrite (as N)		0.25		**1.20**	1.250	0	95.6	90	110	08/02/2023

Batch R335184 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	08/17/2023
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	08/17/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-NO2 B (TOTAL) 2000, 2011

Batch R335184 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.25		**1.29**	1.250	0	103.2	90	110	08/17/2023
Nitrogen, Nitrite (as N)		0.25		**1.29**	1.250	0	103.2	90	110	08/17/2023

Batch R335231 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	08/18/2023
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	08/18/2023

Batch R335231 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.25		**1.36**	1.250	0	108.4	90	110	08/18/2023
Nitrogen, Nitrite (as N)		0.25		**1.36**	1.250	0	108.4	90	110	08/18/2023

STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011

Batch R333082 **SampType:** MS Units **mg/L**
SampID: 23070389-015BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.221**	0.2500	0	88.4	85	115	07/25/2023

Batch R333082 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-015BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.222**	0.2500	0	88.8	0.2210	0.45	07/25/2023

Batch R333082 **SampType:** MS Units **mg/L**
SampID: 23070389-105BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.418**	0.2500	0.1910	90.8	85	115	07/25/2023

Batch R333082 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-105BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.421**	0.2500	0.1910	92.0	0.4180	0.72	07/25/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011

Batch R333187 **SampType:** MS Units **mg/L**

SampID: 23070389-021BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.242**	0.2500	0	96.8	85	115	07/26/2023

Batch R333187 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-021BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.238**	0.2500	0	95.2	0.2420	1.67	07/26/2023

Batch R333252 **SampType:** MS Units **mg/L**

SampID: 23070389-003BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.250		**4.88**	1.250	3.565	105.4	85	115	07/27/2023

Batch R333252 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-003BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.250		**4.78**	1.250	3.565	97.1	4.883	2.15	07/27/2023

Batch R333300 **SampType:** MS Units **mg/L**

SampID: 23070389-100BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.100		**1.62**	0.5000	1.109	101.6	85	115	07/28/2023

Batch R333300 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-100BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.100		**1.60**	0.5000	1.109	97.2	1.617	1.37	07/28/2023

Batch R334435 **SampType:** MS Units **mg/L**

SampID: 23070389-012BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.232**	0.2500	0	92.8	85	115	08/01/2023

Batch R334435 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-012BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.237**	0.2500	0	94.8	0.2320	2.13	08/01/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011

Batch R334535 **SampType:** MS Units **mg/L**
SampID: 23070389-038BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.260**	0.2500	0.01000	100.0	85	115	08/02/2023

Batch R334535 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-038BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.257**	0.2500	0.01000	98.8	0.2600	1.16	08/02/2023

Batch R335191 **SampType:** MS Units **mg/L**
SampID: 23070389-113BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.248**	0.2500	0.009000	95.6	85	115	08/17/2023

Batch R335191 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-113BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.248**	0.2500	0.009000	95.6	0.2480	0.00	08/17/2023

STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011

Batch R333082 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						07/25/2023
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	07/25/2023

Batch R333082 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.500**	0.5000	0	100.0	90	110	07/25/2023

Batch R333082 **SampType:** MS Units **mg/L**
SampID: 23070389-016AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.262**	0.2500	0.02700	94.0	85	115	07/25/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011

Batch R333082 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-016AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.258**	0.2500	0.02700	92.4	0.2620	1.54	07/25/2023

Batch R333187 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						07/26/2023
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	07/26/2023

Batch R333187 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.487**	0.5000	0	97.4	90	110	07/26/2023

Batch R333187 **SampType:** MS Units **mg/L**

SampID: 23070389-009AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.270**	0.2500	0.02700	97.2	85	115	07/26/2023

Batch R333187 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-009AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.270**	0.2500	0.02700	97.2	0.2700	0.00	07/26/2023

Batch R333252 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						07/27/2023
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	07/27/2023

Batch R333252 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.510**	0.5000	0	102.0	90	110	07/27/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011

Batch R333252 **SampType:** MS Units **mg/L**
SampID: 23070389-104AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.240**	0.2500	0	96.0	85	115	07/27/2023

Batch R333252 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-104AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.243**	0.2500	0	97.2	0.2400	1.24	07/27/2023

Batch R333300 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						07/28/2023
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	07/28/2023

Batch R333300 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.505**	0.5000	0	101.0	90	110	07/28/2023

Batch R334435 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						08/01/2023
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	08/01/2023

Batch R334435 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.482**	0.5000	0	96.4	90	110	08/01/2023

Batch R334435 **SampType:** MS Units **mg/L**
SampID: 23070389-013AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.232**	0.2500	0	92.8	85	115	08/01/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011

Batch R334435 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-013AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.232**	0.2500	0	92.8	0.2320	0.00	08/01/2023

Batch R334435 **SampType:** MS Units **mg/L**

SampID: 23070389-020AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.230**	0.2500	0	92.0	85	115	08/01/2023

Batch R334435 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-020AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.228**	0.2500	0	91.2	0.2300	0.87	08/01/2023

Batch R334535 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						08/02/2023
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	08/02/2023

Batch R334535 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.530**	0.5000	0	106.0	90	110	08/02/2023

Batch R335191 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						08/17/2023
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	08/17/2023

Batch R335191 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.508**	0.5000	0	101.6	90	110	08/17/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011

Batch R335253 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						08/18/2023
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	08/18/2023

Batch R335253 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.516**	0.5000	0	103.2	90	110	08/18/2023

Batch R335253 **SampType:** MS Units **mg/L**
SampID: 23070389-117AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.293**	0.2500	0.04100	100.8	85	115	08/18/2023

Batch R335253 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-117AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.295**	0.2500	0.04100	101.6	0.2930	0.68	08/18/2023

STANDARD METHODS 4500-P E (DISSOLVED) 1999, 2011

Batch R333097 **SampType:** MS Units **mg/L**
SampID: 23070389-005BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.052**	0.0500	0	104.0	85	115	07/26/2023

Batch R333097 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-005BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.056**	0.0500	0	112.0	0.05200	7.41	07/26/2023

Batch R333097 **SampType:** MS Units **mg/L**
SampID: 23070389-103BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.152**	0.0500	0.1030	98.0	85	115	07/26/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-P E (DISSOLVED) 1999, 2011

Batch R333097 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-103BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.154**	0.0500	0.1030	102.0	0.1520	1.31	07/26/2023

Batch R333282 **SampType:** MS Units **mg/L**

SampID: 23070389-104BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.069**	0.0500	0.01800	102.0	85	115	07/28/2023

Batch R333282 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-104BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.074**	0.0500	0.01800	112.0	0.06900	6.99	07/28/2023

Batch R334477 **SampType:** MS Units **mg/L**

SampID: 23070389-006BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.108**	0.0500	0.05100	114.0	85	115	08/01/2023

Batch R334477 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-006BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.103**	0.0500	0.05100	104.0	0.1080	4.74	08/01/2023

Batch R334477 **SampType:** MS Units **mg/L**

SampID: 23070389-007BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.062**	0.0500	0.005000	114.0	85	115	08/01/2023

Batch R334477 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-007BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.059**	0.0500	0.005000	108.0	0.06200	4.96	08/01/2023

Batch R334477 **SampType:** MS Units **mg/L**

SampID: 23070389-107BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.043**	0.0500	0	86.0	85	115	08/02/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-P E (DISSOLVED) 1999, 2011

Batch R334477 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-107BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.047**	0.0500	0	94.0	0.04300	8.89	08/02/2023

Batch R335237 **SampType:** MS Units **mg/L**

SampID: 23070389-116BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.052**	0.0500	0	104.0	85	115	08/18/2023

Batch R335237 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-116BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.056**	0.0500	0	112.0	0.05200	7.41	08/18/2023

Batch R335237 **SampType:** MS Units **mg/L**

SampID: 23070389-117BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.055**	0.0500	0	110.0	85	115	08/18/2023

Batch R335237 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-117BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.054**	0.0500	0	108.0	0.05500	1.83	08/18/2023

STANDARD METHODS 4500-P E 1999, 2011

Batch R333097 **SampType:** MBLK Units **mg/L**

SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**< 0.010**	0.0020	0	0	-100	100	07/26/2023

Batch R333097 **SampType:** LCS Units **mg/L**

SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.097**	0.1000	0	97.0	90	110	07/26/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-P E 1999, 2011

Batch R333097 **SampType:** MS Units **mg/L**
SampID: 23070389-016AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.049**	0.0500	0	98.0	85	115	07/26/2023

Batch R333097 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-016AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.053**	0.0500	0	106.0	0.04900	7.84	07/26/2023

Batch R333282 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**< 0.010**	0.0020	0	0	-100	100	07/28/2023

Batch R333282 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.103**	0.1000	0	103.0	90	110	07/28/2023

Batch R334477 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**< 0.010**	0.0020	0	0	-100	100	08/01/2023

Batch R334477 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.108**	0.1000	0	108.0	90	110	08/01/2023

Batch R334531 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**< 0.010**	0.0020	0	0	-100	100	08/03/2023

Batch R334531 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.103**	0.1000	0	103.0	90	110	08/03/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

STANDARD METHODS 4500-P E 1999, 2011

Batch R335237 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**< 0.010**	0.0020	0	0	-100	100	08/18/2023

Batch R335237 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phosphorus, Orthophosphate (as P)		0.010		**0.103**	0.1000	0	103.0	90	110	08/18/2023

SW-846 9012A (TOTAL)

Batch 210000 **SampType:** MBLK Units **mg/L**
SampID: MBLK 230726 TCN3

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	07/27/2023

Batch 210000 **SampType:** LCS Units **mg/L**
SampID: LCS 230726 TCN3

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.024**	0.0250	0	97.9	90	110	07/27/2023

Batch 210000 **SampType:** MS Units **mg/L**
SampID: 23070389-065EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.028**	0.0250	0.004275	93.5	75	125	07/27/2023

Batch 210000 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-065EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.005		**0.029**	0.0250	0.004275	97.6	0.02766	3.62	07/27/2023

Batch 210084 **SampType:** MBLK Units **mg/L**
SampID: MBLK 230727 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	07/28/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9012A (TOTAL)

Batch 210084 **SampType:** LCS Units **mg/L**
SampID: LCS 230727 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0	98.5	90	110	07/28/2023

Batch 210084 **SampType:** MS Units **mg/L**
SampID: 23070389-002DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.024**	0.0250	0	96.6	75	125	07/28/2023

Batch 210084 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-002DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0	100.3	0.02415	3.80	07/28/2023

Batch 210146 **SampType:** MBLK Units **mg/L**
SampID: MBLK 230728 TCN4

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	07/31/2023

Batch 210146 **SampType:** LCS Units **mg/L**
SampID: LCS 230728 TCN4

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.023**	0.0250	0	90.9	90	110	07/31/2023

Batch 210146 **SampType:** MS Units **mg/L**
SampID: 23070389-100DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.027**	0.0250	0	106.0	75	125	07/31/2023

Batch 210146 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-100DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.005		**0.027**	0.0250	0	108.3	0.02651	2.09	07/31/2023

Batch 210262 **SampType:** MBLK Units **mg/L**
SampID: MBLK 230801 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	08/02/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9012A (TOTAL)

Batch 210262 **SampType:** LCS Units **mg/L**
SampID: LCS 230801 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.027**	0.0250	0	108.0	90	110	08/02/2023

Batch 210262 **SampType:** MS Units **mg/L**
SampID: 23070389-048DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.022**	0.0250	0	86.3	75	125	08/02/2023

Batch 210262 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-048DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0	98.0	0.02157	12.74	08/02/2023

Batch 210422 **SampType:** MBLK Units **mg/L**
SampID: MBLK 230804 TCN2

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	08/07/2023

Batch 210422 **SampType:** LCS Units **mg/L**
SampID: LCS 230804 TCN2

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.026**	0.0250	0	103.4	90	110	08/07/2023

Batch 210422 **SampType:** MS Units **mg/L**
SampID: 23070389-047DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0	98.1	75	125	08/07/2023

Batch 210422 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-047DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.005		**0.024**	0.0250	0	94.7	0.02452	3.53	08/07/2023

Batch 210472 **SampType:** MBLK Units **mg/L**
SampID: MBLK 230807 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	08/08/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9012A (TOTAL)

Batch 210472 **SampType:** LCS Units **mg/L**
SampID: LCS 230807 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.024**	0.0250	0	97.6	90	110	08/08/2023

Batch 210472 **SampType:** MS Units **mg/L**
SampID: 23070389-107EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0	98.5	75	125	08/08/2023

Batch 210472 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-107EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.005		**0.024**	0.0250	0	97.9	0.02462	0.61	08/08/2023

Batch 211020 **SampType:** MBLK Units **mg/L**
SampID: MBLK 230817 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	08/18/2023

Batch 211020 **SampType:** LCS Units **mg/L**
SampID: LCS 230817 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.027**	0.0250	0	107.2	90	110	08/18/2023

Batch 211020 **SampType:** MS Units **mg/L**
SampID: 23070389-112DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.026**	0.0250	0	103.0	75	125	08/18/2023

Batch 211020 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-112DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.005		**0.026**	0.0250	0	102.0	0.02576	1.01	08/18/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9036 (DISSOLVED)

Batch R334506 **SampType:** MS Units **mg/L**
SampID: 23070389-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		500		**1810**	1000	921.6	89.0	85	115	08/02/2023

Batch R334506 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		500		**1850**	1000	921.6	92.9	1812	2.12	08/02/2023

Batch R334506 **SampType:** MS Units **mg/L**
SampID: 23070389-054BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		1000		**4580**	2000	2690	94.6	85	115	08/02/2023

Batch R334506 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-054BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		1000		**4720**	2000	2690	101.3	4583	2.86	08/02/2023

Batch R334506 **SampType:** MS Units **mg/L**
SampID: 23070389-102BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		1000		**4390**	2000	2296	104.9	85	115	08/02/2023

Batch R334506 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-102BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		1000		**4480**	2000	2296	109.3	4394	1.97	08/02/2023

Batch R334506 **SampType:** MS Units **mg/L**
SampID: 23070389-105BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		2000	E	**12500**	4000	8979	88.1	85	115	08/02/2023

Batch R334506 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-105BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		2000	E	**12900**	4000	8979	98.2	12500	3.17	08/02/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9036 (DISSOLVED)

Batch R334506 **SampType:** MS Units **mg/L**
SampID: 23070389-108BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		1000		**4760**	2000	2913	92.1	85	115	08/02/2023

Batch R334506 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-108BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		1000		**4850**	2000	2913	97.0	4755	2.03	08/02/2023

Batch R334639 **SampType:** MS Units **mg/L**
SampID: 23070389-047BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		500		**2190**	1000	1110	108.1	85	115	08/05/2023

Batch R334639 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-047BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		500		**2130**	1000	1110	101.9	2191	2.90	08/05/2023

Batch R335217 **SampType:** MS Units **mg/L**
SampID: 23070389-111BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		50		**206**	100.0	108.7	96.9	85	115	08/17/2023

Batch R335217 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-111BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		50		**197**	100.0	108.7	88.2	205.6	4.34	08/17/2023

Batch R335341 **SampType:** MS Units **mg/L**
SampID: 23070389-117BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		1000		**4570**	2000	2860	85.3	85	115	08/22/2023

Batch R335341 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-117BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		1000		**4800**	2000	2860	96.9	4566	4.94	08/22/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9036 (TOTAL)

Batch R333276 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	07/27/2023

Batch R333276 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**18**	20.00	0	92.5	90	110	07/27/2023

Batch R334391 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	07/31/2023

Batch R334391 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**19**	20.00	0	96.8	90	110	07/31/2023

Batch R334391 **SampType:** MS Units **mg/L**
SampID: 23070389-015AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		100		**468**	200.0	267.6	100.2	85	115	07/31/2023

Batch R334391 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-015AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		100		**465**	200.0	267.6	98.8	468.0	0.57	07/31/2023

Batch R334506 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	08/02/2023

Batch R334506 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**20**	20.00	0	97.9	90	110	08/02/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9036 (TOTAL)

Batch R334506 **SampType:** MS Units **mg/L**
SampID: 23070389-105AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		2000	E	**13000**	4000	9422	88.3	85	115	08/02/2023

Batch R334506 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-105AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		2000	E	**13200**	4000	9422	93.2	12960	1.50	08/02/2023

Batch R334559 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	7.620	0	0	-100	100	08/03/2023

Batch R334559 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**19**	20.00	0	96.3	90	110	08/03/2023

Batch R334559 **SampType:** MS Units **mg/L**
SampID: 23070389-022AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		20		**85**	40.00	49.42	90.2	85	115	08/03/2023

Batch R334559 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-022AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		20		**89**	40.00	49.42	98.5	85.48	3.84	08/03/2023

Batch R334559 **SampType:** MS Units **mg/L**
SampID: 23070389-044AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		2000	E	**10200**	4000	6164	100.4	85	115	08/03/2023

Batch R334559 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-044AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		2000	E	**10100**	4000	6164	99.5	10180	0.36	08/03/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9036 (TOTAL)

Batch R334639 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	08/04/2023

Batch R334639 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**20**	20.00	0	101.2	90	110	08/04/2023

Batch R334639 **SampType:** MS Units **mg/L**
SampID: 23070389-006AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		100		**305**	200.0	118.2	93.3	85	115	08/04/2023

Batch R334639 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-006AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		100		**317**	200.0	118.2	99.2	304.8	3.82	08/04/2023

Batch R334639 **SampType:** MS Units **mg/L**
SampID: 23070389-050AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		500		**1480**	1000	534.0	94.1	85	115	08/04/2023

Batch R334639 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-050AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		500	S	**1350**	1000	534.0	82.1	1475	8.53	08/04/2023

Batch R334769 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	08/08/2023

Batch R334769 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**21**	20.00	0	104.6	90	110	08/08/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9036 (TOTAL)

Batch R334769 **SampType:** MS Units **mg/L**
SampID: 23070389-091AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		20	S	**76**	40.00	48.84	68.6	85	115	08/08/2023

Batch R334769 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-091AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		20	S	**75**	40.00	48.84	64.8	76.29	2.01	08/08/2023

Batch R334863 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	08/10/2023

Batch R334863 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**20**	20.00	0	97.6	90	110	08/10/2023

Batch R334945 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	08/11/2023

Batch R334945 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**20**	20.00	0	101.2	90	110	08/11/2023

Batch R335217 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	08/17/2023

Batch R335217 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**20**	20.00	0	99.6	90	110	08/17/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9036 (TOTAL)

Batch R335341 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	08/21/2023

Batch R335341 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**20**	20.00	0	98.0	90	110	08/21/2023

Batch R335452 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	08/23/2023

Batch R335452 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**19**	20.00	0	95.9	90	110	08/23/2023

SW-846 9050A

Batch R334775 **SampType:** LCS Units **µmhos/cm @25C**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Conductivity		10		**1280**	1412	0	90.7	90	110	08/09/2023

Batch R334775 **SampType:** LCS1 Units **µmhos/cm @25C**
SampID: LCS1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Conductivity		10		**6300**	6667	0	94.5	90	110	08/09/2023

Batch R334775 **SampType:** DUP Units **µmhos/cm @25C** RPD Limit **10**
SampID: 23070389-028ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Conductivity		10		**3850**				3920	1.80	08/09/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9050A

Batch R334775 **SampType:** DUP Units **µmhos/cm @25C** RPD Limit **10**

SampID: 23070389-100ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Conductivity		10		**1640**				1630	0.61	08/09/2023

Batch R334775 **SampType:** DUP Units **µmhos/cm @25C** RPD Limit **10**

SampID: 23070389-110ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Conductivity		10		**1330**				1330	0.00	08/09/2023

SW-846 9060A

Batch R334837 **SampType:** MBLK Units **mg/L**

SampID: FILTER MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Dissolved Organic Carbon		1.0		**< 1.0**	0.4500	0	0	-100	100	08/09/2023

Batch R334837 **SampType:** MBLK Units **mg/L**

SampID: MB-R334837

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Dissolved Organic Carbon		1.0		**< 1.0**	0.4500	0	0	0	0	08/09/2023

Batch R334837 **SampType:** LCS Units **mg/L**

SampID: LCS-R334837

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Dissolved Organic Carbon		5.0		**20.8**	21.60	0	96.2	90	110	08/09/2023

Batch R334837 **SampType:** MS Units **mg/L**

SampID: 23070389-005FMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Dissolved Organic Carbon		1.0		**8.9**	5.000	4.490	88.0	85	115	08/10/2023

Batch R334837 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-005FMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Dissolved Organic Carbon		1.0		**8.8**	5.000	4.490	86.2	8.890	1.02	08/10/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9060A

Batch R334982 **SampType:** MBLK Units **mg/L**
SampID: FILTER MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Dissolved Organic Carbon		1.0		**< 1.0**	0.4500	0	0	-100	100	08/14/2023

Batch R334982 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		0.5		**< 0.5**	0.4500	0	0	-100	100	08/14/2023

Batch R334982 **SampType:** MBLK Units **mg/L**
SampID: MB-R334982

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Dissolved Organic Carbon		1.0		**< 1.0**	0.4500	0	0	-100	100	08/14/2023

Batch R334982 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		2.5		**21.0**	21.60	0	97.0	90	110	08/14/2023

Batch R334982 **SampType:** LCS Units **mg/L**
SampID: LCS-R334982

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Dissolved Organic Carbon		5.0		**21.0**	21.60	0	97.0	90	110	08/14/2023

Batch R334982 **SampType:** MS Units **mg/L**
SampID: 23070389-013FMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Dissolved Organic Carbon		5.0		**52.4**	50.00	8.030	88.7	85	115	08/14/2023

Batch R334982 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-013FMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Dissolved Organic Carbon		5.0		**51.8**	50.00	8.030	87.5	52.37	1.17	08/14/2023

Batch R334982 **SampType:** MS Units **mg/L**
SampID: 23070389-020FMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Dissolved Organic Carbon		1.0	E	**11.3**	5.000	6.530	96.2	85	115	08/14/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9060A

Batch R334982 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-020FMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Dissolved Organic Carbon		1.0	E	**11.3**	5.000	6.530	95.4	11.34	0.35	08/14/2023

Batch R335281 **SampType:** MBLK Units **mg/L**

SampID: FILTER MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Dissolved Organic Carbon		1.0		**< 1.0**	0.4500	0	0	-100	100	08/18/2023

Batch R335281 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		1.0		**< 1.0**	0.4500	0	0	-100	100	08/18/2023

Batch R335281 **SampType:** MBLK Units **mg/L**

SampID: MB-R335281

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Dissolved Organic Carbon		1.0		**< 1.0**	0.4500	0	0	-100	100	08/18/2023

Batch R335281 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		5.0		**21.4**	21.60	0	98.8	90	110	08/18/2023

Batch R335281 **SampType:** LCS Units **mg/L**

SampID: LCS-R335281

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Dissolved Organic Carbon		5.0		**21.4**	21.60	0	98.8	90	110	08/18/2023

Batch R335281 **SampType:** MS Units **mg/L**

SampID: 23070389-005EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		1.0	S	**7.8**	5.000	3.580	83.8	85	115	08/18/2023

Batch R335281 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 23070389-005EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		1.0	S	**7.6**	5.000	3.580	79.6	7.770	2.74	08/18/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

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Batch R335281 **SampType:** MS Units **mg/L**
SampID: 23070389-013EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		5.0	S	**28.5**	25.00	9.230	77.2	85	115	08/18/2023

Batch R335281 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-013EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		5.0	S	**29.5**	25.00	9.230	81.1	28.53	3.38	08/18/2023

Batch R335281 **SampType:** MS Units **mg/L**
SampID: 23070389-018EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		1.0		**5.7**	5.000	1.390	85.8	85	115	08/18/2023

Batch R335281 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-018EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		1.0		**5.7**	5.000	1.390	85.8	5.680	0.00	08/18/2023

Batch R335281 **SampType:** MS Units **mg/L**
SampID: 23070389-102EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		2.0	S	**11.9**	10.00	12.04	-1.8	85	115	08/18/2023

Batch R335281 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 23070389-102EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		2.0	S	**12.1**	10.00	12.04	0.8	11.86	2.17	08/18/2023

Batch R335506 **SampType:** MBLK Units **mg/L**
SampID: FILTER MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Dissolved Organic Carbon		1.0		**< 1.0**	0.4500	0	0	-100	100	08/24/2023

Batch R335506 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		1.0		**< 1.0**	0.4500	0	0	-100	100	08/24/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9060A

Batch R335506 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		1.0		**5.3**	5.000	0	105.6	90	110	08/24/2023

SW-846 9214 (DISSOLVED)

Batch R333259 **SampType:** MS Units **mg/L**
SampID: 23070389-049BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.06**	2.000	0.2540	90.1	75	125	07/28/2023

Batch R333259 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-049BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.11**	2.000	0.2540	92.8	2.056	2.55	07/28/2023

Batch R334347 **SampType:** MS Units **mg/L**
SampID: 23070389-024BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.30**	2.000	0.2930	100.5	75	125	07/31/2023

Batch R334347 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-024BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.29**	2.000	0.2930	99.9	2.303	0.52	07/31/2023

Batch R334347 **SampType:** MS Units **mg/L**
SampID: 23070389-110BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.22**	2.000	0.2920	96.5	75	125	07/31/2023

Batch R334347 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-110BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.20**	2.000	0.2920	95.6	2.222	0.86	07/31/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9214 (DISSOLVED)

Batch R334593 **SampType:** MS Units **mg/L**
SampID: 23070389-107BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**1.98**	2.000	0	99.0	75	125	08/04/2023

Batch R334593 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-107BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**1.94**	2.000	0	96.9	1.980	2.14	08/04/2023

SW-846 9214 (TOTAL)

Batch R333087 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**< 0.10**	0.0500	0	0	-100	100	07/25/2023

Batch R333087 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**1.09**	1.000	0	108.6	90	110	07/25/2023

Batch R333087 **SampType:** MS Units **mg/L**
SampID: 23070389-105AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**3.15**	2.000	1.540	80.6	75	125	07/26/2023

Batch R333087 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-105AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**3.07**	2.000	1.540	76.4	3.152	2.73	07/26/2023

Batch R333194 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**< 0.10**	0.0500	0	0	-100	100	07/27/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9214 (TOTAL)

Batch R333194 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**1.06**	1.000	0	105.8	90	110	07/27/2023

Batch R333194 **SampType:** MS Units **mg/L**
SampID: 23070389-011AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.59**	2.000	0.4340	107.7	75	125	07/27/2023

Batch R333194 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-011AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.61**	2.000	0.4340	108.6	2.588	0.69	07/27/2023

Batch R333194 **SampType:** MS Units **mg/L**
SampID: 23070389-108AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.10**	2.000	0.2160	94.2	75	125	07/27/2023

Batch R333194 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-108AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.08**	2.000	0.2160	93.0	2.099	1.10	07/27/2023

Batch R333259 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**< 0.10**	0.0500	0	0	-100	100	07/28/2023

Batch R333259 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**0.93**	1.000	0	93.3	90	110	07/28/2023

Batch R333259 **SampType:** MS Units **mg/L**
SampID: 23070389-104AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		1.00		**17.6**	20.00	1.110	82.5	75	125	07/28/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9214 (TOTAL)

Batch R333259 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 23070389-104AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		1.00		**18.0**	20.00	1.110	84.5	17.61	2.25	07/28/2023

Batch R334347 **SampType:** MBLK Units **mg/L**

SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**< 0.10**	0.0500	0	0	-100	100	07/31/2023

Batch R334347 **SampType:** LCS Units **mg/L**

SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**1.00**	1.000	0	99.9	90	110	07/31/2023

Batch R334474 **SampType:** MBLK Units **mg/L**

SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**< 0.10**	0.0500	0	0	-100	100	08/02/2023

Batch R334474 **SampType:** LCS Units **mg/L**

SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**1.01**	1.000	0	100.6	90	110	08/02/2023

Batch R334474 **SampType:** MS Units **mg/L**

SampID: 23070389-020AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.79**	2.000	0.7220	103.2	75	125	08/02/2023

Batch R334474 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 23070389-020AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.76**	2.000	0.7220	101.7	2.787	1.12	08/02/2023

Batch R334474 **SampType:** MS Units **mg/L**

SampID: 23070389-045AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**1.92**	2.000	0.2300	84.5	75	125	08/02/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9214 (TOTAL)

Batch R334474 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 23070389-045AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**1.97**	2.000	0.2300	87.0	1.920	2.62	08/02/2023

Batch R334474 **SampType:** MS Units **mg/L**

SampID: 23070389-052AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.48**	2.000	0.4220	102.8	75	125	08/02/2023

Batch R334474 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 23070389-052AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.48**	2.000	0.4220	103.0	2.478	0.16	08/02/2023

Batch R334593 **SampType:** MBLK Units **mg/L**

SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**< 0.10**	0.0500	0	0	-100	100	08/04/2023

Batch R334593 **SampType:** LCS Units **mg/L**

SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**0.96**	1.000	0	96.3	90	110	08/04/2023

Batch R335249 **SampType:** MBLK Units **mg/L**

SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**< 0.10**	0.0500	0	0	-100	100	08/21/2023

Batch R335249 **SampType:** LCS Units **mg/L**

SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**0.96**	1.000	0	96.5	90	110	08/21/2023

Batch R335249 **SampType:** MS Units **mg/L**

SampID: 23070389-117AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.12**	2.000	0.1980	96.0	75	125	08/21/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9214 (TOTAL)

Batch R335249 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 23070389-117AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.10**	2.000	0.1980	95.2	2.119	0.81	08/21/2023

SW-846 9251 (DISSOLVED)

Batch R333281 **SampType:** MS Units **mg/L**

SampID: 23070389-102BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		20		**143**	100.0	45.99	96.8	85	115	07/27/2023

Batch R333281 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 23070389-102BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		20		**142**	100.0	45.99	96.0	142.8	0.62	07/27/2023

Batch R333281 **SampType:** MS Units **mg/L**

SampID: 23070389-105BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		20	E	**281**	100.0	191.5	89.7	85	115	07/27/2023

Batch R333281 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 23070389-105BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		20	E	**283**	100.0	191.5	91.9	281.2	0.78	07/27/2023

Batch R334401 **SampType:** MS Units **mg/L**

SampID: 23070389-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		40		**289**	200.0	98.29	95.4	85	115	07/31/2023

Batch R334401 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 23070389-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		40		**291**	200.0	98.29	96.4	289.1	0.65	07/31/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9251 (DISSOLVED)

Batch R334401 **SampType:** MS Units **mg/L**
SampID: 23070389-108BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		80		**500**	400.0	108.7	97.9	85	115	07/31/2023

Batch R334401 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-108BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		80		**503**	400.0	108.7	98.6	500.3	0.59	07/31/2023

Batch R334538 **SampType:** MS Units **mg/L**
SampID: 23070389-054BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		200		**1340**	1000	407.2	93.1	85	115	08/02/2023

Batch R334538 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-054BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		200		**1360**	1000	407.2	94.9	1338	1.30	08/02/2023

Batch R334646 **SampType:** MS Units **mg/L**
SampID: 23070389-047BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		200		**1200**	1000	210.9	98.7	85	115	08/05/2023

Batch R334646 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-047BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		200		**1190**	1000	210.9	97.5	1198	1.03	08/05/2023

Batch R335223 **SampType:** MS Units **mg/L**
SampID: 23070389-111BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		20		**167**	100.0	76.40	90.5	85	115	08/17/2023

Batch R335223 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-111BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		20		**163**	100.0	76.40	86.4	166.9	2.51	08/17/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9251 (DISSOLVED)

Batch R335479 **SampType:** MS Units **mg/L**
SampID: 23070389-117BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		40		**285**	200.0	101.8	91.6	85	115	08/23/2023

Batch R335479 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-117BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		40		**287**	200.0	101.8	92.8	285.0	0.85	08/23/2023

SW-846 9251 (TOTAL)

Batch R333281 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	07/27/2023

Batch R333281 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**21**	20.00	0	102.8	90	110	07/27/2023

Batch R333281 **SampType:** MS Units **mg/L**
SampID: 23070389-015AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**43**	20.00	25.11	89.2	85	115	07/27/2023

Batch R333281 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-015AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**43**	20.00	25.11	89.0	42.95	0.12	07/27/2023

Batch R333281 **SampType:** MS Units **mg/L**
SampID: 23070389-105AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		20	E	**282**	100.0	185.9	95.6	85	115	07/27/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9251 (TOTAL)

Batch R333281 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 23070389-105AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		20	E	**282**	100.0	185.9	96.4	281.6	0.28	07/27/2023

Batch R334401 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	07/31/2023

Batch R334401 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	101.6	90	110	07/31/2023

Batch R334538 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	08/02/2023

Batch R334538 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	101.7	90	110	08/02/2023

Batch R334538 **SampType:** MS Units **mg/L**

SampID: 23070389-022AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4	S	**43**	20.00	25.67	84.8	85	115	08/02/2023

Batch R334538 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 23070389-022AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4	S	**42**	20.00	25.67	84.1	42.64	0.38	08/02/2023

Batch R334594 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	08/03/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9251 (TOTAL)

Batch R334594 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**21**	20.00	0	105.6	90	110	08/03/2023

Batch R334594 **SampType:** MS Units **mg/L**
SampID: 23070389-006AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**29**	20.00	9.860	96.8	85	115	08/03/2023

Batch R334594 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-006AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**29**	20.00	9.860	96.9	29.23	0.03	08/03/2023

Batch R334594 **SampType:** MS Units **mg/L**
SampID: 23070389-044AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		800		**6220**	4000	2368	96.2	85	115	08/03/2023

Batch R334594 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-044AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		800		**6040**	4000	2368	91.8	6216	2.90	08/03/2023

Batch R334646 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	08/04/2023

Batch R334646 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	102.2	90	110	08/04/2023

Batch R334776 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	08/08/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9251 (TOTAL)

Batch R334776 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**21**	20.00	0	104.0	90	110	08/08/2023

Batch R334776 **SampType:** MS Units **mg/L**
SampID: 23070389-050AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**24**	20.00	4.690	95.6	85	115	08/08/2023

Batch R334776 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-050AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**24**	20.00	4.690	95.6	23.80	0.04	08/08/2023

Batch R334776 **SampType:** MS Units **mg/L**
SampID: 23070389-091AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		8		**49**	40.00	10.23	96.3	85	115	08/08/2023

Batch R334776 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-091AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		8		**49**	40.00	10.23	96.4	48.76	0.08	08/08/2023

Batch R334902 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	08/10/2023

Batch R334902 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**21**	20.00	0	103.6	90	110	08/10/2023

Batch R334956 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	08/11/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 9251 (TOTAL)

Batch R334956 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**21**	20.00	0	105.8	90	110	08/11/2023

Batch R335223 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	08/17/2023

Batch R335223 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	100.8	90	110	08/17/2023

Batch R335354 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	08/21/2023

Batch R335354 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	98.6	90	110	08/21/2023

Batch R335479 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	08/23/2023

Batch R335479 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	101.8	90	110	08/23/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 210037 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210037

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0127	0	0	-100	100	07/28/2023
Aluminum		0.0250		**< 0.0250**	0.0127	0	0	-100	100	08/02/2023
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/02/2023
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	07/28/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	07/28/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/02/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	07/28/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/02/2023
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	07/28/2023
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	08/02/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	07/28/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/02/2023
Silicon	*	0.0500		**< 0.0500**	0.0122	0	0	-100	100	08/02/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	07/28/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/02/2023

Batch 210037 **SampType:** LCS Units **mg/L**

SampID: LCS-210037

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**1.72**	2.000	0	85.8	85	115	07/28/2023
Aluminum		0.0250		**1.94**	2.000	0	96.9	85	115	08/02/2023
Calcium		0.100		**2.30**	2.500	0	91.9	85	115	07/28/2023
Calcium		0.100		**2.59**	2.500	0	103.4	85	115	08/02/2023
Iron		0.0400		**1.80**	2.000	0	90.0	85	115	07/28/2023
Iron		0.0400		**1.99**	2.000	0	99.6	85	115	08/02/2023
Magnesium		0.0500		**2.44**	2.500	0	97.5	85	115	08/02/2023
Magnesium		0.0500		**2.18**	2.500	0	87.1	85	115	07/28/2023
Manganese		0.0070		**0.443**	0.5000	0	88.7	85	115	07/28/2023
Manganese		0.0070		**0.498**	0.5000	0	99.7	85	115	08/02/2023
Potassium		0.100		**2.35**	2.500	0	94.0	85	115	07/28/2023
Potassium		0.100		**2.53**	2.500	0	101.2	85	115	08/02/2023
Silicon	*	0.0500		**0.459**	0.5000	0	91.8	85	115	08/02/2023
Sodium		0.0500		**2.42**	2.500	0	96.8	85	115	08/02/2023
Sodium		0.0500		**2.17**	2.500	0	86.7	85	115	07/28/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 210037 **SampType:** MS Units **mg/L**

SampID: 23070389-009DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**358**	2.500	363.9	-239.6	75	125	08/02/2023
Magnesium		0.0500	S	**280**	2.500	286.5	-278.9	75	125	08/02/2023
Potassium		0.100		**4.16**	2.500	1.722	97.5	75	125	07/28/2023
Silicon	*	0.0500	S	**10.4**	0.5000	10.26	36.3	75	125	08/02/2023
Sodium		0.0500	S	**243**	2.500	247.2	-163.2	75	125	08/02/2023

Batch 210037 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-009DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**359**	2.500	363.9	-197.6	358.0	0.29	08/02/2023
Magnesium		0.0500	S	**282**	2.500	286.5	-189.8	279.6	0.79	08/02/2023
Potassium		0.100		**4.14**	2.500	1.722	96.8	4.160	0.41	07/28/2023
Silicon	*	0.0500	S	**10.4**	0.5000	10.26	35.4	10.44	0.05	08/02/2023
Sodium		0.0500	S	**243**	2.500	247.2	-177.2	243.1	0.14	08/02/2023

Batch 210142 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210142

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0127	0	0	-100	100	08/01/2023
Antimony		0.0500		**< 0.0500**	0.0068	0	0	-100	100	08/01/2023
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	08/01/2023
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	08/01/2023
Cadmium		0.0020		**< 0.0020**	0.0005	0	0	-100	100	08/01/2023
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/01/2023
Chromium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	08/01/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/01/2023
Lead		0.0150		**< 0.0150**	0.0014	0	0	-100	100	08/01/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/01/2023
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	08/01/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/01/2023
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	08/01/2023
Silicon	*	0.0500		**< 0.0500**	0.0122	0	0	-100	100	08/04/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/01/2023
Vanadium		0.0100		**< 0.0100**	0.0009	0	0	-100	100	08/01/2023
Zinc		0.0100		**< 0.0100**	0.0050	0	0	-100	100	08/01/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 210142 **SampType:** LCS Units **mg/L**

SampID: LCS-210142

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**1.81**	2.000	0	90.5	85	115	08/01/2023
Antimony		0.0500		**0.459**	0.5000	0	91.9	85	115	08/01/2023
Arsenic		0.0250		**0.460**	0.5000	0	92.0	85	115	08/01/2023
Boron		0.0200		**0.456**	0.5000	0	91.2	85	115	08/01/2023
Cadmium		0.0020		**0.0464**	0.0500	0	92.8	85	115	08/01/2023
Calcium		0.100		**2.36**	2.500	0	94.4	85	115	08/01/2023
Chromium		0.0050		**0.181**	0.2000	0	90.7	85	115	08/01/2023
Iron		0.0400		**1.83**	2.000	0	91.3	85	115	08/01/2023
Lead		0.0150		**0.459**	0.5000	0	91.9	85	115	08/01/2023
Magnesium		0.0500		**2.19**	2.500	0	87.6	85	115	08/01/2023
Manganese		0.0070		**0.452**	0.5000	0	90.3	85	115	08/01/2023
Potassium		0.100		**2.52**	2.500	0	100.9	85	115	08/01/2023
Selenium		0.0400		**0.439**	0.5000	0	87.8	85	115	08/01/2023
Silicon	*	0.0500		**0.501**	0.5000	0	100.2	85	115	08/07/2023
Sodium		0.0500		**2.34**	2.500	0	93.6	85	115	08/01/2023
Vanadium		0.0100		**0.458**	0.5000	0	91.6	85	115	08/01/2023
Zinc		0.0100		**0.456**	0.5000	0	91.2	85	115	08/01/2023

Batch 210142 **SampType:** MS Units **mg/L**

SampID: 23070389-043CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**487**	2.500	491.4	-165.2	75	125	08/01/2023
Magnesium		0.0500	S	**268**	2.500	268.6	-14.3	75	125	08/01/2023
Potassium		0.100		**6.98**	2.500	4.330	106.1	75	125	08/01/2023
Sodium		0.0500	S	**154**	2.500	153.8	15.2	75	125	08/01/2023

Batch 210142 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-043CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**485**	2.500	491.4	-270.4	487.2	0.54	08/01/2023
Magnesium		0.0500	S	**265**	2.500	268.6	-137.5	268.3	1.16	08/01/2023
Potassium		0.100		**6.92**	2.500	4.330	103.6	6.984	0.90	08/01/2023
Sodium		0.0500	S	**153**	2.500	153.8	-25.2	154.2	0.66	08/01/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 210298 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210298

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0127	0	0	-100	100	08/02/2023
Cadmium		0.0020		**< 0.0020**	0.0005	0	0	-100	100	08/02/2023
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/02/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/02/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/02/2023
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	08/02/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/02/2023
Silicon	*	0.0500		**< 0.0500**	0.0122	0	0	-100	100	08/02/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/02/2023

Batch 210298 **SampType:** LCS Units **mg/L**

SampID: LCS-210298

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**1.80**	2.000	0	90.2	85	115	08/02/2023
Cadmium		0.0020		**0.0483**	0.0500	0	96.6	85	115	08/03/2023
Calcium		0.100		**2.39**	2.500	0	95.8	85	115	08/02/2023
Iron		0.0400		**1.94**	2.000	0	96.9	85	115	08/02/2023
Magnesium		0.0500		**2.26**	2.500	0	90.5	85	115	08/02/2023
Manganese		0.0070		**0.472**	0.5000	0	94.3	85	115	08/02/2023
Potassium		0.100		**2.47**	2.500	0	98.8	85	115	08/02/2023
Silicon	*	0.0500		**0.502**	0.5000	0	100.4	85	115	08/07/2023
Sodium		0.0500		**2.28**	2.500	0	91.2	85	115	08/02/2023

Batch 210298 **SampType:** MS Units **mg/L**

SampID: 23070389-048CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**591**	2.500	597.2	-241.6	75	125	08/02/2023
Magnesium		0.0500	S	**395**	2.500	398.0	-108.9	75	125	08/02/2023
Potassium		0.100		**6.53**	2.500	3.799	109.2	75	125	08/02/2023
Sodium		2.50	S	**556**	2.500	562.0	-240.0	75	125	08/03/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 210298 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-048CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**592**	2.500	597.2	-214.8	591.2	0.11	08/02/2023
Magnesium		0.0500	S	**397**	2.500	398.0	-24.8	395.3	0.53	08/02/2023
Potassium		0.100		**6.53**	2.500	3.799	109.4	6.529	0.08	08/02/2023
Sodium		2.50	S	**562**	2.500	562.0	0	556.0	1.07	08/03/2023

Batch 210567 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210567

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0127	0	0	-100	100	08/10/2023
Aluminum		0.0250		**< 0.0250**	0.0127	0	0	-100	100	08/09/2023
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/10/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/10/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/09/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/09/2023
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	08/09/2023
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	08/10/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/09/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/10/2023
Silicon	*	0.0500		**< 0.0500**	0.0122	0	0	-100	100	08/09/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/09/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/10/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 210567 **SampType:** LCS Units **mg/L**

SampID: LCS-210567

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**1.73**	2.000	0	86.4	85	115	08/10/2023
Aluminum		0.0250		**1.73**	2.000	0	86.6	85	115	08/09/2023
Calcium		0.100		**2.30**	2.500	0	91.9	85	115	08/10/2023
Iron		0.0400		**1.84**	2.000	0	91.9	85	115	08/09/2023
Iron		0.0400		**1.74**	2.000	0	87.0	85	115	08/10/2023
Magnesium		0.0500		**2.26**	2.500	0	90.3	85	115	08/09/2023
Manganese		0.0070		**0.461**	0.5000	0	92.1	85	115	08/09/2023
Manganese		0.0070		**0.431**	0.5000	0	86.2	85	115	08/10/2023
Potassium		0.100		**2.41**	2.500	0	96.4	85	115	08/09/2023
Potassium		0.100		**2.43**	2.500	0	97.0	85	115	08/10/2023
Silicon	*	0.0500		**0.425**	0.5000	0	85.0	85	115	08/09/2023
Sodium		0.0500		**2.24**	2.500	0	89.6	85	115	08/10/2023
Sodium		0.0500		**2.21**	2.500	0	88.5	85	115	08/09/2023

Batch 210567 **SampType:** MS Units **mg/L**

SampID: 23070389-038CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**66.0**	2.500	64.96	39.6	75	125	08/09/2023
Magnesium		0.0500		**27.1**	2.500	25.20	75.4	75	125	08/09/2023
Potassium		0.100		**2.61**	2.500	0.2328	95.1	75	125	08/09/2023
Sodium		0.0500	S	**100**	2.500	100.8	-26.0	75	125	08/09/2023

Batch 210567 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-038CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**66.0**	2.500	64.96	40.0	65.95	0.02	08/09/2023
Magnesium		0.0500		**27.2**	2.500	25.20	79.9	27.09	0.42	08/09/2023
Potassium		0.100		**2.64**	2.500	0.2328	96.2	2.611	1.01	08/09/2023
Sodium		0.0500	S	**101**	2.500	100.8	2.0	100.2	0.70	08/09/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 211013 **SampType:** MBLK Units **mg/L**

SampID: MBLK-211013

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0127	0	0	-100	100	08/18/2023
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/18/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/18/2023
Lead		0.0150		**< 0.0150**	0.0014	0	0	-100	100	08/18/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/18/2023
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	08/18/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/18/2023
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	08/18/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/18/2023
Vanadium		0.0100		**< 0.0100**	0.0009	0	0	-100	100	08/18/2023
Zinc		0.0100		**< 0.0100**	0.0050	0	0	-100	100	08/18/2023

Batch 211013 **SampType:** LCS Units **mg/L**

SampID: LCS-211013

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**1.71**	2.000	0	85.5	85	115	08/18/2023
Calcium		0.100		**2.28**	2.500	0	91.1	85	115	08/18/2023
Iron		0.0400		**1.77**	2.000	0	88.3	85	115	08/18/2023
Lead		0.0150		**0.448**	0.5000	0	89.5	85	115	08/18/2023
Magnesium		0.0500		**2.13**	2.500	0	85.0	85	115	08/18/2023
Manganese		0.0070		**0.440**	0.5000	0	88.0	85	115	08/18/2023
Potassium		0.100		**2.43**	2.500	0	97.1	85	115	08/18/2023
Selenium		0.0400		**0.445**	0.5000	0	89.0	85	115	08/18/2023
Sodium		0.0500		**2.26**	2.500	0	90.5	85	115	08/18/2023
Vanadium		0.0100		**0.442**	0.5000	0	88.4	85	115	08/18/2023
Zinc		0.0100		**0.445**	0.5000	0	89.0	85	115	08/18/2023

Batch 211013 **SampType:** MS Units **mg/L**

SampID: 23070389-112CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**59.3**	2.500	59.96	-25.2	75	125	08/18/2023
Magnesium		0.0500		**26.6**	2.500	24.56	83.0	75	125	08/21/2023
Potassium		0.100		**2.66**	2.500	0.1760	99.2	75	125	08/18/2023
Sodium		0.0500		**103**	2.500	100.7	94.0	75	125	08/18/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 211013 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-112CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**60.5**	2.500	59.96	20.8	59.33	1.92	08/18/2023
Magnesium		0.0500		**26.7**	2.500	24.56	84.2	26.63	0.11	08/21/2023
Potassium		0.100		**2.59**	2.500	0.1760	96.4	2.657	2.74	08/18/2023
Sodium		0.0500	S	**98.8**	2.500	100.7	-75.2	103.0	4.19	08/18/2023

Batch 211033 **SampType:** MBLK Units **mg/L**

SampID: MBLK-211033

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0127	0	0	-100	100	08/18/2023
Antimony		0.0500		**< 0.0500**	0.0068	0	0	-100	100	08/18/2023
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	08/18/2023
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	08/18/2023
Cadmium		0.0020		**< 0.0020**	0.0005	0	0	-100	100	08/18/2023
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/18/2023
Chromium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	08/18/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/18/2023
Lead		0.0150		**< 0.0150**	0.0014	0	0	-100	100	08/18/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/18/2023
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	08/18/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/18/2023
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	08/18/2023
Silicon	*	0.0500		**< 0.0500**	0.0122	0	0	-100	100	08/18/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/18/2023
Vanadium		0.0100		**< 0.0100**	0.0009	0	0	-100	100	08/18/2023
Zinc		0.0100		**< 0.0100**	0.0050	0	0	-100	100	08/18/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 211033 **SampType:** LCS Units **mg/L**

SampID: LCS-211033

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**1.72**	2.000	0	86.2	85	115	08/18/2023
Antimony		0.0500		**0.448**	0.5000	0	89.5	85	115	08/18/2023
Arsenic		0.0250		**0.464**	0.5000	0	92.9	85	115	08/18/2023
Boron		0.0200		**0.444**	0.5000	0	88.8	85	115	08/18/2023
Cadmium		0.0020		**0.0448**	0.0500	0	89.6	85	115	08/18/2023
Calcium		0.100		**2.33**	2.500	0	93.4	85	115	08/18/2023
Chromium		0.0050		**0.179**	0.2000	0	89.3	85	115	08/18/2023
Iron		0.0400		**1.80**	2.000	0	89.8	85	115	08/18/2023
Lead		0.0150		**0.454**	0.5000	0	90.8	85	115	08/18/2023
Magnesium		0.0500		**2.16**	2.500	0	86.4	85	115	08/18/2023
Manganese		0.0070		**0.445**	0.5000	0	88.9	85	115	08/18/2023
Potassium		0.100		**2.42**	2.500	0	96.8	85	115	08/18/2023
Selenium		0.0400		**0.448**	0.5000	0	89.7	85	115	08/18/2023
Silicon	*	0.0500		**0.460**	0.5000	0	91.9	85	115	08/21/2023
Silicon	*	0.0500		**0.472**	0.5000	0	94.5	85	115	08/22/2023
Sodium		0.0500		**2.26**	2.500	0	90.4	85	115	08/18/2023
Vanadium		0.0100		**0.447**	0.5000	0	89.4	85	115	08/18/2023
Zinc		0.0100		**0.449**	0.5000	0	89.9	85	115	08/18/2023

Batch 211033 **SampType:** MS Units **mg/L**

SampID: 23070389-117DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**480**	2.500	491.9	-484.4	75	125	08/18/2023
Magnesium		0.0500	S	**443**	2.500	447.9	-206.9	75	125	08/18/2023
Potassium		0.100		**9.26**	2.500	6.709	102.1	75	125	08/18/2023
Silicon	*	0.0500	S	**8.12**	0.5000	7.889	46.2	75	125	08/18/2023
Sodium		0.0500	S	**394**	2.500	398.1	-169.2	75	125	08/18/2023

Batch 211033 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-117DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**469**	2.500	491.9	-919.2	479.8	2.29	08/18/2023
Magnesium		0.0500	S	**427**	2.500	447.9	-852.3	442.7	3.71	08/18/2023
Potassium		0.100		**8.97**	2.500	6.709	90.3	9.261	3.24	08/18/2023
Silicon	*	0.0500	S	**7.92**	0.5000	7.889	5.3	8.120	2.55	08/18/2023
Sodium		0.0500	S	**382**	2.500	398.1	-624.0	393.8	2.93	08/18/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 209945 **SampType:** MBLK Units **mg/L**

SampID: MBLK-209945

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	07/26/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	07/26/2023
Magnesium		0.0500		**< 0.0500**	0.0060	0	0	-100	100	07/26/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	07/26/2023
Silicon	*	0.0500	JS	**0.031**	0.0122	0	253.3	-100	100	07/26/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	07/26/2023

Batch 209945 **SampType:** LCS Units **mg/L**

SampID: LCS-209945

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.70**	2.500	0	108.0	85	115	07/26/2023
Iron		0.0400		**1.98**	2.000	0	99.2	85	115	07/26/2023
Magnesium		0.0500		**2.39**	2.500	0	95.5	85	115	07/26/2023
Potassium		0.100		**2.71**	2.500	0	108.2	85	115	07/26/2023
Silicon	*	0.0500	B	**0.500**	0.5000	0	99.9	85	115	07/26/2023
Sodium		0.0500		**2.51**	2.500	0	100.6	85	115	07/26/2023

Batch 209945 **SampType:** MS Units **mg/L**

SampID: 23070389-103CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**29.2**	2.500	27.59	64.8	75	125	07/26/2023
Magnesium		0.0500		**2.46**	2.500	0.2025	90.3	75	125	07/26/2023
Potassium		1.00	S	**19.7**	2.500	16.38	134.0	75	125	07/28/2023
Silicon	*	0.0500	B	**4.30**	0.5000	3.899	80.4	75	125	07/26/2023
Sodium		0.0500	S	**69.2**	2.500	69.09	5.6	75	125	07/26/2023

Batch 209945 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-103CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**28.8**	2.500	27.59	49.6	29.21	1.31	07/26/2023
Magnesium		0.0500		**2.43**	2.500	0.2025	89.0	2.460	1.29	07/26/2023
Potassium		1.00	S	**20.4**	2.500	16.38	162.2	19.73	3.51	07/28/2023
Silicon	*	0.0500	BS	**4.24**	0.5000	3.899	67.7	4.301	1.49	07/26/2023
Sodium		0.0500	S	**68.8**	2.500	69.09	-10.8	69.23	0.59	07/26/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 210094 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210094

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0127	0	0	-100	100	08/01/2023
Antimony		0.0500		**< 0.0500**	0.0068	0	0	-100	100	08/01/2023
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	08/01/2023
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	08/01/2023
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	08/11/2023
Cadmium		0.0020		**< 0.0020**	0.0005	0	0	-100	100	08/01/2023
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/01/2023
Chromium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	08/01/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/01/2023
Lead		0.0150		**< 0.0150**	0.0040	0	0	-100	100	08/01/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/01/2023
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	08/01/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/01/2023
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	08/01/2023
Silicon	*	0.0500		**< 0.0500**	0.0122	0	0	-100	100	08/04/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/01/2023

Batch 210094 **SampType:** LCS Units **mg/L**

SampID: LCS-210094

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**1.95**	2.000	0	97.6	85	115	08/01/2023
Antimony		0.0500		**0.504**	0.5000	0	100.7	85	115	08/01/2023
Arsenic		0.0250		**0.513**	0.5000	0	102.5	85	115	08/01/2023
Boron		0.0200		**0.493**	0.5000	0	98.5	85	115	08/01/2023
Boron		0.0200		**0.510**	0.5000	0	101.9	85	115	08/11/2023
Cadmium		0.0020		**0.0512**	0.0500	0	102.4	85	115	08/01/2023
Calcium		0.100		**2.56**	2.500	0	102.2	85	115	08/01/2023
Chromium		0.0050		**0.198**	0.2000	0	98.8	85	115	08/01/2023
Iron		0.0400		**1.97**	2.000	0	98.7	85	115	08/01/2023
Lead		0.0150		**0.498**	0.5000	0	99.6	85	115	08/01/2023
Magnesium		0.0500		**2.34**	2.500	0	93.8	85	115	08/01/2023
Manganese		0.0070		**0.491**	0.5000	0	98.3	85	115	08/01/2023
Potassium		0.100		**2.68**	2.500	0	107.1	85	115	08/01/2023
Selenium		0.0400		**0.482**	0.5000	0	96.4	85	115	08/01/2023
Silicon	*	0.0500		**0.439**	0.5000	0	87.8	85	115	08/04/2023
Sodium		0.0500		**2.53**	2.500	0	101.2	85	115	08/01/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 210094 **SampType:** MS Units **mg/L**

SampID: 23070389-010CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**57.8**	5.000	53.71	82.2	75	125	08/01/2023
Magnesium		0.0500		**29.0**	5.000	24.74	85.9	75	125	08/01/2023
Potassium		0.100		**6.48**	5.000	1.420	101.1	75	125	08/01/2023
Silicon	*	0.0500	S	**6.81**	1.000	7.807	-100.2	75	125	08/04/2023
Sodium		0.0500	S	**119**	5.000	115.0	72.8	75	125	08/01/2023

Batch 210094 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-010CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**57.2**	5.000	53.71	70.2	57.82	1.04	08/01/2023
Magnesium		0.0500		**28.7**	5.000	24.74	80.2	29.03	0.98	08/01/2023
Potassium		0.100		**6.38**	5.000	1.420	99.1	6.475	1.56	08/01/2023
Silicon	*	0.0500	S	**6.76**	1.000	7.807	-104.6	6.805	0.65	08/04/2023
Sodium		0.0500	S	**117**	5.000	115.0	44.2	118.6	1.21	08/01/2023

Batch 210094 **SampType:** MS Units **mg/L**

SampID: 23070389-064CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**177**	5.000	175.3	39.2	75	125	08/01/2023
Magnesium		0.0500		**68.4**	5.000	63.84	91.1	75	125	08/01/2023
Potassium		0.200		**11.9**	5.000	7.082	95.5	75	125	08/04/2023
Sodium		0.0500	S	**101**	5.000	97.49	69.6	75	125	08/01/2023

Batch 210094 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-064CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**175**	5.000	175.3	-1.4	177.3	1.15	08/01/2023
Magnesium		0.0500	S	**67.1**	5.000	63.84	66.0	68.40	1.85	08/01/2023
Potassium		0.200		**12.1**	5.000	7.082	101.0	11.86	2.33	08/04/2023
Sodium		0.0500		**102**	5.000	97.49	88.6	101.0	0.94	08/01/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 210149 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210149

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/03/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/03/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/03/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/03/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/03/2023

Batch 210149 **SampType:** LCS Units **mg/L**

SampID: LCS-210149

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.57**	2.500	0	102.6	85	115	08/03/2023
Iron		0.0400		**1.96**	2.000	0	98.0	85	115	08/03/2023
Magnesium		0.0500		**2.33**	2.500	0	93.4	85	115	08/03/2023
Potassium		0.100		**2.58**	2.500	0	103.3	85	115	08/03/2023
Sodium		0.0500		**2.47**	2.500	0	98.8	85	115	08/03/2023

Batch 210149 **SampType:** MS Units **mg/L**

SampID: 23070389-068BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		5.00	S	**1140**	2.500	1159	-720.0	75	125	08/07/2023
Magnesium		2.50		**11.2**	2.500	8.715	99.2	75	125	08/07/2023
Potassium		50.0	S	**1950**	2.500	1943	182.0	75	125	08/08/2023
Sodium		5.00	S	**15300**	2.500	14890	15440	75	125	08/07/2023

Batch 210149 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-068BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		5.00	S	**1150**	2.500	1159	-400.0	1141	0.70	08/07/2023
Magnesium		2.50		**11.1**	2.500	8.715	94.6	11.20	1.03	08/07/2023
Potassium		50.0	S	**1970**	2.500	1943	932.0	1948	0.96	08/08/2023
Sodium		5.00	S	**15200**	2.500	14890	12080	15280	0.55	08/07/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 210259 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210259

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0127	0	0	-100	100	08/02/2023
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/02/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/02/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/02/2023
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	08/02/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/02/2023
Silicon	*	0.0500		**< 0.0500**	0.0122	0	0	-100	100	08/02/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/02/2023

Batch 210259 **SampType:** LCS Units **mg/L**

SampID: LCS-210259

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**1.94**	2.000	0	96.8	85	115	08/02/2023
Calcium		0.100		**2.60**	2.500	0	104.2	85	115	08/02/2023
Iron		0.0400		**2.14**	2.000	0	107.0	85	115	08/02/2023
Magnesium		0.0500		**2.44**	2.500	0	97.5	85	115	08/02/2023
Manganese		0.0070		**0.515**	0.5000	0	103.0	85	115	08/02/2023
Potassium		0.100		**2.60**	2.500	0	103.8	85	115	08/02/2023
Silicon	*	0.0500		**0.438**	0.5000	0	87.5	85	115	08/02/2023
Sodium		0.0500		**2.46**	2.500	0	98.4	85	115	08/02/2023

Batch 210259 **SampType:** MS Units **mg/L**

SampID: 23070389-014CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**144**	5.000	139.8	92.2	75	125	08/02/2023
Magnesium		0.0500		**72.5**	5.000	67.27	104.4	75	125	08/02/2023
Potassium		0.100		**6.48**	5.000	1.499	99.5	75	125	08/02/2023
Silicon	*	0.0500		**8.61**	1.000	7.669	94.2	75	125	08/02/2023
Sodium		0.0500	S	**118**	5.000	111.9	129.8	75	125	08/02/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 210259 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-014CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**146**	5.000	139.8	126.8	144.4	1.19	08/02/2023
Magnesium		0.0500	S	**73.7**	5.000	67.27	128.3	72.49	1.64	08/02/2023
Potassium		0.100		**6.52**	5.000	1.499	100.4	6.475	0.69	08/02/2023
Silicon	*	0.0500		**8.90**	1.000	7.669	122.9	8.610	3.28	08/02/2023
Sodium		0.0500	S	**121**	5.000	111.9	181.4	118.4	2.16	08/02/2023

Batch 210307 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210307

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0127	0	0	-100	100	08/04/2023
Antimony		0.0500		**< 0.0500**	0.0068	0	0	-100	100	08/04/2023
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	08/04/2023
Barium		0.0025		**< 0.0025**	0.0007	0	0	-100	100	08/04/2023
Beryllium		0.0005		**< 0.0005**	0.0002	0	0	-100	100	08/04/2023
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	08/04/2023
Cadmium		0.0020	J	**0.0005**	0.0005	0	100.0	-100	100	08/04/2023
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/04/2023
Chromium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	08/04/2023
Cobalt		0.0050		**< 0.0050**	0.0020	0	0	-100	100	08/04/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/04/2023
Lead		0.0150		**< 0.0150**	0.0014	0	0	-100	100	08/04/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/04/2023
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	08/04/2023
Molybdenum		0.0100		**< 0.0100**	0.0037	0	0	-100	100	08/04/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/04/2023
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	08/04/2023
Silicon	*	0.0500		**< 0.0500**	0.0122	0	0	-100	100	08/04/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/04/2023
Thallium		0.0500		**< 0.0500**	0.0111	0	0	-100	100	08/04/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 210307 **SampType:** LCS Units **mg/L**

SampID: LCS-210307

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**1.78**	2.000	0	88.9	85	115	08/04/2023
Antimony		0.0500		**0.477**	0.5000	0	95.4	85	115	08/04/2023
Arsenic		0.0250		**0.488**	0.5000	0	97.5	85	115	08/04/2023
Barium		0.0025		**1.87**	2.000	0	93.7	85	115	08/04/2023
Beryllium		0.0005		**0.0467**	0.0500	0	93.4	85	115	08/04/2023
Boron		0.0200		**0.467**	0.5000	0	93.4	85	115	08/04/2023
Cadmium		0.0020		**0.0471**	0.0500	0	94.2	85	115	08/04/2023
Calcium		0.100		**2.46**	2.500	0	98.2	85	115	08/04/2023
Chromium		0.0050		**0.184**	0.2000	0	92.2	85	115	08/04/2023
Cobalt		0.0050		**0.470**	0.5000	0	94.0	85	115	08/04/2023
Iron		0.0400		**1.85**	2.000	0	92.3	85	115	08/04/2023
Lead		0.0150		**0.471**	0.5000	0	94.1	85	115	08/04/2023
Magnesium		0.0500		**2.33**	2.500	0	93.4	85	115	08/04/2023
Manganese		0.0070		**0.461**	0.5000	0	92.2	85	115	08/04/2023
Molybdenum		0.0100		**0.456**	0.5000	0	91.3	85	115	08/04/2023
Potassium		0.100		**2.52**	2.500	0	100.9	85	115	08/04/2023
Selenium		0.0400		**0.467**	0.5000	0	93.5	85	115	08/04/2023
Silicon	*	0.0500		**0.471**	0.5000	0	94.3	85	115	08/04/2023
Sodium		0.0500		**2.32**	2.500	0	92.7	85	115	08/04/2023
Thallium		0.0500		**0.242**	0.2500	0	96.8	85	115	08/04/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 210307 **SampType:** LCSD Units **mg/L** RPD Limit **20**

SampID: LCSD-210307

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Aluminum		0.0250		**1.81**	2.000	0	90.7	1.779	2.01	08/04/2023
Antimony		0.0500		**0.483**	0.5000	0	96.6	0.4769	1.27	08/04/2023
Arsenic		0.0250		**0.506**	0.5000	0	101.2	0.4875	3.70	08/04/2023
Barium		0.0025		**1.91**	2.000	0	95.6	1.875	1.91	08/04/2023
Beryllium		0.0005		**0.0476**	0.0500	0	95.2	0.04670	1.91	08/04/2023
Boron		0.0200		**0.478**	0.5000	0	95.5	0.4669	2.29	08/04/2023
Cadmium		0.0020		**0.0484**	0.0500	0	96.8	0.04710	2.72	08/04/2023
Calcium		0.100		**2.47**	2.500	0	98.9	2.455	0.67	08/04/2023
Chromium		0.0050		**0.188**	0.2000	0	94.1	0.1844	1.99	08/04/2023
Cobalt		0.0050		**0.481**	0.5000	0	96.2	0.4701	2.29	08/04/2023
Iron		0.0400		**1.90**	2.000	0	94.9	1.845	2.81	08/04/2023
Lead		0.0150		**0.482**	0.5000	0	96.3	0.4706	2.33	08/04/2023
Magnesium		0.0500		**2.39**	2.500	0	95.6	2.335	2.34	08/04/2023
Manganese		0.0070		**0.470**	0.5000	0	94.1	0.4610	2.04	08/04/2023
Molybdenum		0.0100		**0.466**	0.5000	0	93.2	0.4563	2.08	08/04/2023
Potassium		0.100		**2.56**	2.500	0	102.3	2.523	1.38	08/04/2023
Selenium		0.0400		**0.476**	0.5000	0	95.1	0.4673	1.74	08/04/2023
Silicon	*	0.0500		**0.479**	0.5000	0	95.8	0.4714	1.58	08/04/2023
Sodium		0.0500		**2.35**	2.500	0	93.9	2.317	1.35	08/04/2023
Thallium		0.0500		**0.244**	0.2500	0	97.8	0.2419	1.07	08/04/2023

Batch 210307 **SampType:** MS Units **mg/L**

SampID: 23070389-025BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**114**	5.000	26.12	1766	75	125	08/04/2023
Potassium		0.100	S	**8.29**	5.000	0.8466	149.0	75	125	08/07/2023
Sodium		0.0500	S	**197**	5.000	45.61	3019	75	125	08/04/2023

Batch 210307 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-025BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**119**	5.000	26.12	1860	114.4	4.02	08/04/2023
Potassium		0.100	S	**8.46**	5.000	0.8466	152.3	8.294	1.99	08/07/2023
Sodium		0.0500	S	**205**	5.000	45.61	3186	196.6	4.14	08/04/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 210483 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210483

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	08/08/2023
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/08/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/08/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/08/2023
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	08/08/2023
Molybdenum		0.0100		**< 0.0100**	0.0037	0	0	-100	100	08/08/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/08/2023
Silicon	*	0.0500		**< 0.0500**	0.0122	0	0	-100	100	08/08/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/08/2023

Batch 210483 **SampType:** LCS Units **mg/L**

SampID: LCS-210483

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		0.0200		**0.484**	0.5000	0	96.7	85	115	08/08/2023
Calcium		0.100		**2.51**	2.500	0	100.5	85	115	08/08/2023
Iron		0.0400		**1.94**	2.000	0	97.1	85	115	08/08/2023
Magnesium		0.0500		**2.33**	2.500	0	93.1	85	115	08/08/2023
Manganese		0.0070		**0.480**	0.5000	0	96.1	85	115	08/08/2023
Molybdenum		0.0100		**0.475**	0.5000	0	95.0	85	115	08/08/2023
Potassium		0.100		**2.60**	2.500	0	104.2	85	115	08/08/2023
Silicon	*	0.0500		**0.505**	0.5000	0	101.0	85	115	08/08/2023
Sodium		0.0500		**2.43**	2.500	0	97.2	85	115	08/08/2023

Batch 210483 **SampType:** LCSD Units **mg/L** RPD Limit **20**

SampID: LCSD-210483

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Boron		0.0200		**0.495**	0.5000	0	98.9	0.4836	2.27	08/08/2023
Calcium		0.100		**2.57**	2.500	0	103.0	2.512	2.46	08/08/2023
Iron		0.0400		**1.97**	2.000	0	98.4	1.942	1.27	08/08/2023
Magnesium		0.0500		**2.35**	2.500	0	94.1	2.328	1.06	08/08/2023
Manganese		0.0070		**0.490**	0.5000	0	98.1	0.4804	2.04	08/08/2023
Molybdenum		0.0100		**0.480**	0.5000	0	96.1	0.4748	1.15	08/08/2023
Potassium		0.100		**2.64**	2.500	0	105.6	2.604	1.31	08/08/2023
Silicon	*	0.0500		**0.511**	0.5000	0	102.2	0.5048	1.18	08/08/2023
Sodium		0.0500		**2.47**	2.500	0	98.7	2.430	1.57	08/08/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 210625 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210625

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/10/2023
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/14/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/10/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/10/2023
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	08/10/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/10/2023
Silicon	*	0.0500		**< 0.0500**	0.0122	0	0	-100	100	08/14/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/10/2023

Batch 210625 **SampType:** LCS Units **mg/L**

SampID: LCS-210625

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.45**	2.500	0	98.2	85	115	08/10/2023
Calcium		0.100		**2.53**	2.500	0	101.1	85	115	08/14/2023
Iron		0.0400		**1.93**	2.000	0	96.7	85	115	08/10/2023
Magnesium		0.0500		**2.30**	2.500	0	92.2	85	115	08/10/2023
Manganese		0.0070		**0.465**	0.5000	0	92.9	85	115	08/10/2023
Potassium		0.100		**2.54**	2.500	0	101.7	85	115	08/10/2023
Silicon	*	0.0500		**0.528**	0.5000	0	105.5	85	115	08/14/2023
Sodium		0.0500		**2.37**	2.500	0	94.8	85	115	08/10/2023

Batch 210625 **SampType:** LCSD Units **mg/L** RPD Limit **20**

SampID: LCSD-210625

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100		**2.45**	2.500	0	98.0	2.454	0.20	08/10/2023
Calcium		0.100		**2.47**	2.500	0	98.6	2.528	2.48	08/14/2023
Iron		0.0400		**1.90**	2.000	0	95.1	1.934	1.63	08/10/2023
Magnesium		0.0500		**2.29**	2.500	0	91.7	2.304	0.53	08/10/2023
Manganese		0.0070		**0.460**	0.5000	0	92.0	0.4646	1.04	08/10/2023
Potassium		0.100		**2.52**	2.500	0	101.0	2.542	0.73	08/10/2023
Silicon	*	0.0500		**0.511**	0.5000	0	102.3	0.5275	3.12	08/14/2023
Sodium		0.0500		**2.35**	2.500	0	93.9	2.371	0.99	08/10/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 211012 **SampType:** MBLK Units **mg/L**

SampID: MBLK-211012

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0127	0	0	-100	100	08/18/2023
Antimony		0.0500		**< 0.0500**	0.0068	0	0	-100	100	08/18/2023
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	08/18/2023
Barium		0.0025		**< 0.0025**	0.0007	0	0	-100	100	08/18/2023
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	08/18/2023
Cadmium		0.0020		**< 0.0020**	0.0005	0	0	-100	100	08/18/2023
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/18/2023
Chromium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	08/18/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/18/2023
Lead		0.0150		**< 0.0150**	0.0040	0	0	-100	100	08/18/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/18/2023
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	08/18/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/18/2023
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	08/18/2023
Silicon	*	0.0500		**< 0.0500**	0.0122	0	0	-100	100	08/18/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/18/2023

Batch 211012 **SampType:** LCS Units **mg/L**

SampID: LCS-211012

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**1.94**	2.000	0	97.2	85	115	08/18/2023
Antimony		0.0500		**0.514**	0.5000	0	102.8	85	115	08/18/2023
Arsenic		0.0250		**0.538**	0.5000	0	107.5	85	115	08/18/2023
Barium		0.0025		**2.03**	2.000	0	101.5	85	115	08/18/2023
Boron		0.0200		**0.503**	0.5000	0	100.5	85	115	08/18/2023
Cadmium		0.0020		**0.0504**	0.0500	0	100.8	85	115	08/18/2023
Calcium		0.100		**2.62**	2.500	0	105.0	85	115	08/18/2023
Chromium		0.0050		**0.202**	0.2000	0	100.8	85	115	08/18/2023
Iron		0.0400		**2.07**	2.000	0	103.5	85	115	08/18/2023
Lead		0.0150		**0.513**	0.5000	0	102.6	85	115	08/18/2023
Magnesium		0.0500		**2.47**	2.500	0	98.9	85	115	08/18/2023
Manganese		0.0070		**0.505**	0.5000	0	101.0	85	115	08/18/2023
Potassium		0.100		**2.64**	2.500	0	105.4	85	115	08/18/2023
Selenium		0.0400		**0.518**	0.5000	0	103.5	85	115	08/18/2023
Silicon	*	0.0500		**0.454**	0.5000	0	90.8	85	115	08/18/2023
Sodium		0.0500		**2.53**	2.500	0	101.0	85	115	08/18/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 211012 **SampType:** MS Units **mg/L**

SampID: 23070389-114CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**125**	2.500	122.4	111.6	75	125	08/18/2023
Magnesium		0.0500		**47.0**	2.500	44.62	94.6	75	125	08/18/2023
Potassium		0.100		**5.78**	2.500	3.161	104.8	75	125	08/18/2023
Sodium		0.0500		**90.1**	2.500	87.99	85.2	75	125	08/18/2023

Batch 211012 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-114CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**127**	2.500	122.4	174.8	125.2	1.25	08/18/2023
Magnesium		0.0500		**47.7**	2.500	44.62	121.8	46.98	1.44	08/18/2023
Potassium		0.100		**5.70**	2.500	3.161	101.7	5.780	1.35	08/18/2023
Sodium		0.0500		**90.2**	2.500	87.99	88.0	90.12	0.08	08/18/2023

Batch 211034 **SampType:** MBLK Units **mg/L**

SampID: MBLK-211034

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0127	0	0	-100	100	08/21/2023
Calcium		0.100	JS	**0.051**	0.0350	0	146.6	-100	100	08/21/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/21/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/21/2023
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	08/21/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/21/2023
Silicon	*	0.0500	JS	**0.030**	0.0122	0	246.7	-100	100	08/23/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/21/2023

Batch 211034 **SampType:** LCS Units **mg/L**

SampID: LCS-211034

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**2.03**	2.000	0	101.5	85	115	08/21/2023
Calcium		0.100	B	**2.76**	2.500	0	110.2	85	115	08/21/2023
Iron		0.0400		**2.11**	2.000	0	105.5	85	115	08/21/2023
Magnesium		0.0500		**2.49**	2.500	0	99.7	85	115	08/21/2023
Manganese		0.0070		**0.520**	0.5000	0	104.1	85	115	08/21/2023
Potassium		0.100		**2.75**	2.500	0	109.9	85	115	08/21/2023
Silicon	*	0.0500	B	**0.542**	0.5000	0	108.4	85	115	08/23/2023
Sodium		0.0500		**2.58**	2.500	0	103.0	85	115	08/21/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 211213 **SampType:** MBLK Units **mg/L**

SampID: MBLK-211213

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/23/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	08/23/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/23/2023
Potassium		0.100	JS	**0.044**	0.0400	0	109.8	-100	100	08/23/2023
Silicon	*	0.0500	JS	**0.038**	0.0122	0	309.0	-100	100	08/23/2023
Sodium		0.0500	JS	**0.045**	0.0180	0	251.1	-100	100	08/23/2023

Batch 211213 **SampType:** LCS Units **mg/L**

SampID: LCS-211213

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.76**	2.500	0	110.4	85	115	08/23/2023
Iron		0.0400		**2.12**	2.000	0	106.0	85	115	08/23/2023
Magnesium		0.0500		**2.50**	2.500	0	100.0	85	115	08/23/2023
Potassium		0.100	B	**2.70**	2.500	0	107.9	85	115	08/23/2023
Silicon	*	0.0500	B	**0.537**	0.5000	0	107.4	85	115	08/23/2023
Sodium		0.0500	B	**2.58**	2.500	0	103.1	85	115	08/23/2023

Batch 211213 **SampType:** MS Units **mg/L**

SampID: 23070389-116CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**492**	5.000	475.1	337.0	75	125	08/23/2023
Magnesium		0.0500	S	**449**	5.000	429.2	403.1	75	125	08/23/2023
Potassium		0.100	E	**11.8**	5.000	6.434	106.9	75	125	08/23/2023
Silicon	*	0.0500	BS	**10.3**	1.000	8.979	133.3	75	125	08/23/2023
Sodium		0.0500	BS	**408**	5.000	393.8	284.0	75	125	08/23/2023

Batch 211213 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-116CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**490**	5.000	475.1	302.2	492.0	0.35	08/23/2023
Magnesium		0.0500	S	**446**	5.000	429.2	338.6	449.3	0.72	08/23/2023
Potassium		0.100	E	**11.7**	5.000	6.434	104.5	11.78	1.04	08/23/2023
Silicon	*	0.0500	BS	**10.4**	1.000	8.979	141.8	10.31	0.82	08/23/2023
Sodium		0.0500	BS	**404**	5.000	393.8	206.2	408.0	0.96	08/23/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 212096 **SampType:** MBLK Units **mg/L**

SampID: MBLK-212096

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	09/19/2023
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	09/19/2023
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	09/19/2023
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	09/19/2023
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	09/19/2023

Batch 212096 **SampType:** LCS Units **mg/L**

SampID: LCS-212096

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.54**	2.500	0	101.7	85	115	09/19/2023
Iron		0.0400		**1.98**	2.000	0	99.2	85	115	09/19/2023
Magnesium		0.0500		**2.38**	2.500	0	95.2	85	115	09/19/2023
Potassium		0.100		**2.58**	2.500	0	103.3	85	115	09/19/2023
Sodium		0.0500		**2.40**	2.500	0	96.0	85	115	09/19/2023

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 210037 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210037

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0125	0	0	-100	100	09/16/2023
Antimony		0.0010		**< 0.0010**	0.0004	0	0	-100	100	07/29/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	07/29/2023
Boron		0.0250	JS	**0.024**	0.0093	0	254.0	-100	100	07/29/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	07/29/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	07/29/2023
Iron		0.0250		**< 0.0250**	0.0115	0	0	-100	100	09/16/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	07/29/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	09/16/2023
Selenium		0.0010		**< 0.0010**	0.0006	0	0	-100	100	07/29/2023
Vanadium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	07/29/2023
Zinc		0.0132		**< 0.0132**	0.0059	0	0	-100	100	09/16/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 210037 **SampType:** LCS Units **mg/L**

SampID: LCS-210037

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250	B	**1.97**	2.000	0	98.6	80	120	07/31/2023
Aluminum		0.0250		**1.99**	2.000	0	99.5	80	120	09/16/2023
Antimony		0.0010		**0.476**	0.5000	0	95.2	80	120	07/29/2023
Arsenic		0.0010		**0.513**	0.5000	0	102.5	80	120	07/29/2023
Boron		0.0250	B	**0.478**	0.5000	0	95.7	80	120	07/29/2023
Cadmium		0.0010		**0.0477**	0.0500	0	95.5	80	120	07/29/2023
Chromium		0.0015		**0.187**	0.2000	0	93.6	80	120	07/29/2023
Iron		0.0250		**1.96**	2.000	0	97.8	80	120	09/16/2023
Iron		0.0250		**1.76**	2.000	0	88.0	80	120	07/31/2023
Lead		0.0010		**0.481**	0.5000	0	96.2	80	120	07/29/2023
Manganese		0.0020		**0.451**	0.5000	0	90.3	80	120	07/31/2023
Manganese		0.0020		**0.502**	0.5000	0	100.3	80	120	09/16/2023
Selenium		0.0010		**0.485**	0.5000	0	97.0	80	120	07/31/2023
Vanadium		0.0050		**0.461**	0.5000	0	92.3	80	120	07/29/2023
Zinc		0.0132	B	**0.408**	0.5000	0	81.5	80	120	07/31/2023
Zinc		0.0132		**0.414**	0.5000	0	82.7	80	120	09/16/2023

Batch 210037 **SampType:** MS Units **mg/L**

SampID: 23070389-009DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**1.88**	2.000	0.01332	93.4	75	125	09/16/2023
Iron		0.0250		**1.90**	2.000	0.05624	92.3	75	125	09/16/2023
Manganese		0.0020		**0.889**	0.5000	0.4182	94.2	75	125	09/16/2023

Batch 210037 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-009DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Aluminum		0.0250		**1.88**	2.000	0.01332	93.3	1.882	0.09	09/16/2023
Iron		0.0250		**1.89**	2.000	0.05624	91.7	1.902	0.63	09/16/2023
Manganese		0.0020		**0.884**	0.5000	0.4182	93.1	0.8891	0.60	09/16/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 210142 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210142

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0125	0	0	-100	100	09/18/2023
Antimony		0.0010		**< 0.0010**	0.0004	0	0	-100	100	08/03/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	09/18/2023
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	09/18/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	09/16/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	09/18/2023
Iron		0.0250		**< 0.0250**	0.0115	0	0	-100	100	09/18/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/16/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	09/18/2023
Selenium		0.0010		**< 0.0010**	0.0006	0	0	-100	100	08/03/2023
Vanadium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	08/03/2023
Zinc		0.0132		**< 0.0132**	0.0059	0	0	-100	100	09/16/2023

Batch 210142 **SampType:** LCS Units **mg/L**

SampID: LCS-210142

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**2.00**	2.000	0	99.8	80	120	09/18/2023
Antimony		0.0010		**0.433**	0.5000	0	86.6	80	120	08/03/2023
Arsenic		0.0010		**0.484**	0.5000	0	96.8	80	120	09/18/2023
Boron		0.0250		**0.470**	0.5000	0	94.0	80	120	09/18/2023
Cadmium		0.0010		**0.0455**	0.0500	0	90.9	80	120	09/16/2023
Chromium		0.0015		**0.194**	0.2000	0	97.2	80	120	09/18/2023
Iron		0.0250		**1.94**	2.000	0	97.1	80	120	09/18/2023
Lead		0.0010		**0.488**	0.5000	0	97.6	80	120	09/16/2023
Manganese		0.0020		**0.492**	0.5000	0	98.4	80	120	09/18/2023
Selenium		0.0010		**0.447**	0.5000	0	89.5	80	120	08/03/2023
Vanadium		0.0050		**0.429**	0.5000	0	85.8	80	120	08/03/2023
Zinc		0.0132		**0.410**	0.5000	0	82.0	80	120	09/16/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 210142 **SampType:** MS Units **mg/L**

SampID: 23070389-043CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		0.0010		**0.532**	0.5000	0.001317	106.2	75	125	09/18/2023
Boron		0.0250	S	**0.870**	0.5000	0.1308	147.9	75	125	09/18/2023
Cadmium		0.0010		**0.0445**	0.0500	0	89.0	75	125	09/16/2023
Chromium		0.0015		**0.215**	0.2000	0.001789	106.5	75	125	09/18/2023
Iron		0.0250	S	**1.96**	2.000	0.7345	61.5	75	125	09/18/2023
Lead		0.0010		**0.498**	0.5000	0	99.6	75	125	09/16/2023
Manganese		0.0080	S	**1.80**	0.5000	2.459	-131.8	75	125	09/18/2023
Selenium		0.0010		**0.461**	0.5000	0	92.2	75	125	08/03/2023
Zinc		0.0132		**0.386**	0.5000	0	77.2	75	125	09/16/2023

Batch 210142 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-043CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		0.0010		**0.491**	0.5000	0.001317	97.9	0.5323	8.12	09/18/2023
Boron		0.0250	S	**0.855**	0.5000	0.1308	144.8	0.8704	1.80	09/18/2023
Cadmium		0.0010		**0.0447**	0.0500	0	89.4	0.04451	0.46	09/16/2023
Chromium		0.0015		**0.186**	0.2000	0.001789	92.2	0.2149	14.32	09/18/2023
Iron		0.0250	S	**1.88**	2.000	0.7345	57.5	1.964	4.15	09/18/2023
Lead		0.0010		**0.505**	0.5000	0	100.9	0.4981	1.31	09/16/2023
Manganese		0.0080	S	**1.83**	0.5000	2.459	-125.5	1.800	1.73	09/18/2023
Selenium		0.0010		**0.467**	0.5000	0	93.3	0.4611	1.21	08/03/2023
Zinc		0.0132		**0.392**	0.5000	0	78.4	0.3861	1.51	09/16/2023

Batch 210298 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210298

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0125	0	0	-100	100	09/16/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	09/16/2023
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	09/16/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	09/16/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	09/16/2023
Iron		0.0250		**< 0.0250**	0.0115	0	0	-100	100	09/16/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/16/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	09/16/2023
Selenium		0.0010		**< 0.0010**	0.0006	0	0	-100	100	08/04/2023
Zinc		0.0132		**< 0.0132**	0.0059	0	0	-100	100	09/16/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 210298 **SampType:** LCS Units **mg/L**

SampID: LCS-210298

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**1.86**	2.000	0	92.8	80	120	09/16/2023
Arsenic		0.0010		**0.478**	0.5000	0	95.5	80	120	09/16/2023
Boron		0.0250		**0.413**	0.5000	0	82.5	80	120	09/16/2023
Cadmium		0.0010		**0.0431**	0.0500	0	86.3	80	120	09/16/2023
Chromium		0.0015		**0.182**	0.2000	0	90.8	80	120	09/16/2023
Iron		0.0250		**1.82**	2.000	0	91.0	80	120	09/16/2023
Lead		0.0010		**0.460**	0.5000	0	92.1	80	120	09/16/2023
Manganese		0.0020		**0.471**	0.5000	0	94.2	80	120	09/16/2023
Selenium		0.0010		**0.410**	0.5000	0	82.1	80	120	08/04/2023
Zinc		0.0132		**0.547**	0.5000	0	109.4	80	120	09/19/2023

Batch 210298 **SampType:** MS Units **mg/L**

SampID: 23070389-048CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		0.0010		**0.510**	0.5000	0.0005942	102.0	75	125	09/16/2023
Boron		0.0250	S	**0.504**	0.5000	0.5350	-6.1	75	125	09/18/2023
Cadmium		0.0010		**0.0441**	0.0500	0	88.1	75	125	09/16/2023
Chromium		0.0015		**0.181**	0.2000	0.0007327	90.2	75	125	09/16/2023
Iron		0.0250		**1.86**	2.000	0.04155	91.0	75	125	09/16/2023
Lead		0.0010		**0.510**	0.5000	0	102.1	75	125	09/16/2023
Manganese		0.0080		**2.09**	0.5000	1.617	94.3	75	125	09/18/2023
Selenium		0.0010		**0.439**	0.5000	0	87.8	75	125	08/04/2023
Zinc		0.0132		**0.419**	0.5000	0	83.8	75	125	09/19/2023

Batch 210298 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-048CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		0.0010		**0.498**	0.5000	0.0005942	99.6	0.5105	2.38	09/16/2023
Boron		0.0250	S	**0.509**	0.5000	0.5350	-5.2	0.5043	0.90	09/18/2023
Cadmium		0.0010		**0.0411**	0.0500	0	82.2	0.04406	6.96	09/16/2023
Chromium		0.0015		**0.178**	0.2000	0.0007327	88.7	0.1811	1.65	09/16/2023
Iron		0.0250		**1.78**	2.000	0.04155	87.1	1.861	4.30	09/16/2023
Lead		0.0010		**0.491**	0.5000	0	98.1	0.5104	3.95	09/16/2023
Manganese		0.0080		**2.15**	0.5000	1.617	106.3	2.088	2.82	09/18/2023
Selenium		0.0010		**0.436**	0.5000	0	87.2	0.4390	0.72	08/04/2023
Zinc		0.0132		**0.401**	0.5000	0	80.1	0.4188	4.40	09/19/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 210567 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210567

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0125	0	0	-100	100	09/10/2023
Antimony		0.0010		**< 0.0010**	0.0004	0	0	-100	100	08/11/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	09/10/2023
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	09/10/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	09/10/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	09/10/2023
Iron		0.0250		**< 0.0250**	0.0115	0	0	-100	100	09/10/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/10/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	09/10/2023
Selenium		0.0010		**< 0.0010**	0.0006	0	0	-100	100	08/11/2023
Vanadium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	08/11/2023
Zinc		0.0132		**< 0.0132**	0.0059	0	0	-100	100	09/10/2023

Batch 210567 **SampType:** LCS Units **mg/L**

SampID: LCS-210567

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**2.02**	2.000	0	100.8	80	120	09/11/2023
Antimony		0.0010		**0.462**	0.5000	0	92.3	80	120	08/11/2023
Arsenic		0.0010		**0.506**	0.5000	0	101.2	80	120	09/11/2023
Boron		0.0250		**0.470**	0.5000	0	94.0	80	120	09/11/2023
Cadmium		0.0010		**0.0480**	0.0500	0	96.0	80	120	09/11/2023
Chromium		0.0015		**0.195**	0.2000	0	97.3	80	120	09/11/2023
Iron		0.0250		**2.01**	2.000	0	100.5	80	120	09/11/2023
Lead		0.0010		**0.501**	0.5000	0	100.3	80	120	09/11/2023
Manganese		0.0020		**0.524**	0.5000	0	104.9	80	120	09/14/2023
Selenium		0.0010		**0.429**	0.5000	0	85.8	80	120	08/11/2023
Vanadium		0.0050		**0.453**	0.5000	0	90.7	80	120	08/11/2023
Zinc		0.0132		**0.466**	0.5000	0	93.3	80	120	09/14/2023
Zinc		0.0132		**0.440**	0.5000	0	87.9	80	120	09/14/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 210567 **SampType:** MS Units **mg/L**

SampID: 23070389-038CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		0.0010		**0.488**	0.5000	0	97.6	75	125	09/14/2023
Boron		0.0250		**0.486**	0.5000	0	97.3	75	125	09/14/2023
Cadmium		0.0010		**0.0460**	0.0500	0	92.0	75	125	09/14/2023
Chromium		0.0015		**0.187**	0.2000	0	93.6	75	125	09/14/2023
Iron		0.0250		**1.96**	2.000	0.09896	92.8	75	125	09/14/2023
Lead		0.0010		**0.499**	0.5000	0	99.9	75	125	09/14/2023
Manganese		0.0020		**0.495**	0.5000	0.01423	96.3	75	125	09/14/2023
Selenium		0.0010		**0.435**	0.5000	0	87.1	75	125	08/11/2023
Zinc		0.0132		**0.451**	0.5000	0.007144	88.8	75	125	09/14/2023

Batch 210567 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-038CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		0.0010		**0.517**	0.5000	0	103.3	0.4878	5.73	09/14/2023
Boron		0.0250		**0.496**	0.5000	0	99.2	0.4863	1.95	09/14/2023
Cadmium		0.0010		**0.0488**	0.0500	0	97.7	0.04598	6.02	09/14/2023
Chromium		0.0015		**0.195**	0.2000	0	97.3	0.1873	3.79	09/14/2023
Iron		0.0250		**2.04**	2.000	0.09896	97.2	1.955	4.38	09/14/2023
Lead		0.0010		**0.509**	0.5000	0	101.8	0.4993	1.93	09/14/2023
Manganese		0.0020		**0.515**	0.5000	0.01423	100.2	0.4955	3.86	09/14/2023
Selenium		0.0010		**0.436**	0.5000	0	87.2	0.4353	0.19	08/11/2023
Zinc		0.0132		**0.439**	0.5000	0.007144	86.4	0.4509	2.68	09/14/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 211013 **SampType:** MBLK Units **mg/L**

SampID: MBLK-211013

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0010		**< 0.0010**	0.0004	0	0	-100	100	08/30/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	09/16/2023
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	09/08/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	09/08/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	09/08/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	09/16/2023
Iron		0.0250		**< 0.0250**	0.0115	0	0	-100	100	09/16/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/08/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	09/08/2023
Selenium		0.0010		**< 0.0010**	0.0006	0	0	-100	100	08/30/2023
Vanadium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	08/30/2023
Zinc		0.0132		**< 0.0132**	0.0059	0	0	-100	100	09/08/2023

Batch 211013 **SampType:** LCS Units **mg/L**

SampID: LCS-211013

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0010		**0.454**	0.5000	0	90.8	80	120	08/30/2023
Arsenic		0.0010		**0.536**	0.5000	0	107.3	80	120	09/16/2023
Boron		0.0250		**0.467**	0.5000	0	93.3	80	120	09/08/2023
Cadmium		0.0010		**0.0481**	0.0500	0	96.3	80	120	09/08/2023
Chromium		0.0015		**0.205**	0.2000	0	102.3	80	120	09/16/2023
Iron		0.0250		**2.05**	2.000	0	102.5	80	120	09/16/2023
Lead		0.0010		**0.493**	0.5000	0	98.5	80	120	09/08/2023
Manganese		0.0020		**0.500**	0.5000	0	100.1	80	120	09/08/2023
Selenium		0.0010		**0.438**	0.5000	0	87.6	80	120	08/30/2023
Vanadium		0.0050		**0.454**	0.5000	0	90.8	80	120	08/30/2023
Zinc		0.0132		**0.411**	0.5000	0	82.1	80	120	09/08/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 211013 **SampType:** MS Units **mg/L**

SampID: 23070389-112CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		0.0010		**0.569**	0.5000	0	113.9	75	125	09/16/2023
Boron		0.0250		**0.507**	0.5000	0.01606	98.1	75	125	09/08/2023
Cadmium		0.0010		**0.0491**	0.0500	0	98.3	75	125	09/08/2023
Chromium		0.0015		**0.217**	0.2000	0	108.3	75	125	09/16/2023
Iron		0.0250		**2.20**	2.000	0.02158	109.1	75	125	09/16/2023
Lead		0.0010		**0.505**	0.5000	0	101.1	75	125	09/08/2023
Manganese		0.0020		**0.517**	0.5000	0.02366	98.8	75	125	09/08/2023
Selenium		0.0010		**0.438**	0.5000	0	87.5	75	125	08/30/2023
Zinc		0.0132		**0.390**	0.5000	0	78.0	75	125	09/08/2023

Batch 211013 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-112CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		0.0010		**0.567**	0.5000	0	113.3	0.5693	0.46	09/16/2023
Boron		0.0250		**0.489**	0.5000	0.01606	94.7	0.5067	3.46	09/08/2023
Cadmium		0.0010		**0.0505**	0.0500	0	101.0	0.04914	2.77	09/08/2023
Chromium		0.0015		**0.219**	0.2000	0	109.6	0.2166	1.21	09/16/2023
Iron		0.0250		**2.20**	2.000	0.02158	108.7	2.203	0.38	09/16/2023
Lead		0.0010		**0.530**	0.5000	0	106.1	0.5053	4.83	09/08/2023
Manganese		0.0020		**0.526**	0.5000	0.02366	100.5	0.5174	1.68	09/08/2023
Selenium		0.0010		**0.436**	0.5000	0	87.3	0.4377	0.29	08/30/2023
Zinc		0.0132		**0.408**	0.5000	0	81.6	0.3901	4.42	09/08/2023

Batch 211033 **SampType:** MBLK Units **mg/L**

SampID: MBLK-211033

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0125	0	0	-100	100	09/17/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	09/17/2023
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	09/17/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	09/17/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	09/17/2023
Iron		0.0250		**< 0.0250**	0.0115	0	0	-100	100	09/17/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/17/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	09/17/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 211033 **SampType:** LCS Units **mg/L**

SampID: LCS-211033

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**2.07**	2.000	0	103.3	80	120	09/17/2023
Arsenic		0.0010		**0.501**	0.5000	0	100.1	80	120	09/17/2023
Boron		0.0250		**0.450**	0.5000	0	90.0	80	120	09/17/2023
Cadmium		0.0010		**0.0451**	0.0500	0	90.2	80	120	09/17/2023
Chromium		0.0015		**0.195**	0.2000	0	97.4	80	120	09/17/2023
Iron		0.0250		**1.97**	2.000	0	98.4	80	120	09/17/2023
Lead		0.0010		**0.485**	0.5000	0	96.9	80	120	09/17/2023
Manganese		0.0020		**0.504**	0.5000	0	100.9	80	120	09/17/2023

Batch 211033 **SampType:** MS Units **mg/L**

SampID: 23070389-117DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**1.89**	2.000	0	94.6	75	125	09/17/2023
Iron		0.0250		**1.87**	2.000	0.02484	92.3	75	125	09/17/2023
Manganese		0.0020		**0.592**	0.5000	0.1396	90.5	75	125	09/17/2023
Zinc		0.0132		**0.381**	0.5000	0	76.1	75	125	09/17/2023

Batch 211033 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-117DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Aluminum		0.0250		**1.89**	2.000	0	94.7	1.891	0.16	09/17/2023
Iron		0.0250		**1.86**	2.000	0.02484	91.5	1.870	0.79	09/17/2023
Manganese		0.0020		**0.592**	0.5000	0.1396	90.4	0.5920	0.09	09/17/2023
Zinc		0.0132		**0.379**	0.5000	0	75.7	0.3806	0.52	09/17/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 209945 **SampType:** MBLK Units **mg/L**

SampID: MBLK-209945

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0125	0	0	-100	100	09/16/2023
Antimony		0.0010		**< 0.0010**	0.0004	0	0	-100	100	07/28/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	07/28/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	09/16/2023
Barium		0.0010		**< 0.0010**	0.0007	0	0	-100	100	07/28/2023
Barium		0.0010		**< 0.0010**	0.0007	0	0	-100	100	09/16/2023
Beryllium		0.0010		**< 0.0010**	0.0002	0	0	-100	100	09/16/2023
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	09/16/2023
Boron	*	0.0250		**< 0.0250**	0.0093	0	0	-100	100	07/28/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	09/16/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	07/28/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	09/16/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	07/28/2023
Cobalt		0.0010		**< 0.0010**	0.0001	0	0	-100	100	07/28/2023
Iron		0.0250		**< 0.0250**	0.0115	0	0	-100	100	09/16/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	07/28/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/16/2023
Lithium	*	0.0030		**< 0.0030**	0.0015	0	0	-100	100	07/28/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	07/28/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	09/16/2023
Molybdenum	*	0.0015		**< 0.0015**	0.0006	0	0	-100	100	09/16/2023
Molybdenum	*	0.0015		**< 0.0015**	0.0006	0	0	-100	100	07/28/2023
Selenium		0.0010		**< 0.0010**	0.0006	0	0	-100	100	07/28/2023
Thallium		0.0020		**< 0.0020**	0.0010	0	0	-100	100	07/28/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 209945 **SampType:** LCS Units **mg/L**

SampID: LCS-209945

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**2.19**	2.000	0	109.3	80	120	09/16/2023
Antimony		0.0010		**0.530**	0.5000	0	105.9	85	115	07/28/2023
Arsenic		0.0010		**0.558**	0.5000	0	111.5	85	115	07/28/2023
Arsenic		0.0010		**0.534**	0.5000	0	106.8	80	120	09/16/2023
Barium		0.0010		**2.19**	2.000	0	109.5	85	115	07/28/2023
Barium		0.0010		**2.31**	2.000	0	115.5	80	120	09/16/2023
Beryllium		0.0010		**0.0486**	0.0500	0	97.1	80	120	09/16/2023
Boron	*	0.0250		**0.516**	0.5000	0	103.2	85	115	07/28/2023
Boron		0.0250		**0.511**	0.5000	0	102.2	80	120	09/16/2023
Cadmium		0.0010		**0.0541**	0.0500	0	108.1	85	115	07/28/2023
Cadmium		0.0010		**0.0498**	0.0500	0	99.7	80	120	09/16/2023
Chromium		0.0015		**0.211**	0.2000	0	105.6	85	115	07/28/2023
Chromium		0.0015		**0.210**	0.2000	0	105.1	80	120	09/16/2023
Cobalt		0.0010		**0.546**	0.5000	0	109.2	85	115	07/28/2023
Iron		0.0250		**2.09**	2.000	0	104.4	80	120	09/16/2023
Lead		0.0010		**0.539**	0.5000	0	107.7	85	115	07/28/2023
Lead		0.0010		**0.523**	0.5000	0	104.7	80	120	09/16/2023
Lithium	*	0.0030		**0.514**	0.5000	0	102.7	85	115	07/28/2023
Manganese		0.0020		**0.537**	0.5000	0	107.4	80	120	09/16/2023
Manganese		0.0020		**0.519**	0.5000	0	103.8	85	115	07/28/2023
Molybdenum	*	0.0015		**0.505**	0.5000	0	100.9	80	120	09/16/2023
Molybdenum	*	0.0015		**0.516**	0.5000	0	103.2	85	115	07/28/2023
Selenium		0.0010		**0.519**	0.5000	0	103.9	85	115	07/28/2023
Thallium		0.0020		**0.258**	0.2500	0	103.3	85	115	07/28/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 209945 **SampType:** MS Units **mg/L**

SampID: 23070389-103CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**2.41**	2.000	0.4216	99.5	75	125	09/16/2023
Antimony		0.0010		**0.523**	0.5000	0.0005572	104.4	75	125	07/28/2023
Arsenic		0.0010		**0.480**	0.5000	0.06186	83.7	75	125	09/16/2023
Barium		0.0010		**2.14**	2.000	0.01384	106.1	75	125	09/16/2023
Beryllium		0.0010		**0.0470**	0.0500	0	94.0	75	125	09/16/2023
Boron		0.0250		**2.18**	0.5000	1.697	95.6	75	125	09/16/2023
Cadmium		0.0010		**0.0471**	0.0500	0	94.1	75	125	09/16/2023
Chromium		0.0015		**0.186**	0.2000	0.0007670	92.4	75	125	09/16/2023
Cobalt		0.0010		**0.527**	0.5000	0	105.4	75	125	07/28/2023
Iron		0.0250		**1.85**	2.000	0.04409	90.1	75	125	09/16/2023
Lead		0.0010		**0.514**	0.5000	0	102.8	75	125	09/16/2023
Lithium	*	0.0030		**0.531**	0.5000	0.02067	102.1	75	125	07/28/2023
Manganese		0.0020		**0.461**	0.5000	0.002062	91.8	75	125	09/16/2023
Molybdenum	*	0.0015		**0.500**	0.5000	0.04906	90.2	75	125	09/16/2023
Selenium		0.0010		**0.465**	0.5000	0.0007275	92.8	75	125	07/28/2023
Thallium		0.0020		**0.262**	0.2500	0	104.8	75	125	07/28/2023

Batch 209945 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-103CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Aluminum		0.0250		**2.48**	2.000	0.4216	102.7	2.411	2.69	09/16/2023
Antimony		0.0010		**0.525**	0.5000	0.0005572	104.8	0.5226	0.37	07/28/2023
Arsenic		0.0010		**0.498**	0.5000	0.06186	87.3	0.4804	3.67	09/16/2023
Barium		0.0010		**2.25**	2.000	0.01384	111.7	2.136	5.06	09/16/2023
Beryllium		0.0010		**0.0474**	0.0500	0	94.8	0.04700	0.83	09/16/2023
Boron		0.0250		**2.23**	0.5000	1.697	107.5	2.175	2.69	09/16/2023
Cadmium		0.0010		**0.0485**	0.0500	0	96.9	0.04707	2.92	09/16/2023
Chromium		0.0015		**0.190**	0.2000	0.0007670	94.9	0.1856	2.57	09/16/2023
Cobalt		0.0010		**0.539**	0.5000	0	107.8	0.5272	2.19	07/28/2023
Iron		0.0250		**1.91**	2.000	0.04409	93.3	1.846	3.48	09/16/2023
Lead		0.0010		**0.520**	0.5000	0	103.9	0.5139	1.11	09/16/2023
Lithium	*	0.0030		**0.537**	0.5000	0.02067	103.2	0.5312	1.03	07/28/2023
Manganese		0.0020		**0.477**	0.5000	0.002062	95.1	0.4609	3.52	09/16/2023
Molybdenum	*	0.0015		**0.512**	0.5000	0.04906	92.6	0.5000	2.39	09/16/2023
Selenium		0.0010		**0.453**	0.5000	0.0007275	90.5	0.4646	2.46	07/28/2023
Thallium		0.0020		**0.262**	0.2500	0	104.9	0.2619	0.12	07/28/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 210094 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210094

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0125	0	0	-100	100	09/10/2023
Antimony		0.0010		**< 0.0010**	0.0004	0	0	-100	100	07/29/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	09/10/2023
Barium		0.0010		**< 0.0010**	0.0007	0	0	-100	100	09/10/2023
Beryllium		0.0010		**< 0.0010**	0.0002	0	0	-100	100	09/10/2023
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	09/10/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	09/10/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	09/10/2023
Cobalt		0.0010		**< 0.0010**	0.0001	0	0	-100	100	07/31/2023
Iron		0.0250		**< 0.0250**	0.0115	0	0	-100	100	09/10/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/10/2023
Lithium	*	0.0030		**< 0.0030**	0.0015	0	0	-100	100	07/31/2023
Manganese		0.0020	S	**0.0054**	0.0008	0	717.6	-100	100	09/10/2023
Molybdenum	*	0.0015		**< 0.0015**	0.0006	0	0	-100	100	09/10/2023
Selenium		0.0010		**< 0.0010**	0.0006	0	0	-100	100	07/29/2023
Thallium		0.0020		**< 0.0020**	0.0010	0	0	-100	100	07/29/2023

Batch 210094 **SampType:** LCS Units **mg/L**

SampID: LCS-210094

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**2.09**	2.000	0	104.4	80	120	09/10/2023
Antimony		0.0010		**0.527**	0.5000	0	105.4	80	120	07/29/2023
Arsenic		0.0010		**0.510**	0.5000	0	102.0	80	120	09/10/2023
Barium		0.0010		**2.16**	2.000	0	107.9	85	115	08/02/2023
Barium		0.0010		**2.26**	2.000	0	112.8	80	120	09/10/2023
Beryllium		0.0010		**0.0447**	0.0500	0	89.3	80	120	09/10/2023
Boron		0.0250		**0.470**	0.5000	0	94.0	80	120	09/10/2023
Cadmium		0.0010		**0.0511**	0.0500	0	102.2	80	120	09/10/2023
Chromium		0.0015		**0.204**	0.2000	0	101.8	80	120	09/10/2023
Cobalt		0.0010		**0.496**	0.5000	0	99.3	80	120	07/31/2023
Iron		0.0250		**2.03**	2.000	0	101.6	80	120	09/10/2023
Lead		0.0010		**0.554**	0.5000	0	110.7	80	120	09/10/2023
Lithium	*	0.0030		**0.535**	0.5000	0	107.0	85	115	08/02/2023
Manganese		0.0020	B	**0.513**	0.5000	0	102.6	80	120	09/10/2023
Selenium		0.0010		**0.503**	0.5000	0	100.5	85	115	08/02/2023
Thallium		0.0020		**0.263**	0.2500	0	105.4	80	120	07/29/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 210094 **SampType:** MS Units **mg/L**

SampID: 23070389-010CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0010		**1.16**	1.000	0	116.4	75	125	07/31/2023
Beryllium		0.0010		**0.0989**	0.1000	0	98.9	75	125	07/31/2023
Boron		0.0250	S	**1.18**	1.000	0.6045	57.4	75	125	08/02/2023
Cadmium		0.0010		**0.108**	0.1000	0	107.6	75	125	07/31/2023
Chromium		0.0015		**0.392**	0.4000	0.0009210	97.8	75	125	07/31/2023
Cobalt		0.0010		**1.01**	1.000	0.0001714	101.0	75	125	07/31/2023
Lead		0.0010		**1.00**	1.000	0	100.3	75	125	07/31/2023
Selenium		0.0010		**0.956**	1.000	0	95.6	75	125	08/02/2023
Thallium		0.0020		**0.484**	0.5000	0	96.7	75	125	07/31/2023

Batch 210094 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-010CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		0.0010		**1.16**	1.000	0	116.0	1.164	0.39	07/31/2023
Beryllium		0.0010		**0.0956**	0.1000	0	95.6	0.09893	3.43	07/31/2023
Boron		0.0250	S	**1.13**	1.000	0.6045	52.6	1.179	4.20	08/02/2023
Cadmium		0.0010		**0.108**	0.1000	0	108.4	0.1076	0.71	07/31/2023
Chromium		0.0015		**0.382**	0.4000	0.0009210	95.4	0.3921	2.51	07/31/2023
Cobalt		0.0010		**0.989**	1.000	0.0001714	98.9	1.010	2.06	07/31/2023
Lead		0.0010		**1.00**	1.000	0	100.0	1.003	0.30	07/31/2023
Selenium		0.0010		**0.983**	1.000	0	98.3	0.9558	2.83	08/02/2023
Thallium		0.0020		**0.484**	0.5000	0	96.8	0.4836	0.04	07/31/2023

Batch 210094 **SampType:** MS Units **mg/L**

SampID: 23070389-064CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		0.0250		**0.949**	1.000	0.1017	84.8	75	125	09/15/2023
Iron		0.250	S	**38.2**	4.000	54.10	-397.6	75	125	09/18/2023

Batch 210094 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-064CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Boron		0.0250		**0.966**	1.000	0.1017	86.4	0.9493	1.70	09/15/2023
Iron		0.250	S	**39.7**	4.000	54.10	-360.0	38.20	3.86	09/18/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 210149 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210149

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0010		**< 0.0010**	0.0004	0	0	-100	100	08/02/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	08/02/2023
Barium		0.0010		**< 0.0010**	0.0007	0	0	-100	100	08/02/2023
Beryllium		0.0010		**< 0.0010**	0.0002	0	0	-100	100	08/04/2023
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	09/10/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	08/02/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	08/02/2023
Cobalt		0.0010		**< 0.0010**	0.0001	0	0	-100	100	08/02/2023
Iron	*	0.0250		**< 0.0250**	0.0115	0	0	-100	100	08/02/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	08/02/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	08/02/2023
Molybdenum	*	0.0015		**< 0.0015**	0.0006	0	0	-100	100	08/04/2023
Selenium		0.0010		**< 0.0010**	0.0006	0	0	-100	100	08/02/2023
Thallium		0.0020		**< 0.0020**	0.0010	0	0	-100	100	08/02/2023

Batch 210149 **SampType:** LCS Units **mg/L**

SampID: LCS-210149

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0010		**0.480**	0.5000	0	96.0	85	115	08/02/2023
Arsenic		0.0010		**0.513**	0.5000	0	102.5	85	115	08/02/2023
Barium		0.0010		**1.99**	2.000	0	99.3	85	115	08/02/2023
Beryllium		0.0010		**0.0503**	0.0500	0	100.5	85	115	08/04/2023
Boron		0.0250		**0.472**	0.5000	0	94.4	80	120	09/10/2023
Cadmium		0.0010		**0.0483**	0.0500	0	96.6	85	115	08/02/2023
Chromium		0.0015		**0.190**	0.2000	0	94.9	85	115	08/02/2023
Cobalt		0.0010		**0.485**	0.5000	0	97.1	85	115	08/02/2023
Iron	*	0.0250		**1.89**	2.000	0	94.6	85	115	08/02/2023
Lead		0.0010		**0.489**	0.5000	0	97.7	85	115	08/02/2023
Manganese		0.0020		**0.472**	0.5000	0	94.3	85	115	08/02/2023
Molybdenum	*	0.0015		**0.502**	0.5000	0	100.3	85	115	08/04/2023
Selenium		0.0010		**0.487**	0.5000	0	97.5	85	115	08/02/2023
Thallium		0.0020		**0.233**	0.2500	0	93.4	85	115	08/02/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 210149 **SampType:** MS Units **mg/L**

SampID: 23070389-068BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		0.250	S	**26.5**	0.5000	37.52	-2197	75	125	09/18/2023

Batch 210149 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-068BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Boron		0.250	S	**27.0**	0.5000	37.52	-2110	26.53	1.63	09/18/2023

Batch 210259 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210259

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0125	0	0	-100	100	09/10/2023
Antimony		0.0010		**< 0.0010**	0.0004	0	0	-100	100	08/04/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	08/04/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	09/10/2023
Barium		0.0010		**< 0.0010**	0.0007	0	0	-100	100	09/10/2023
Beryllium		0.0010		**< 0.0010**	0.0002	0	0	-100	100	09/10/2023
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	09/10/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	08/04/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	09/10/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	08/04/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	09/10/2023
Cobalt		0.0010		**< 0.0010**	0.0001	0	0	-100	100	08/04/2023
Iron		0.0250		**< 0.0250**	0.0115	0	0	-100	100	09/10/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	08/04/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/10/2023
Lithium	*	0.0030		**< 0.0030**	0.0015	0	0	-100	100	08/04/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	09/10/2023
Molybdenum	*	0.0015		**< 0.0015**	0.0006	0	0	-100	100	08/04/2023
Molybdenum	*	0.0015		**< 0.0015**	0.0006	0	0	-100	100	09/16/2023
Selenium		0.0010		**< 0.0010**	0.0006	0	0	-100	100	08/04/2023
Thallium		0.0020		**< 0.0020**	0.0010	0	0	-100	100	08/04/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 210259 **SampType:** LCS Units **mg/L**

SampID: LCS-210259

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**2.06**	2.000	0	102.9	80	120	09/10/2023
Antimony		0.0010		**0.489**	0.5000	0	97.8	85	115	08/04/2023
Arsenic		0.0010		**0.498**	0.5000	0	99.6	85	115	08/04/2023
Arsenic		0.0010		**0.514**	0.5000	0	102.8	80	120	09/10/2023
Barium		0.0010		**2.15**	2.000	0	107.6	80	120	09/10/2023
Beryllium		0.0010		**0.0473**	0.0500	0	94.7	80	120	09/10/2023
Boron		0.0250		**0.491**	0.5000	0	98.2	80	120	09/10/2023
Cadmium		0.0010		**0.0475**	0.0500	0	95.1	85	115	08/04/2023
Cadmium		0.0010		**0.0498**	0.0500	0	99.5	80	120	09/10/2023
Chromium		0.0015		**0.191**	0.2000	0	95.7	85	115	08/04/2023
Chromium		0.0015		**0.202**	0.2000	0	100.9	80	120	09/10/2023
Cobalt		0.0010		**0.498**	0.5000	0	99.7	85	115	08/04/2023
Iron		0.0250		**2.01**	2.000	0	100.4	80	120	09/10/2023
Lead		0.0010		**0.534**	0.5000	0	106.7	85	115	08/04/2023
Lead		0.0010		**0.541**	0.5000	0	108.3	80	120	09/10/2023
Lithium	*	0.0030		**0.529**	0.5000	0	105.8	85	115	08/04/2023
Manganese		0.0020		**0.517**	0.5000	0	103.3	80	120	09/10/2023
Molybdenum	*	0.0015		**0.469**	0.5000	0	93.9	85	115	08/04/2023
Molybdenum	*	0.0015		**0.517**	0.5000	0	103.5	80	120	09/16/2023
Selenium		0.0010		**0.447**	0.5000	0	89.3	85	115	08/04/2023
Thallium		0.0020		**0.242**	0.2500	0	96.6	85	115	08/04/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 210259 **SampType:** MS Units **mg/L**

SampID: 23070389-014CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**4.01**	4.000	0.07512	98.3	75	125	09/16/2023
Antimony		0.0010		**1.17**	1.000	0	116.7	75	125	08/04/2023
Arsenic		0.0010		**1.06**	1.000	0.009417	104.7	75	125	09/16/2023
Barium		0.0010		**4.91**	4.000	0.03258	122.0	75	125	09/16/2023
Beryllium		0.0010		**0.0950**	0.1000	0	95.0	75	125	09/16/2023
Boron		0.0250		**1.06**	1.000	0.09234	97.1	75	125	09/16/2023
Cadmium		0.0010		**0.108**	0.1000	0	108.4	75	125	09/16/2023
Chromium		0.0015		**0.392**	0.4000	0.001100	97.7	75	125	09/16/2023
Cobalt		0.0010		**0.997**	1.000	0.0001756	99.7	75	125	08/04/2023
Iron		0.0250		**4.05**	4.000	0.1391	97.8	75	125	09/16/2023
Lead		0.0010		**1.05**	1.000	0	104.8	75	125	09/16/2023
Lithium	*	0.0030		**1.06**	1.000	0.02149	103.5	75	125	08/08/2023
Manganese		0.0020		**1.35**	1.000	0.3831	96.5	75	125	09/16/2023
Molybdenum	*	0.0015		**1.19**	1.000	0.008342	118.7	75	125	09/16/2023
Selenium		0.0010		**1.03**	1.000	0	102.8	75	125	08/04/2023
Thallium		0.0020		**0.507**	0.5000	0	101.5	75	125	08/04/2023

Batch 210259 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-014CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Aluminum		0.0250		**4.01**	4.000	0.07512	98.4	4.009	0.10	09/16/2023
Antimony		0.0010	SE	**1.31**	1.000	0	130.6	1.167	11.23	08/04/2023
Arsenic		0.0010		**1.06**	1.000	0.009417	105.0	1.057	0.23	09/16/2023
Barium		0.0010		**4.99**	4.000	0.03258	124.0	4.912	1.61	09/16/2023
Beryllium		0.0010		**0.0950**	0.1000	0	95.0	0.09499	0.05	09/16/2023
Boron		0.0250		**1.07**	1.000	0.09234	97.6	1.063	0.42	09/16/2023
Cadmium		0.0010		**0.114**	0.1000	0	114.4	0.1084	5.41	09/16/2023
Chromium		0.0015		**0.395**	0.4000	0.001100	98.4	0.3918	0.70	09/16/2023
Cobalt		0.0010		**1.04**	1.000	0.0001756	104.5	0.9972	4.67	08/04/2023
Iron		0.0250		**4.10**	4.000	0.1391	99.0	4.051	1.20	09/16/2023
Lead		0.0010		**1.06**	1.000	0	105.8	1.048	0.94	09/16/2023
Lithium	*	0.0030		**1.05**	1.000	0.02149	103.1	1.057	0.39	08/08/2023
Manganese		0.0020		**1.37**	1.000	0.3831	98.4	1.348	1.39	09/16/2023
Molybdenum	*	0.0015	E	**1.25**	1.000	0.008342	124.6	1.195	4.84	09/16/2023
Selenium		0.0010		**1.15**	1.000	0	114.8	1.028	11.02	08/04/2023
Thallium		0.0020		**0.527**	0.5000	0	105.4	0.5073	3.78	08/04/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 210307 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210307

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0125	0	0	-100	100	09/15/2023
Aluminum		0.0250		**< 0.0250**	0.0125	0	0	-100	100	09/10/2023
Antimony		0.0010		**< 0.0010**	0.0004	0	0	-100	100	08/04/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	08/04/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	09/10/2023
Barium		0.0010		**< 0.0010**	0.0007	0	0	-100	100	09/10/2023
Beryllium		0.0010		**< 0.0010**	0.0002	0	0	-100	100	09/10/2023
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	09/10/2023
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	09/15/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	09/10/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	09/10/2023
Cobalt		0.0010		**< 0.0010**	0.0001	0	0	-100	100	08/04/2023
Iron		0.0250		**< 0.0250**	0.0115	0	0	-100	100	09/10/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/10/2023
Lithium	*	0.0030		**< 0.0030**	0.0015	0	0	-100	100	08/04/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	09/10/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	09/15/2023
Molybdenum	*	0.0015		**< 0.0015**	0.0006	0	0	-100	100	09/15/2023
Selenium		0.0010		**< 0.0010**	0.0006	0	0	-100	100	08/04/2023
Thallium		0.0020		**< 0.0020**	0.0010	0	0	-100	100	08/04/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 210307 **SampType:** LCS Units **mg/L**

SampID: LCS-210307

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**2.09**	2.000	0	104.6	80	120	09/15/2023
Aluminum		0.0250		**2.06**	2.000	0	103.2	80	120	09/10/2023
Antimony		0.0010		**0.484**	0.5000	0	96.8	80	120	08/04/2023
Arsenic		0.0010		**0.509**	0.5000	0	101.7	80	120	08/04/2023
Arsenic		0.0010		**0.507**	0.5000	0	101.4	80	120	09/10/2023
Barium		0.0010		**2.21**	2.000	0	110.6	80	120	09/10/2023
Beryllium		0.0010		**0.0453**	0.0500	0	90.6	80	120	09/10/2023
Boron		0.0250		**0.447**	0.5000	0	89.4	80	120	09/15/2023
Boron		0.0250		**0.469**	0.5000	0	93.7	80	120	09/10/2023
Cadmium		0.0010		**0.0495**	0.0500	0	99.0	80	120	09/10/2023
Chromium		0.0015		**0.198**	0.2000	0	99.2	80	120	09/10/2023
Cobalt		0.0010		**0.522**	0.5000	0	104.4	80	120	08/04/2023
Iron		0.0250		**1.97**	2.000	0	98.7	80	120	09/10/2023
Lead		0.0010		**0.538**	0.5000	0	107.5	80	120	09/10/2023
Lithium	*	0.0030		**0.517**	0.5000	0	103.4	80	120	08/04/2023
Manganese		0.0020		**0.533**	0.5000	0	106.6	80	120	09/15/2023
Manganese		0.0020		**0.502**	0.5000	0	100.5	80	120	09/10/2023
Molybdenum	*	0.0015		**0.494**	0.5000	0	98.8	80	120	09/15/2023
Selenium		0.0010		**0.446**	0.5000	0	89.2	80	120	08/04/2023
Thallium		0.0020		**0.244**	0.2500	0	97.6	80	120	08/04/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 210307 **SampType:** LCSD Units **mg/L** RPD Limit **20**

SampID: LCSD-210307

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Aluminum		0.0250		**2.10**	2.000	0	105.1	2.092	0.44	09/15/2023
Antimony		0.0010		**0.499**	0.5000	0	99.9	0.4841	3.11	08/04/2023
Arsenic		0.0010		**0.530**	0.5000	0	106.0	0.5087	4.11	08/04/2023
Arsenic		0.0010		**0.535**	0.5000	0	106.9	0.5087	4.95	09/10/2023
Barium		0.0010		**2.23**	2.000	0	111.7	1.971	12.51	09/10/2023
Beryllium		0.0010		**0.0475**	0.0500	0	94.9	0.04778	0.67	09/10/2023
Boron		0.0250		**0.448**	0.5000	0	89.7	0.4470	0.30	09/15/2023
Cadmium		0.0010		**0.0511**	0.0500	0	102.2	0.04784	6.58	09/10/2023
Chromium		0.0015		**0.202**	0.2000	0	101.2	0.1964	2.98	09/10/2023
Cobalt		0.0010		**0.538**	0.5000	0	107.7	0.5222	3.04	08/04/2023
Iron		0.0250		**2.02**	2.000	0	101.2	1.958	3.27	09/10/2023
Lead		0.0010		**0.559**	0.5000	0	111.9	0.5248	6.36	09/10/2023
Lithium	*	0.0030		**0.533**	0.5000	0	106.7	0.5169	3.13	08/04/2023
Manganese		0.0020		**0.515**	0.5000	0	102.9	0.4812	6.73	09/10/2023
Manganese		0.0020		**0.535**	0.5000	0	107.1	0.5328	0.49	09/15/2023
Molybdenum	*	0.0015		**0.498**	0.5000	0	99.6	0.4940	0.80	09/15/2023
Selenium		0.0010		**0.466**	0.5000	0	93.2	0.4458	4.38	08/04/2023
Thallium		0.0020		**0.254**	0.2500	0	101.7	0.2441	4.10	08/04/2023

Batch 210483 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210483

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	08/11/2023
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	09/18/2023
Selenium		0.0010		**< 0.0010**	0.0006	0	0	-100	100	08/11/2023

Batch 210483 **SampType:** LCS Units **mg/L**

SampID: LCS-210483

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		0.0010		**0.563**	0.5000	0	112.5	85	115	08/11/2023
Boron		0.0250		**0.493**	0.5000	0	98.7	80	120	09/18/2023
Selenium		0.0010		**0.502**	0.5000	0	100.5	85	115	08/11/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 210483 **SampType:** LCSD Units **mg/L** RPD Limit **20**

SampID: LCSD-210483

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		0.0010		**0.548**	0.5000	0	109.6	0.5627	2.63	08/11/2023
Boron		0.0250		**0.503**	0.5000	0	100.7	0.4934	1.97	09/18/2023
Selenium		0.0010		**0.483**	0.5000	0	96.7	0.5023	3.85	08/11/2023

Batch 210625 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210625

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0125	0	0	-100	100	09/15/2023
Antimony		0.0010		**< 0.0010**	0.0004	0	0	-100	100	08/11/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	08/11/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	09/15/2023
Barium		0.0010		**< 0.0010**	0.0007	0	0	-100	100	09/15/2023
Beryllium		0.0010		**< 0.0010**	0.0002	0	0	-100	100	09/15/2023
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	09/15/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	09/15/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	09/15/2023
Cobalt		0.0010		**< 0.0010**	0.0001	0	0	-100	100	08/11/2023
Iron		0.0250		**< 0.0250**	0.0115	0	0	-100	100	09/15/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/15/2023
Lithium	*	0.0030		**< 0.0030**	0.0015	0	0	-100	100	08/11/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	09/15/2023
Molybdenum	*	0.0015		**< 0.0015**	0.0006	0	0	-100	100	09/15/2023
Selenium		0.0010		**< 0.0010**	0.0006	0	0	-100	100	08/11/2023
Thallium		0.0020		**< 0.0020**	0.0010	0	0	-100	100	08/11/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 210625 **SampType:** LCS Units **mg/L**

SampID: LCS-210625

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**2.21**	2.000	0	110.4	80	120	09/15/2023
Antimony		0.0010		**0.498**	0.5000	0	99.6	85	115	08/11/2023
Arsenic		0.0010		**0.517**	0.5000	0	103.4	85	115	08/11/2023
Arsenic		0.0010		**0.553**	0.5000	0	110.7	80	120	09/15/2023
Barium		0.0010		**2.30**	2.000	0	114.9	80	120	09/15/2023
Beryllium		0.0010		**0.0524**	0.0500	0	104.7	80	120	09/15/2023
Boron		0.0250		**0.520**	0.5000	0	104.0	80	120	09/15/2023
Cadmium		0.0010		**0.0547**	0.0500	0	109.4	80	120	09/15/2023
Chromium		0.0015		**0.215**	0.2000	0	107.7	80	120	09/15/2023
Cobalt		0.0010		**0.496**	0.5000	0	99.1	85	115	08/11/2023
Iron		0.0250		**2.23**	2.000	0	111.5	80	120	09/15/2023
Lead		0.0010		**0.539**	0.5000	0	107.8	80	120	09/15/2023
Lithium	*	0.0030		**0.472**	0.5000	0	94.4	85	115	08/11/2023
Manganese		0.0020		**0.559**	0.5000	0	111.7	80	120	09/15/2023
Molybdenum	*	0.0015		**0.541**	0.5000	0	108.2	80	120	09/15/2023
Selenium		0.0010		**0.482**	0.5000	0	96.4	85	115	08/11/2023
Thallium		0.0020		**0.242**	0.2500	0	97.0	85	115	08/11/2023

Batch 210625 **SampType:** LCSD Units **mg/L** RPD Limit **20**

SampID: LCSD-210625

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		0.0010		**0.512**	0.5000	0	102.4	0.4978	2.84	08/11/2023
Arsenic		0.0010		**0.534**	0.5000	0	106.8	0.5169	3.24	08/11/2023
Cobalt		0.0010		**0.494**	0.5000	0	98.9	0.4956	0.26	08/11/2023
Lithium	*	0.0030		**0.473**	0.5000	0	94.7	0.4721	0.28	08/11/2023
Selenium		0.0010		**0.477**	0.5000	0	95.4	0.4818	1.06	08/11/2023
Thallium		0.0020		**0.246**	0.2500	0	98.4	0.2424	1.52	08/11/2023

Batch 211012 **SampType:** MBLK Units **mg/L**

SampID: MBLK-211012

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	09/16/2023
Iron		0.0250		**< 0.0250**	0.0175	0	0	-100	100	09/16/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 211012 **SampType:** LCS Units **mg/L**

SampID: LCS-211012

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		0.0250		**0.514**	0.5000	0	102.8	80	120	09/17/2023
Iron		0.0250		**2.16**	2.000	0	108.0	80	120	09/17/2023

Batch 211012 **SampType:** MS Units **mg/L**

SampID: 23070389-114CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		0.0250		**0.590**	0.5000	0.09343	99.3	75	125	09/17/2023
Iron		0.0250		**9.67**	2.000	7.327	117.4	75	125	09/17/2023

Batch 211012 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-114CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Boron		0.0250		**0.590**	0.5000	0.09343	99.4	0.5900	0.03	09/17/2023
Iron		0.0250		**9.70**	2.000	7.327	118.8	9.674	0.30	09/17/2023

Batch 211034 **SampType:** MBLK Units **mg/L**

SampID: MBLK-211034

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0125	0	0	-100	100	09/16/2023
Antimony		0.0010		**< 0.0010**	0.0004	0	0	-100	100	08/30/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	09/16/2023
Barium		0.0010		**< 0.0010**	0.0007	0	0	-100	100	09/16/2023
Beryllium		0.0010		**< 0.0010**	0.0002	0	0	-100	100	09/16/2023
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	09/16/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	08/30/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	09/16/2023
Cobalt		0.0010		**< 0.0010**	0.0001	0	0	-100	100	08/30/2023
Iron		0.0250		**< 0.0250**	0.0115	0	0	-100	100	09/16/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/16/2023
Lithium	*	0.0030		**< 0.0030**	0.0015	0	0	-100	100	08/30/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	09/16/2023
Molybdenum	*	0.0015		**< 0.0015**	0.0006	0	0	-100	100	09/16/2023
Selenium		0.0010		**< 0.0010**	0.0006	0	0	-100	100	08/30/2023
Thallium		0.0020		**< 0.0020**	0.0010	0	0	-100	100	08/30/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 211034 **SampType:** LCS Units **mg/L**

SampID: LCS-211034

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250	S	**2.50**	2.000	0	125.0	80	120	09/16/2023
Antimony		0.0010		**0.501**	0.5000	0	100.3	85	115	08/30/2023
Arsenic		0.0010		**0.598**	0.5000	0	119.7	80	120	09/16/2023
Barium		0.0010	S	**2.67**	2.000	0	133.6	80	120	09/16/2023
Beryllium		0.0010		**0.0567**	0.0500	0	113.3	80	120	09/16/2023
Boron		0.0250		**0.588**	0.5000	0	117.7	80	120	09/16/2023
Cadmium		0.0010		**0.0479**	0.0500	0	95.7	85	115	08/30/2023
Chromium		0.0015	S	**0.242**	0.2000	0	120.9	80	120	09/16/2023
Cobalt		0.0010		**0.501**	0.5000	0	100.2	80	120	08/30/2023
Iron		0.0250		**2.39**	2.000	0	119.5	80	120	09/16/2023
Lead		0.0010	S	**0.609**	0.5000	0	121.9	80	120	09/16/2023
Lithium	*	0.0030		**0.508**	0.5000	0	101.6	80	120	08/30/2023
Manganese		0.0020	S	**0.618**	0.5000	0	123.6	80	120	09/16/2023
Molybdenum	*	0.0015		**0.580**	0.5000	0	116.1	80	120	09/16/2023
Selenium		0.0010		**0.454**	0.5000	0	90.8	85	115	08/30/2023
Thallium		0.0020		**0.223**	0.2500	0	89.2	85	115	08/30/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 211213 **SampType:** MBLK Units **mg/L**

SampID: MBLK-211213

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250	S	**0.0291**	0.0125	0	232.7	-100	100	08/31/2023
Antimony		0.0010		**< 0.0010**	0.0004	0	0	-100	100	08/31/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	09/06/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	08/31/2023
Barium		0.0010		**< 0.0010**	0.0007	0	0	-100	100	09/16/2023
Barium		0.0010		**< 0.0010**	0.0007	0	0	-100	100	09/10/2023
Beryllium		0.0010		**< 0.0010**	0.0002	0	0	-100	100	08/31/2023
Boron		0.0250		**< 0.0250**	0.0093	0	0	-100	100	08/31/2023
Cadmium		0.0010		**< 0.0010**	0.0001	0	0	-100	100	08/31/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	08/31/2023
Cobalt		0.0010		**< 0.0010**	0.0001	0	0	-100	100	08/31/2023
Iron		0.0250		**< 0.0250**	0.0115	0	0	-100	100	08/31/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/10/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/16/2023
Lithium	*	0.0030		**< 0.0030**	0.0015	0	0	-100	100	08/31/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	08/31/2023
Molybdenum	*	0.0015		**< 0.0015**	0.0006	0	0	-100	100	08/31/2023
Selenium		0.0010		**< 0.0010**	0.0006	0	0	-100	100	08/31/2023
Thallium		0.0020		**< 0.0020**	0.0010	0	0	-100	100	08/31/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 211213 **SampType:** LCS Units **mg/L**

SampID: LCS-211213

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250	B	**2.12**	2.000	0	106.1	80	120	08/31/2023
Antimony		0.0010		**0.573**	0.5000	0	114.6	80	120	08/31/2023
Arsenic		0.0010		**0.506**	0.5000	0	101.1	85	115	09/06/2023
Arsenic		0.0010		**0.592**	0.5000	0	118.4	80	120	08/31/2023
Beryllium		0.0010		**0.0537**	0.0500	0	107.4	80	120	08/31/2023
Boron		0.0250		**0.516**	0.5000	0	103.2	80	120	08/31/2023
Cadmium		0.0010		**0.0558**	0.0500	0	111.5	80	120	08/31/2023
Chromium		0.0015		**0.216**	0.2000	0	108.2	80	120	08/31/2023
Cobalt		0.0010		**0.549**	0.5000	0	109.8	80	120	08/31/2023
Iron		0.0250		**2.18**	2.000	0	109.0	80	120	08/31/2023
Lead		0.0010	S	**0.624**	0.5000	0	124.7	80	120	09/10/2023
Lithium	*	0.0030		**0.546**	0.5000	0	109.2	80	120	08/31/2023
Manganese		0.0020		**0.533**	0.5000	0	106.7	80	120	08/31/2023
Molybdenum	*	0.0015		**0.544**	0.5000	0	108.9	80	120	08/31/2023
Selenium		0.0010		**0.522**	0.5000	0	104.4	80	120	08/31/2023
Thallium		0.0020		**0.268**	0.2500	0	107.3	80	120	08/31/2023

Batch 211213 **SampType:** MS Units **mg/L**

SampID: 23070389-116CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250	B	**4.46**	4.000	0.3459	102.8	75	125	08/31/2023
Antimony		0.0010	SE	**1.28**	1.000	0	128.0	75	125	08/31/2023
Arsenic		0.0010		**1.11**	1.000	0.0009230	111.2	75	125	08/31/2023
Beryllium		0.0010		**0.104**	0.1000	0.0003817	103.6	75	125	08/31/2023
Boron		0.0250		**1.18**	1.000	0.1889	99.4	75	125	08/31/2023
Cadmium		0.0010		**0.112**	0.1000	0	111.7	75	125	08/31/2023
Chromium		0.0015		**0.405**	0.4000	0.002169	100.7	75	125	08/31/2023
Cobalt		0.0010		**0.883**	1.000	0.001562	88.2	75	125	08/31/2023
Iron		0.0250		**4.86**	4.000	0.7602	102.5	75	125	08/31/2023
Lead		0.0010		**1.23**	1.000	0	123.0	75	125	09/10/2023
Lithium	*	0.0030		**1.23**	1.000	0.1897	103.7	75	125	08/31/2023
Manganese		0.0020		**1.19**	1.000	0.2869	90.7	75	125	08/31/2023
Molybdenum	*	0.0015		**1.15**	1.000	0.001515	115.2	75	125	08/31/2023
Selenium		0.0010		**0.984**	1.000	0	98.4	75	125	08/31/2023
Thallium		0.0020		**0.519**	0.5000	0	103.9	75	125	08/31/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 211213 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-116CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Aluminum		0.0250	B	**4.44**	4.000	0.3459	102.5	4.459	0.31	08/31/2023
Antimony		0.0010	SE	**1.27**	1.000	0	126.7	1.280	1.06	08/31/2023
Arsenic		0.0010		**1.11**	1.000	0.0009230	111.3	1.113	0.11	08/31/2023
Beryllium		0.0010		**0.104**	0.1000	0.0003817	103.7	0.1040	0.08	08/31/2023
Boron		0.0250		**1.18**	1.000	0.1889	99.5	1.183	0.08	08/31/2023
Cadmium		0.0010		**0.110**	0.1000	0	109.9	0.1117	1.63	08/31/2023
Chromium		0.0015		**0.395**	0.4000	0.002169	98.2	0.4049	2.49	08/31/2023
Cobalt		0.0010		**0.881**	1.000	0.001562	88.0	0.8834	0.22	08/31/2023
Iron		0.0250		**4.88**	4.000	0.7602	103.1	4.862	0.43	08/31/2023
Lead		0.0010		**1.20**	1.000	0	119.8	1.230	2.61	09/10/2023
Lithium	*	0.0030		**1.19**	1.000	0.1897	100.3	1.227	2.82	08/31/2023
Manganese		0.0020		**1.19**	1.000	0.2869	90.3	1.194	0.32	08/31/2023
Molybdenum	*	0.0015		**1.13**	1.000	0.001515	112.9	1.154	2.06	08/31/2023
Selenium		0.0010		**0.989**	1.000	0	98.9	0.9839	0.47	08/31/2023
Thallium		0.0020		**0.509**	0.5000	0	101.9	0.5194	1.96	08/31/2023

Batch 212096 **SampType:** MBLK Units **mg/L**

SampID: MBLK-212096

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0125	0	0	-100	100	09/20/2023
Antimony		0.0010		**< 0.0010**	0.0004	0	0	-100	100	09/21/2023
Arsenic		0.0010		**< 0.0010**	0.0004	0	0	-100	100	09/21/2023
Barium		0.0010		**< 0.0010**	0.0007	0	0	-100	100	09/20/2023
Chromium		0.0015		**< 0.0015**	0.0007	0	0	-100	100	09/20/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/21/2023
Lead		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/20/2023
Manganese		0.0020		**< 0.0020**	0.0008	0	0	-100	100	09/20/2023
Selenium		0.0010		**< 0.0010**	0.0006	0	0	-100	100	09/21/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 212096 **SampType:** LCS Units **mg/L**

SampID: LCS-212096

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**2.07**	2.000	0	103.5	80	120	09/20/2023
Antimony		0.0010		**0.501**	0.5000	0	100.2	85	115	09/21/2023
Arsenic		0.0010		**0.504**	0.5000	0	100.8	85	115	09/21/2023
Barium		0.0010		**2.14**	2.000	0	106.8	80	120	09/20/2023
Chromium		0.0015		**0.213**	0.2000	0	106.3	80	120	09/20/2023
Lead		0.0010		**0.493**	0.5000	0	98.5	85	115	09/21/2023
Lead		0.0010		**0.529**	0.5000	0	105.7	80	120	09/20/2023
Manganese		0.0020		**0.520**	0.5000	0	104.0	80	120	09/20/2023
Selenium		0.0010		**0.507**	0.5000	0	101.5	85	115	09/22/2023

Batch 212096 **SampType:** MS Units **mg/L**

SampID: 23070389-117CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**4.09**	4.000	0.3606	93.3	75	125	09/20/2023
Barium		0.0010		**4.73**	4.000	0.01058	118.0	75	125	09/20/2023
Chromium		0.0015		**0.391**	0.4000	0.001907	97.4	75	125	09/20/2023
Lead		0.0010		**1.09**	1.000	0	109.4	75	125	09/20/2023
Manganese		0.0020		**1.03**	1.000	0.09165	93.4	75	125	09/20/2023

Batch 212096 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 23070389-117CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Aluminum		0.0250		**4.44**	4.000	0.3606	101.9	4.094	8.02	09/20/2023
Barium		0.0010		**4.85**	4.000	0.01058	120.9	4.732	2.37	09/20/2023
Chromium		0.0015		**0.415**	0.4000	0.001907	103.3	0.3915	5.82	09/20/2023
Lead		0.0010		**1.13**	1.000	0	113.4	1.094	3.56	09/20/2023
Manganese		0.0020		**1.10**	1.000	0.09165	100.6	1.025	6.85	09/20/2023

Batch 212110 **SampType:** MBLK Units **mg/L**

SampID: MBLK-212110

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Barium		0.0010		**< 0.0010**	0.0007	0	0	-100	100	09/20/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 212110 **SampType:** LCS Units **mg/L**

SampID: LCS-212110

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Barium		0.0010		**2.30**	2.000	0	114.9	80	120	09/20/2023

Batch 212110 **SampType:** LCSD Units **mg/L** RPD Limit **20**

SampID: LCSD-212110

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Barium		0.0010		**2.25**	2.000	0	112.4	2.298	2.15	09/20/2023

SW-846 7470A (DISSOLVED)

Batch 210195 **SampType:** MBLK Units **mg/L**

SampID: MBLK-210195

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**< 0.00020**	0.0001	0	0	-100	100	08/01/2023

Batch 210195 **SampType:** LCS Units **mg/L**

SampID: LCS-210195

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**0.00463**	0.0050	0	92.7	85	115	08/01/2023

Batch 210305 **SampType:** MS Units **mg/L**

SampID: 23070389-061CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**0.00828**	0.0100	0.0001390	81.4	75	125	08/03/2023

Batch 210305 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 23070389-061CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.00020		**0.00857**	0.0100	0.0001390	84.3	0.008284	3.39	08/03/2023

Batch 210306 **SampType:** MS Units **mg/L**

SampID: 23070389-064DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**0.00471**	0.0050	0	94.2	75	125	08/04/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 7470A (DISSOLVED)

Batch 210306 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 23070389-064DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.00020		**0.00458**	0.0050	0	91.6	0.004710	2.75	08/04/2023

Batch 211189 **SampType:** MS Units **mg/L**

SampID: 23070389-114DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**0.00557**	0.0050	0	111.4	75	125	08/23/2023

Batch 211189 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 23070389-114DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.00020		**0.00585**	0.0050	0	117.0	0.005571	4.86	08/23/2023

SW-846 7470A (TOTAL)

Batch 209946 **SampType:** MBLK Units **mg/L**

SampID: MBLK-209946

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**< 0.00020**	0.0001	0	0	-100	100	07/26/2023

Batch 209946 **SampType:** LCS Units **mg/L**

SampID: LCS-209946

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**0.00513**	0.0050	0	102.6	85	115	07/26/2023

Batch 209946 **SampType:** MS Units **mg/L**

SampID: 23070389-015CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**0.00520**	0.0050	0	104.0	75	125	07/26/2023

Batch 209946 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 23070389-015CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.00020		**0.00493**	0.0050	0	98.7	0.005202	5.29	07/26/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 7470A (TOTAL)

Batch 210195 **SampType:** MBLK Units **mg/L**
SampID: MBLK-210195

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**< 0.00020**	0.0001	0	0	-100	100	08/01/2023

Batch 210195 **SampType:** LCS Units **mg/L**
SampID: LCS-210195

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**0.00463**	0.0050	0	92.7	85	115	08/01/2023

Batch 210195 **SampType:** MS Units **mg/L**
SampID: 23070389-108CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**0.00472**	0.0050	0	94.5	75	125	08/01/2023

Batch 210195 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-108CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.00020		**0.00478**	0.0050	0	95.5	0.004723	1.11	08/01/2023

Batch 210255 **SampType:** MBLK Units **mg/L**
SampID: MBLK-210255

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**< 0.00020**	0.0001	0	0	-100	100	08/02/2023

Batch 210255 **SampType:** LCS Units **mg/L**
SampID: LCS-210255

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**0.00535**	0.0050	0	107.0	85	115	08/02/2023

Batch 210255 **SampType:** MS Units **mg/L**
SampID: 23070389-012CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**0.00530**	0.0050	0	106.1	75	125	08/02/2023

Batch 210255 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-012CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.00020		**0.00514**	0.0050	0	102.7	0.005304	3.21	08/02/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 7470A (TOTAL)

Batch 210305 **SampType:** MBLK Units **mg/L**
SampID: MBLK-210305

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**< 0.00020**	0.0001	0	0	-100	100	08/03/2023

Batch 210305 **SampType:** LCS Units **mg/L**
SampID: LCS-210305

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**0.00469**	0.0050	0	93.8	85	115	08/03/2023

Batch 210305 **SampType:** MS Units **mg/L**
SampID: 23070389-005CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**0.00810**	0.0100	0	81.0	75	125	08/03/2023

Batch 210305 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 23070389-005CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.00020		**0.00837**	0.0100	0	83.7	0.008104	3.29	08/03/2023

Batch 210306 **SampType:** MBLK Units **mg/L**
SampID: MBLK-210306

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**< 0.00020**	0.0001	0	0	-100	100	08/04/2023

Batch 210306 **SampType:** LCS Units **mg/L**
SampID: LCS-210306

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**0.00454**	0.0050	0	90.9	85	115	08/04/2023

Batch 211189 **SampType:** MBLK Units **mg/L**
SampID: MBLK-211189

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**< 0.00020**	0.0001	0	0	-100	100	08/25/2023
Mercury		0.00020		**< 0.00020**	0.0001	0	0	-100	100	08/23/2023

Client: Ramboll **Work Order:** 23070389

Client Project: NEW-23Q3 **Report Date:** 13-Nov-23

SW-846 7470A (TOTAL)

Batch **211189** **SampType:** **LCS** Units **mg/L**

SampID: LCS-211189

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.00020		**0.00505**	0.0050	0	100.9	85	115	08/23/2023

Receiving Check List

Teklab, Inc. Environmental Laboratory

http://www.teklabinc.com/

Client: Ramboll
Client Project: NEW-23Q3

Work Order: 23070389
Report Date: 13-Nov-23

Carrier: Skylar Mathis
Received By: ANC

Completed by: Amber Dilallo
On: 02-Aug-23

Reviewed by: Ellie Hopkins
On: 02-Aug-23

Pages to follow: Chain of custody 26 Extra pages included 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C 3.8
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☑	Lab ☐	NA ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water – at least one vial per sample has zero headspace?	Yes ☐	No ☐	No VOA vials ☑
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	NA ☐
NPDES/CWA TCN interferences checked/treated in the field?	Yes ☐	No ☐	NA ☑

Any No responses must be detailed below or on the COC.

pH strip #90719/79929. - TWM/CET/acolin - 7/25/2023 10:12:23 AM
Additional HNO3 (90404) was needed in XPWO1 upon arrival at the laboratory. - acolin - 7/25/2023 10:12:26 AM
Additional HNO3 (90404) was needed in APWO2, G232 upon arrival at the laboratory. - acolin - 7/26/2023 1:35:53 PM
Additional HNO3 (90404) was needed in G225, additional H2SO4 (90128) was needed in G225, and additional NaOH (81662) was needed in G217S, G225, R2170, A213DUP upon arrival at the laboratory. - acolin - 7/27/2023 9:04:36 AM
Samples collected on 7/26/23 were delivered to the laboratory on 7/26/23 at 1805 (on ice - 8.4C - LTG#5). pH strip #90719/79929 - ANC/ERH 7/27/23
G141 was filtered and preserved with nitric acid (90404) for the dissolved parameters upon arrival at the laboratory. - TM/ehopkins - 7/27/2023 9:36:45 AM
L1R was preserved with HNO3 (90404) upon arrival at the laboratory. Sample did not reach the desired pH range. G104, G106, G1139, R219, G104DUP were preserved with NaOH (81662) upon arrival at the laboratory. - MP/acolin - 7/28/2023 9:50:16 AM
Samples collected on 7/31/23 were delivered to the laboratory on 8/01/23 at 805 (on ice - 5.8C - LTG#1). pH strip #90719 - CET/ERH 7/27/23
Samples collected on 8/01/23 were delivered to the laboratory on 8/02/23 at 1000 (on ice - 3.4C - LTG#1). pH strip #90719 - CET/ERH 7/27/23
Samples collected on 8/16/23 were delivered to the laboratory on 8/16/23 at 1529 (on ice - 5.4C - LTG#5). pH strip #90719/79929 - CET/ERH 7/27/23
pH strip #90719. - amberdilallo - 8/17/2023 3:34:30 PM
Samples collected on 8/17/23 were delivered to the laboratory on 8/17/23 at 1400 (on ice - 1.2C - LTG#1). pH strip #90719/79929 - AMD/ERH 8/17/23

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

23070389

Page: 1 of 7

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp	Report To: Brian Voelker	Attention: Jason Stuckey
Address: 13498 E. 900th St	Copy To: Jason Stuckey	Company Name: Vistra Corp
		Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY

NPDES | **GROUND WATER** | DRINKING WATER

UST | RCRA | OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A207						0													✓					23070389-001
2	A213						5	2			1								✓						002
3	A214						5	2	1		1								✓						003
4	A215						5	2	1		1								✓						004
5	APW02			7-25-23	1145		6	2	2	2							✓				✓	✓	✓		005
6	APW03						1	1	1	1							✓				✓	✓	✓		006
7	APW04						1	1	1	1							✓				✓	✓	✓		007
8	APW05			7-24-23	1352		1	1	1	1							✓				✓		✓		008
9	APW05S			7-25-23	1253		1	1	1	1							✓				✓		✓		009
10	APW06			7-25-23	1222		1	1	1	1							✓				✓		✓		010
11	APW07			7-25-23	1010		1	1	1	1							✓				✓		✓		011
12	APW08						1	1	1	1							✓				✓		✓		012
13	APW09						1	1	1	1							✓				✓		✓		013
14	APW10						1	1	1	1							✓				✓		✓		014
15	APW11			7-24-23	1453		1	1	1	1							✓				✓		✓		015
16	APW12			7-24-23	1523		6	2	2	2							✓				✓		✓		016

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
NEW-23Q3 Rev 0	J. Colp	7-24-23	1700*	Layla Mathis	7/24/23	1700		Y	N	
	Layla Mathis	7/25/23	0840	Allison Colp	7/25/23	840	3.8			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: Justin Colp DATE Signed (MM/DD/YY): 7-24-23

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Initial relinquished time per Justin Colp.
EAH 9/28/23

LTG, I PM 07A. GRS 7/25/23.

CHAIN-OF-CUSTODY / Analytical Request Document

23070389

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp	Report To: Brian Voelker	Attention: Jason Stuckey
Address: 13498 E. 900th St	Copy To: Jason Stuckey	Company Name: Vistra Corp
		Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY

NPDES **GROUND WATER** DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	MW48S						0												✓					23070389-097
2	R216						0												✓					098
3	R217D						6	2	1	2		1					✓	✓						099
4	R219						5	2	1	1		1						✓						100
5	SG02						0									✓				✓				101
6	XPW01			7-24-23	1230		6	2	2	2						✓				✓		✓		102
7	XPW02			7-24-23	1130		6	2	2	2						✓				✓		✓		103
8	XPW03						6	2	2	2						✓				✓		✓		104
9	XPW04			7-24-23	1300		6	2	2	2						✓				✓		✓		105
10	XSG01						0									✓				✓				106
11	Field Blank						8	2	3	2		1				✓	✓	✓	✓	✓	✓	✓		107
12	APW02 Duplicate						6	2	2	2						✓				✓	✓	✓		108
13	A213 Duplicate						5	2	1	1		1						✓						109
14	G104 Duplicate						5	2	1	1		1							✓					110
15																								
16																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
NEW-23Q3 Rev 0	J. Colp	7-24-23	1700*	[illegible]	7/24/23	1700				
	[illegible]	7/25/23	0840	Allison Colp	7/28/23	840	3.8	Y		

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7-24-23

*Initial relinquished time per Justin Colp.
EAH 9/28/23

CT 6.1
PW90719-GRA 7-25-23.
Added HNO3(pH<2) to both 250ml From XPW01.
CT 7-25-23

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

23070389

Page: 1 of 7

Section A Required Client Information:

Company:	Vistra Corp
Address:	13498 E. 900th St
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Jason Stuckey
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Jason Stuckey
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A207						0												✓					23070389-001
2	A213						5	2	1	1		1						✓						002
3	A214						5	2	1	1		1						✓						003
4	A215						5	2	1	1		1						✓						004
5	APW02			7-25-23	1145		6	2	2	2						✓				✓	✓	✓		005
6	APW03						1	1	1	1						✓				✓	✓	✓		006
7	APW04															✓				✓	✓	✓		007
8	APW05			~~7-25-23~~ 14												✓				✓		✓		008
9	APW05S			7-25-23	1253											✓				✓		✓		009
10	APW06			7-25-23	1222											✓				✓		✓		010
11	APW07			7-25-23	1010											✓				✓		✓		011
12	APW08															✓				✓		✓		012
13	APW09															✓				✓		✓		013
14	APW10															✓				✓		✓		014
15	APW11						↓	↓	↓	↓						✓				✓		✓		015
16	APW12						6	2	2	2						✓				✓		✓		016

ADDED HNO3 TO APW02, 04, 05, 06, 07, 09, 10, 11, 12, 13, 14, 15, 16 PER VOA 90291 79929

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Colp	7-25	1700*		7/25	1700*	
		7/26	0815		7/26	815	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 7-25-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Y	N	

*Initial relinquished time per Justin Colp.
EAH 9/28/23

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

23070389

Section A Required Client Information:

Company:	Vistra Corp
Address:	13498 E. 900th St
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Jason Stuckey
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Jason Stuckey
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW13						6	2	2	2							✓				✓		✓		23070389-017
2	APW14																✓				✓		✓		018
3	APW15																✓				✓		✓		019
4	APW16																✓				✓		✓		020
5	APW17			7-25-23	1036												✓				✓		✓		021
6	APW18			7-25-23	0942		6	2	2	2							✓				✓		✓		022
7	G06D						2	1		1								✓							023
8	G104						5	2	1	1		1								✓					024
9	G104D						2	1		1								✓		✓					025
10	G104S						0													✓					026
11	G105						5	2	1	1		1								✓					027
12	G106						5	2	1	1		1								✓					028
13	G108						2	1		1								✓		✓					029
14	G109						0													✓					030
15	G110						0													✓					031
16	G111						0													✓					032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Colp	7-25	1700*	Mike Mobbs	7/25/23	1700*	5.8
	Mike Mobbs	7/26/23	0845	Allison Colp	7/26	845	1

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: Justin Colp DATE Signed (MM/DD/YY): 7-25-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Initial relinquished time per Justin Colp.
EAH 9/28/23

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

23070389

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp	Report To:	Brian Voelker	Attention:	Jason Stuckey
Address:	13498 E. 900th St	Copy To:	Jason Stuckey	Company Name:	Vistra Corp
				Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:	2285	Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G141						5	2	1	1		1								✓					23070389-049
2	G201						2	1		1								✓							050
3	G202						2	1		1								✓							051
4	G203						2	1		1								✓							052
5	G208			7-25-23	1453		2	1		1								✓	✓						053
6	G217S						5	2	1	1		1							✓						054
7	G218						0												✓						055
8	G220						2	1		1								✓	✓						056
9	G221						5	2	1	1		1							✓						057
10	G222						2	1		1								✓	✓						058
11	G223						2	1		1								✓	✓						059
12	G224						2	1		1								✓	✓						060
13	G225						5	2	1	1		1							✓						061
14	G230 DRY			7-25-23	DRY		6	2	1	2		1						✓	✓						062
15	G231			7-25-23	1112		6	2	1	2		1						✓	✓						063
16	G232			7-25-23	1151		6	2	1	2		1						✓	✓						064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Colp	7-25	1700*	Skyler Mabb	7/25	1700*	
	Skyler Mabb	7/26	0815	Allison Cole	7/26	815	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7-25-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Initial relinquished time per Justin Colp.
EAH 9/28/23

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

23070389

Section A Required Client Information:

Company:	Vistra Corp
Address:	13498 E. 900th St
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Jason Stuckey
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Jason Stuckey
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G233			7-25-23	1324		6	2	1	2		1						✓	✓						23070389-065
2	G234			7-25-23	0848		6	2	1	2		1						✓	✓						066
3	G48MG						2	1		1								✓							067
4	L1R						2	1		1								✓		✓					068
5	L201						0													✓					069
6	L202						0													✓					070
7	L203						0													✓					071
8	L204						0													✓					072
9	L205						0													✓					073
10	L301						2	1		1								✓							074
11	M25-1						0													✓					075
12	M25-2						0													✓					076
13	M25-3						0													✓					077
14	M25-4						0													✓					078
15	M25-5						0													✓					079
16	M25-6						0													✓					080

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Colp	7-25	1700*	[signature]	7/25	1700*	
	[signature]	7/26	0815	[signature]	7/26	815	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7-25-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Initial relinquished time per Justin Colp.
EAH 9/28/23

CHAIN-OF-CUSTODY / Analytical Request Document

23070389

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp	Report To: Brian Voelker	Attention: Jason Stuckey
Address: 13498 E. 900th St	Copy To: Jason Stuckey	Company Name: Vistra Corp
		Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY: NPDES GROUND WATER DRINKING WATER UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	MW48S						0												✓					23070389-097
2	R216						0												✓					098
3	R217D						6	2	1	2		1					✓	✓						099
4	R219						5	2	1	1		1						✓						100
5	SG02						0									✓				✓				101
6	XPW01						6	2	2	2						✓				✓		✓		102
7	XPW02						6	2	2	2						✓				✓		✓		103
8	XPW03						6	2	2	2						✓				✓		✓		104
9	XPW04						6	2	2	2						✓				✓		✓		105
10	XSG01						0									✓				✓				106
11	Field Blank						8	2	3	2		1				✓	✓	✓	✓	✓	✓	✓		107
12	APW02 Duplicate			7-25-23	1145		6	2	2	2						✓				✓	✓	✓		108
13	A213 Duplicate						5	2	1	1		1						✓						109
14	G104 Duplicate						5	2	1	1		1							✓					110
15																								
16																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Colp	7-25	1700*		7/25	1700*	
		7/26	0815		7/26	815	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 7-25-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Initial relinquished time per Justin Colp.
EAH 9/28/23

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

23070389

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp	Report To: Brian Voelker	Attention: Jason Stuckey
Address: 13498 E. 900th St	Copy To: Jason Stuckey	Company Name: Vistra Corp
		Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Requested Analysis Filtered (Y/N): NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A207						0													✓					23070389-001
2	A213			7/26/23	1105		5	2	1	1		1							✓						002
3	A214			7/26/23	1148		5	2	1	1		1							✓						003
4	A215 X			7/26/23	1315		5	2	1	1		1							✓						004
5	APW02						6	2	2	2							✓				✓	✓	✓			005
6	APW03																✓				✓	✓	✓			006
7	APW04																✓				✓	✓	✓			007
8	APW05																✓				✓		✓			008
9	APW05S																✓				✓		✓			009
10	APW06																✓				✓		✓			010
11	APW07																✓				✓		✓			011
12	APW08																✓				✓		✓			012
13	APW09																✓				✓		✓			013
14	APW10																✓				✓		✓			014
15	APW11																✓				✓		✓			015
16	APW12						6	2	2	2							✓				✓		✓			016

PH 907/9/79929
Added HNO3 to 6225 (90404)
H2SO4 (90128) to 6225
Added NaOH (81402) to 6217S, 6225, 62170, A213 DUP
AC 7/27

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
NEW-23Q3 Rev 0	Tracy Carroll	7/26/23	1805		7/26/23	1805	3.4	Y	N	
							TGS			

X Well went Dry during reads

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tracy Carroll

SIGNATURE of SAMPLER: Tracy Carroll DATE Signed (MM/DD/YY): 7/26/23

CHAIN-OF-CUSTODY / Analytical Request Document

23070389

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp	Report To: Brian Voelker	Attention: Jason Stuckey
Address: 13498 E. 900th St	Copy To: Jason Stuckey	Company Name: Vistra Corp
		Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G112						0													✓					23070389-033
2	G113						0													✓					034
3	G114						2	1		1								✓		✓					035
4	G114D						2	1		1								✓							036
5	G115						0													✓					037
6	G116						5	2	1	1		1								✓		✓			038
7	G117						0													✓					039
8	G118						2	1		1								✓		✓					040
9	G119						0													✓					041
10	G120						0													✓					042
11	G125			7/26/23	1338		5	2	1	1		1								✓					043
12	G128			7/26/23	1120		6	2	1	2		1						✓		✓					044
13	G130						6	2	1	2		1						✓		✓					045
14	G133						6	2	1	2		1						✓		✓					046
15	G136						5	2	1	1		1								✓					047
16	G139						5	2	1	1		1								✓					048

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	Tracy Carroll	7/26/23	1805	[illegible]	7/26/23	1805	

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Tracy Carroll					
SIGNATURE of SAMPLER:	Tracy Carroll	DATE Signed (MM/DD/YY): 7/26/23				

23070389

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp
Address:	13498 E. 900th St
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Jason Stuckey
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Jason Stuckey
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G141 ☆			7-26-23	1402		5	2	1	1		1								✓					23070389-049
2	G201						2	1		1								✓							050
3	G202						2	1		1								✓							051
4	G203						2	1		1								✓							052
5	G208						2	1		1								✓	✓						053
6	G217S			7-26-23	1322		5	2	1	1		1							✓						054
7	G218						0												✓						055
8	G220			7-26-23	0751		2	1		1								✓	✓						056
9	G221			7-26-23	1112		5	2	1	1		1							✓						057
10	G222			7-26-23	1143		2	1		1								✓	✓						058
11	G223				1027		2	1		1								✓	✓						059
12	G224				1236		2	1		1								✓	✓						060
13	G225			7-26-23	1434		5	2	1	1		1							✓						061
14	G230						6	2	1	2		1						✓	✓						062
15	G231						6	2	1	2		1						✓	✓						063
16	G232						6	2	1	2		1						✓	✓						064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	Jenny Carroll	7/26/23	1805	Jason Dibello	7/27/23	1805	

☆ = Filter in lab

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Cop

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7-26-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

23070389

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp
Address:	13498 E. 900th St
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Jason Stuckey
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Jason Stuckey
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	MW48S						0													✓					23070389-097
2	R216						0													✓					098
3	R217D			7-26-23	1249		6	2	1	2		1						✓	✓						099
4	R219						5	2	1	1		1							✓						100
5	SG02						0										✓				✓				101
6	XPW01						6	2	2	2							✓				✓		✓		102
7	XPW02						6	2	2	2							✓				✓		✓		103
8	XPW03			7/26/23	1433		6	2	2	2							✓				✓		✓		104
9	XPW04						6	2	2	2							✓				✓		✓		105
10	XSG01						0										✓				✓				106
11	Field Blank						8	2	3	2		1					✓	✓	✓	✓	✓	✓	✓		107
12	APW02 Duplicate						6	2	2	2							✓				✓	✓	✓		108
13	A213 Duplicate						5	2	1	1		1							✓						109
14	G104 Duplicate						5	2	1	1		1								✓					110
15																									
16																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	Justin Colp	7/26/23	1805	Jason Stuckey	7/26/23	1805	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7-26-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

23070389

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp	Report To: Brian Voelker	Attention: Jason Stuckey
Address: 13498 E. 900th St	Copy To: Jason Stuckey	Company Name: Vistra Corp
		Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW13						6	2	2	2						✓				✓		✓		23070389-017
2	APW14															✓				✓		✓		018
3	APW15															✓				✓		✓		019
4	APW16															✓				✓		✓		020
5	APW17															✓				✓		✓		021
6	APW18						6	2	2	2						✓				✓		✓		022
7	G06D						2	1		1							✓							023
8	G104			7-27-23	0907		5	2	1	1		1							✓					024
9	G104D						2	1		1							✓		✓					025
10	G104S						0												✓					026
11	G105						5	2	1	1		1							✓					027
12	G106			7-27-23	0814		5	2	1	1		1							✓					028
13	G108						2	1		1							✓		✓					029
14	G109						0												✓					030
15	G110						0												✓					031
16	G111						0												✓					032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Colp	7-27	1635	[signature]	7/27	1035	0.8
							#5

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Justin Colp					
SIGNATURE of SAMPLER:	[signature]	DATE Signed (MM/DD/YY): 7-27-23				

Desired ph not reached LIR
Ph checked 79929, 90719
ph added NaOH G104, G106, G139, R219, G104dup Ph added HNO3 LIR - MP 7/28

CHAIN-OF-CUSTODY / Analytical Request Document

23070389

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Section A Required Client Information:

Company:	Vistra Corp
Address:	13498 E. 900th St
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Jason Stuckey
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Jason Stuckey
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000					Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G112						0													✓								23070389-033
2	G113						0													✓								034
3	G114						2	1		1								✓		✓								035
4	G114D						2	1		1								✓										036
5	G115						0													✓								037
6	G116						5	2	1	1		1								✓		✓						038
7	G117						0													✓								039
8	G118			7-27-23	0724		2	1		1								✓		✓								040
9	G119						0													✓								041
10	G120						0													✓								042
11	G125						5	2	1	1		1								✓								043
12	G128						6	2	1	2		1						✓		✓								044
13	G130						6	2	1	2		1						✓		✓								045
14	G133						6	2	1	2		1						✓		✓								046
15	G136						5	2	1	1		1								✓								047
16	G139			7-27-23	1258		5	2	1	1		1								✓								048

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Colp	7-27	1635	Allison Cohen	7/27	1635	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7-27-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

23070389

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp
Address:	13498 E. 900th St
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Jason Stuckey
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Jason Stuckey
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G141						5	2	1	1		1								✓						23070389-049
2	G201			7/27/23	0958		2	1		1								✓								050
3	G202						2	1		1								✓								051
4	G203						2	1		1								✓								052
5	G208						2	1		1								✓	✓							053
6	G217S						5	2	1	1		1							✓							054
7	G218						0												✓							055
8	G220						2	1		1								✓	✓							056
9	G221						5	2	1	1		1							✓							057
10	G222						2	1		1								✓	✓							058
11	G223						2	1		1								✓	✓							059
12	G224						2	1		1								✓	✓							060
13	G225						5	2	1	1		1							✓							061
14	G230						6	2	1	2		1						✓	✓							062
15	G231						6	2	1	2		1						✓	✓							063
16	G232						6	2	1	2		1						✓	✓							064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J-Colp	7-27	1635	Allison Colp	7/27	1035	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: Justin Colp DATE Signed (MM/DD/YY): 7-27-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

23070389

Section A Required Client Information:

Company:	Vistra Corp
Address:	13498 E. 900th St
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Jason Stuckey
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Jason Stuckey
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No / Lab I.D.
1	G233						6	2	1	2	1							✓	✓						23070389-065
2	G234						6	2	1	2	1							✓	✓						066
3	G48MG			7-27-23	10:03		2	1		1								✓							067
4	L1R			7-27-23	12:30		2	1		1								✓		✓					068
5	L201						0													✓					069
6	L202						0													✓					070
7	L203						0													✓					071
8	L204						0													✓					072
9	L205						0													✓					073
10	L301						2	1		1								✓							074
11	M25-1						0													✓					075
12	M25-2						0													✓					076
13	M25-3						0													✓					077
14	M25-4						0													✓					078
15	M25-5						0													✓					079
16	M25-6						0													✓					080

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Colp	7-27	1635	[signature]	7/27	1635	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7-27-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

23070389

Section A Required Client Information:

Company:	Vistra Corp
Address:	13498 E. 900th St
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Jason Stuckey
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Jason Stuckey
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	M25-7						0													✓					23070389-081
2	M26-1						0													✓					082
3	M26-2						0													✓					083
4	M26-3						0													✓					084
5	M26-4						0													✓					085
6	M26-5						0													✓					086
7	M26-6						0													✓					087
8	M26-7						0													✓					088
9	MW31S						0													✓					089
10	MW33S						0													✓					090
11	MW34D			7-27-23	10:28		2	1		1								✓							091
12	MW35D			7-27-23	9:19		2	1		1								✓							092
13	MW35S						0													✓					093
14	MW36S			7-27-23	10:58		0													✓					094
15	MW43D			~~7-27-23~~	~~11:33~~ BB		2	1		1								✓							095
16	MW46D DRY			7-27-23	DRY		2	1		1								✓							096

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Cole	7-27	1635		7/27	1035	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Cole

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 7-27-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

23070389

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Section A Required Client Information:

Company:	Vistra Corp
Address:	13498 E. 900th St
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Jason Stuckey
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Jason Stuckey
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	MW48S						0													✓					23070389-097
2	R216						0													✓					098
3	R217D						6	2	1	2		1						✓	✓						099
4	R219			7-27-23	1210		5	2	1	1		1							✓						100
5	SG02						0										✓				✓				101
6	XPW01						6	2	2	2							✓				✓		✓		102
7	XPW02						6	2	2	2							✓				✓		✓		103
8	XPW03						6	2	2	2							✓				✓		✓		104
9	XPW04						6	2	2	2							✓				✓		✓		105
10	XSG01						8										✓				✓				106
11	Field Blank						8	2	3	2		1					✓	✓	✓	✓	✓	✓	✓		107
12	APW02 Duplicate						6	2	2	2							✓				✓	✓	✓		108
13	A213 Duplicate						5	2	1	1		1							✓						109
14	G104 Duplicate			7-27-23	0907		5	2	1	1		1								✓					110
15																									
16																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Cobb	7-27	1635	Allison Colon	7/27	1635	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Cobb

SIGNATURE of SAMPLER: Justin Cobb DATE Signed (MM/DD/YY): 7-27-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

23070389

Page: 1 of 7

Section A Required Client Information:

Company:	Vistra Corp
Address:	13498 E. 900th St
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Jason Stuckey
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Jason Stuckey
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A207						0													✓					23070389-001
2	A213						5	2	1	1		1							✓						002
3	A214						5	2	1	1		1							✓						003
4	A215						5	2	1	1		1							✓						004
5	APW02						6	2	2	2							✓				✓	✓	✓		005
6	APW03			7-31-23	1347												✓				✓	✓	✓		006
7	APW04			7-31-23	1153												✓				✓	✓	✓		007
8	APW05																✓				✓		✓		008
9	APW05S																✓				✓		✓		009
10	APW06																✓				✓		✓		010
11	APW07																✓				✓		✓		011
12	APW08			7-31-23	1509												✓				✓		✓		012
13	APW09			7-31-23	1332												✓				✓		✓		013
14	APW10			7-31-23	1126												✓				✓		✓		014
15	APW11																✓				✓		✓		015
16	APW12						6	2	2	2							✓				✓		✓		016

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-23Q3 Rev 0	J. Colp	7-31	1715	Jenny Farrell	7/31/23	1715
	Jenny Farrell	8/1/23	0805	Omar Duarte	8/1/23	0805

SAMPLE CONDITIONS			
	Y	N	
Temp in °C: 5.8	Received on Ice (Y/N): Y	Custody Sealed Cooler (Y/N): N	Samples Intact (Y/N): Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: Justin Colp DATE Signed (MM/DD/YY): 7-31-23

PW207:9. Added HNO3 LTM #1 cooled to total and dissolved from APW-13. CET 8-1-23.

CHAIN-OF-CUSTODY / Analytical Request Document

23070389

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp	Report To: Brian Voelker	Attention: Jason Stuckey
Address: 13498 E. 900th St	Copy To: Jason Stuckey	Company Name: Vistra Corp
		Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW13			7-31-23	1214		6	2	2	2						✓				✓		✓		23070389-017
2	APW14			7-31-23	1233											✓				✓		✓		018
3	APW15															✓				✓		✓		019
4	APW16			7-31-23	1557											✓				✓		✓		020
5	APW17															✓				✓		✓		021
6	APW18						6	2	2	2						✓				✓		✓		022
7	G06D						2	1		1							✓							023
8	G104						5	2	1	1		1							✓					024
9	G104D						2	1		1							✓		✓					025
10	G104S						0												✓					026
11	G105						5	2	1	1		1							✓					027
12	G106						5	2	1	1		1							✓					028
13	G108						2	1		1							✓		✓					029
14	G109						0												✓					030
15	G110						0												✓					031
16	G111						0												✓					032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Cole	7-31	1715	Jeremy Carroll	7/31/23	1715	
	Jeremy Carroll	8/1/23	805	[illegible]	8/1/23	0805	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Cole

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7-31-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

23070389

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp	Report To: Brian Voelker	Attention: Jason Stuckey
Address: 13498 E. 900th St	Copy To: Jason Stuckey	Company Name: Vistra Corp
		Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW13						6	2	2	2							✓				✓		✓		23070389-017
2	APW14						1	1	1	1							✓				✓		✓		018
3	APW15			8-1-23	0839		1	1	1	1							✓				✓		✓		019
4	APW16						1	1	1	1							✓				✓		✓		020
5	APW17						1	1	1	1							✓				✓		✓		021
6	APW18						6	2	2	2							✓				✓		✓		022
7	G06D			8-1-23	DRY		2	1		1								✓							023
8	G104						5	2	1	1		1								✓					024
9	G104D Went DRY			8-1-23	1131		2	1		1								✓		✓					025
10	G104S						0													✓					026
11	G105			8-1-23	DRY		5	2	1	1		1								✓					027
12	G106						5	2	1	1		1								✓					028
13	G108 Abandoned			8-1-23	N/A		2	1		1								✓		✓					029
14	G109						0													✓					030
15	G110						0													✓					031
16	G111						0													✓					032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Culp	8-2	1000	Allison Cahn	8/2	10:00	
							3.4

SAMPLER NAME AND SIGNATURE					
PRINT Name of SAMPLER:	Justin Culp		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY): 8-1-23				

G104D HNO3 container empty. 8/2/23 LTG. 1 ICR
Split for metals analysis. SMS PH<2 7/19/7929. Added NaOH(8/16/23)
to G116, G130 and 133 GLK 8-7-23

CHAIN-OF-CUSTODY / Analytical Request Document

23070389

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Page: 3 of 7

Section A Required Client Information:

Company:	Vistra Corp
Address:	13498 E. 900th St
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Jason Stuckey
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Jason Stuckey
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000					Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G112						0													✓								23070389-033
2	G113						0													✓								034
3	G114			8-1-23	1214		2	1		1								✓		✓								035
4	G114D			8-1-23	1155		2	1		1								✓										036
5	G115						0													✓								037
6	G116			8-1-23	1500		5	2	1	1		1								✓		✓						038
7	G117						0													✓								039
8	G118						2	1		1								✓		✓								040
9	G119						0													✓								041
10	G120						0													✓								042
11	G125						5	2	1	1		1								✓								043
12	G128						6	2	1	2		1						✓		✓								044
13	G130			8-1-23	1013		6	2	1	2		1						✓		✓								045
14	G133			8-1-23	0945		6	2	1	2		1						✓		✓								046
15	G136			8-1-23	1047		5	2	1	1		1								✓								047
16	G139						5	2	1	1		1								✓								048

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Colp	8-2	1000	Allison Colp	8/2	10:00	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: Justin Colp DATE Signed (MM/DD/YY): 8-1-23

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

23070389

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp	Report To: Brian Voelker	Attention: Jason Stuckey
Address: 13498 E. 900th St	Copy To: Jason Stuckey	Company Name: Vistra Corp
		Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G141						5	2	1	1		1								✓					23070389-049
2	G201						2	1		1								✓							050
3	G202			8-1-23	ORY		2	1		1								✓							051
4	G203			8-1-23	1316		2	1		1								✓							052
5	G208						2	1		1								✓	✓						053
6	G217S						5	2	1	1		1							✓						054
7	G218						0												✓						055
8	G220						2	1		1								✓	✓						056
9	G221						5	2	1	1		1							✓						057
10	G222						2	1		1								✓	✓						058
11	G223						2	1		1								✓	✓						059
12	G224						2	1		1								✓	✓						060
13	G225						5	2	1	1		1							✓						061
14	G230						6	2	1	2		1						✓	✓						062
15	G231						6	2	1	2		1						✓	✓						063
16	G232						6	2	1	2		1						✓	✓						064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Colp	8-2	0900	Allison Colp	8/2	10:00	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: Justin Colp DATE Signed (MM/DD/YY): 8-1-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

23070389

Section A Required Client Information:

Company:	Vistra Corp
Address:	13498 E. 900th St
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Jason Stuckey
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Jason Stuckey
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G233						6	2	1	2		1						✓	✓						23070389-065
2	G234						6	2	1	2		1						✓	✓						066
3	G48MG						2	1		1								✓							067
4	L1R						2	1		1								✓		✓					068
5	L201						0													✓					069
6	L202						0													✓					070
7	L203						0													✓					071
8	L204						0													✓					072
9	L205						0													✓					073
10	L301 Inoperable			8-1-23	N/A		2	1		1								✓							074
11	M25-1						0													✓					075
12	M25-2						0													✓					076
13	M25-3						0													✓					077
14	M25-4						0													✓					078
15	M25-5						0													✓					079
16	M25-6						0													✓					080

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Culp	8-2	1000	Allison Colin	8/2	10:00	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: JUSTIN CULP

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7-1-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

23070389

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp
Address:	13498 E. 900th St
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Jason Stuckey
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Jason Stuckey
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	MW48S						0														✓				23070389-097
2	R216						0														✓				098
3	R217D						6	2	1	2		1							✓	✓						099
4	R219						5	2	1	1		1								✓						100
5	SG02						0											✓				✓				101
6	XPW01						6	2	2	2								✓				✓		✓		102
7	XPW02						6	2	2	2								✓				✓		✓		103
8	XPW03						6	2	2	2								✓				✓		✓		104
9	XPW04						6	2	2	2								✓				✓		✓		105
10	XSG01						0											✓				✓				106
11	Field Blank			8-1-23	1509		8	2	3	2		1						✓	✓	✓	✓	✓	✓	✓		107
12	APW02 Duplicate						6	2	2	2								✓				✓	✓	✓		108
13	A213 Duplicate						5	2	1	1		1								✓						109
14	G104 Duplicate						5	2	1	1		1									✓					110
15																										
16																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J.Gp	8-2	1000	Allison Cole	8/2	10:00	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Gp

SIGNATURE of SAMPLER: Justin Gp DATE Signed (MM/DD/YY): 8-1-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

WO# 23070389

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp	Report To: Brian Voelker	Attention: Jason Stuckey
Address: 13498 E. 900th St	Copy To: Jason Stuckey	Company Name: Vistra Corp
		Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A214			8-16-23	1046		5	2	1	1		1							X							23070389-111
2	G116				1322		5	2	1	1		1							X			X				-112
3	G231				1131 x		6	2	1	2		1						X	X							-113
4	G232				~~1207~~ 1212		6	2	1	2		1						X	X							-114
5	MW35D DRY				DRY		2	1		1								X								-115
6	Influent Water																									
7																										
8																										
9																										
10																										
11																										
12																										
13																										
14																										
15																										
16																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-23Q3 Rev 0	J. Colp	8-16	1529	Maryam Peeler	8/16/23	1529	#5
Resampling, only.							5.4

SAMPLER NAME AND SIGNATURE			
PRINT Name of SAMPLER:	Justin Colp		
SIGNATURE of SAMPLER:	Justin Colp	DATE Signed (MM/DD/YY):	8-16-23

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
5.4	Y		

TB ~~rrad5116~~ ph 9071979929, added HNO3 (92447) to dissolved from 6232.1625 8-17-23.

WO# 23070389

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp	Report To: Brian Voelker	Attention: Jason Stuckey
Address: 13498 E. 900th St	Copy To: Jason Stuckey	Company Name: Vistra Corp
		Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY

NPDES **GROUND WATER** DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW02			8-17-23	1123		6	2	2	2															23070389-116
2	APW02 Duplicate			8-17-23	1123		6	2	2	2															-117
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									PH ✓ 90719 SM 8/17/23
13																									
14																									
15																									
16																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
NEW-23Q3 Rev 0	J. Colp	8-17	1400	[signature]	8/17/23	1400	1.2	Y	N	Y
Resampling, only.										

SAMPLER NAME AND SIGNATURE					
PRINT Name of SAMPLER:	Justin Colp		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
SIGNATURE of SAMPLER:	[signature]	DATE Signed (MM/DD/YY): 8-17-23				

L764.1

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-116A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW02 (resample)	8/17/2023	11:17	1117	7.32		17.5	63.5	6.7	8469.5	8469.5	1.48	19.76	85.5	
APW02 (resample)	8/17/2023	11:20	1120	7.32		17.7	63.86	6.71	8465.1	8465.1	1.56	16.35	90.1	
APW02 (resample)	8/17/2023	11:23	1123	7.32		17.5	63.5	6.72	8435.3	8435.3	1.6	17.1	93.4	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-117A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW02 DUP (resample)	8/17/2023	11:17	1117	7.32		17.5	63.5	6.7	8469.5	8469.5	1.48	19.76	85.5	
APW02 DUP (resample)	8/17/2023	11:20	1120	7.32		17.7	63.86	6.71	8465.1	8465.1	1.56	16.35	90.1	
APW02 DUP (resample)	8/17/2023	11:23	1123	7.32		17.5	63.5	6.72	8435.3	8435.3	1.6	17.1	93.4	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-006A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW03	7/31/2023	13:41	1341	8.47		16.3	61.34	7.15			1.17	12.26	67.8	
APW03	7/31/2023	13:44	1344	8.47		16.7	62.06	6.9			0.85	4.76	66	
APW03	7/31/2023	13:47	1347	8.47		16.5	61.7	6.79			0.75	5.61	64.4	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-007A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW04	7/31/2023	11:47	1147	5.93		19.1	66.38	6.62			0.79	10.54	97.3	
APW04	7/31/2023	11:50	1150	5.93		19.2	66.56	6.59			0.7	7.16	94.3	
APW04	7/31/2023	11:53	1153	5.93		18.9	66.02	6.59			0.68	8	92.5	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-008A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW05	7/24/2023	13:46	1346	14.34		15.8	60.44	8.37	1025.1	1025.1	0.56	10.77	-31	
APW05	7/24/2023	13:49	1349	14.34		15.7	60.26	8.15	1025.3	1025.3	0.41	10.1	-57.6	
APW05	7/24/2023	13:52	1352	14.34		15.6	60.08	8.02	1026.1	1026.1	0.36	13.72	-88.2	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-009A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW05S	7/25/2023	12:47	1247	13.59		19.3	66.74	6.9			0.46	55.25	37.1	
APW05S	7/25/2023	12:50	1250	13.59		19.8	67.64	6.88			0.38	50.34	36	
APW05S	7/25/2023	12:53	1253	13.59		19.5	67.1	6.88			0.31	49.78	35.5	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-010A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW06	7/25/2023	12:16	1216	19.5		14.3	57.74	7.73	646.8	646.8	0.59	18.13	34.7	
APW06	7/25/2023	12:19	1219	19.5		14.4	57.92	7.71	646.8	646.8	0.46	18.02	28.3	
APW06	7/25/2023	12:22	1222	19.5		14.5	58.1	7.7	646.6	646.6	0.39	17.9	21.6	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-011A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW07	7/25/2023	10:04	1004	47.33		15.8	60.44	7.07			6.39	10.54	53	
APW07	7/25/2023	10:07	1007	47.33		15.7	60.26	7.2			7.9	19.04	35.5	
APW07	7/25/2023	10:10	1010	47.33		15.8	60.44	7.35			9.5	388.39	32.7	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-012A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW08	7/31/2023	15:03	1503	38.33		17.3	63.14	7.24			1.7	8.95	97.8	
APW08	7/31/2023	15:06	1506	38.33		17.4	63.32	7.1			1.12	8.91	96.1	
APW08	7/31/2023	15:09	1509	38.33		17.5	63.5	7.08			0.95	10.56	94	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-013A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW09	7/31/2023	13:26	1326	27.85		17.5	63.5	7.33			0.85	12.36	97.6	
APW09	7/31/2023	13:29	1329	27.85		17.8	64.04	7.22			0.59	9.28	93.8	
APW09	7/31/2023	13:32	1332	27.85		17.9	64.22	7.2			0.47	4.99	90.9	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-014A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW10	7/31/2023	11:17	1117	19.4				7.07			2.28	67.9	116.8	
APW10	7/31/2023	11:20	1120	19.4		17.2	62.96	7.06			1.89	8.93	110.6	
APW10	7/31/2023	11:23	1123	19.4		16.9	62.42	7.06			1.68	10.38	106.7	
APW10	7/31/2023	11:26	1126	19.4		17.1	62.78	7.07			1.58	4.22	103.9	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-015A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW11	7/24/2023	14:41	1441	25.09		15.5	59.9	7.2	1343.7	1343.7	0.34	109.63	-49	
APW11	7/24/2023	14:44	1444	25.09		15.5	59.9	7.19	1342.9	1342.9	0.33	106.01	-50.8	
APW11	7/24/2023	14:47	1447	25.09		15.5	59.9	7.19	1344.2	1344.2	0.32	103.24	-51.8	
APW11	7/24/2023	14:50	1450	25.09		15.5	59.9	7.18	1342.2	1342.2	0.32	97.32	-53	
APW11	7/24/2023	14:53	1453	25.09		15.5	59.9	7.17	1343.7	1343.7	0.31	127.02	-53.7	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-016A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW12	7/24/2023	15:17	1517	15.93		13.8	56.84	6.49	1753.7	1753.7	1.11	3.84	48	
APW12	7/24/2023	15:20	1520	15.93		13.7	56.66	6.41	2142.3	2142.3	0.53	1.83	47.5	
APW12	7/24/2023	15:23	1523	15.93		13.7	56.66	6.39	2191.8	2191.8	0.4	0.9	47.1	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-017A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW13	7/31/2023	12:08	1208	33.49		18.3	64.94	6.98			1.77	8.97	113.9	
APW13	7/31/2023	12:11	1211	33.49		17.9	64.22	6.95			0.72	10.24	112	
APW13	7/31/2023	12:14	1214	33.49		18.1	64.58	6.94			0.56	5.8	109.3	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-018A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW14	7/31/2023	12:27	1227	22.12		16.3	61.34	7.29			2.8	5.35	122.6	
APW14	7/31/2023	12:30	1230	22.12		16.5	61.7	7.09			0.63	12.63	121.2	
APW14	7/31/2023	12:33	1233	22.12		16.2	61.16	7.04			0.45	7.73	116.9	

Site Sampling Event	Newton 3Q 2023													
LIMS Workorder	23070389-019A													
Technician	BG,JC,TAC													
Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW15	8/1/2023	8:27	0827	21.4		15	59	7.02	2575.2	2575.2	0.94	34.6	15.8	
APW15	8/1/2023	8:30	0830	21.4		14.8	58.64	6.97	2575.8	2575.8	0.69	62.31	-30.1	
APW15	8/1/2023	8:33	0833	21.4		14.8	58.64	6.94	2575.8	2575.8	0.55	57.94	-46.6	
APW15	8/1/2023	8:36	0836	21.4		15.2	59.36	6.92	2577.5	2577.5	0.51	67.2	-55.7	
APW15	8/1/2023	8:39	0839	21.4		15.2	59.36	6.92	2574.8	2574.8	0.49	133.75	-61.8	

Groundwater Sampling Field Form - Groundwater Quality Parameters

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-020A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW16	7/31/2023	15:31	1531	40.89		15.1	59.18	7.54	966.8	966.8	7.74	9.2	103.4	
APW16	7/31/2023	15:34	1534	40.89		14.3	57.74	7.19	939.4	939.4	1.94	3.8	108.4	
APW16	7/31/2023	15:37	1537	40.89		14.2	57.56	7.13	946	946	1.14	3.24	107.9	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-021A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW17	7/25/2023	10:30	1030	41.81		16.5	61.7	7.27			2.02	5.63	70.7	
APW17	7/25/2023	10:33	1033	41.81		16.8	62.24	7			0.84	4.92	66.1	
APW17	7/25/2023	10:36	1036	41.81		16.6	61.88	6.94			0.51	4.49	50.3	

Site Sampling Event	Newton 3Q 2023
LIMS Workorder	23070389-022A
Technician	BG,JC,TAC

Groundwater Sampling Field Form - Groundwater Quality Parameters

Well ID	Date	Time	Time (adj)	DTW	Drawdown	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	Sp Cond (µmhos/cm @25C)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (gal)
APW18	7/25/2023	9:36	0936	52.25		14.6	58.28	7.32	750.6	750.6	2.19	5.25	79.1	
APW18	7/25/2023	9:39	0939	52.25		14.4	57.92	7.25	755.8	755.8	0.69	4.51	67.3	
APW18	7/25/2023	9:42	0942	52.25		14.4	57.92	7.22	755.8	755.8	0.52	3.61	48.5	

Field Analysis Log

Cross Reference to Sample ID	Date mm/dd/yy	Time	Temp. C	pH Results Reading 1	Reading 2	LCSD	Conductivity Range Factor	Reading 1	Reading 2	Other: DF	Read1/units	DF	Read2/units
LCS	7-24-23	1046	26.1		6.98			1385					
CCV	7-24-23	1603	25.4		7.01			1536					

****** Field Meter ID for Temp, pH & Conductivity :** _____

****** Field Meter ID for (_____) :** _____

	SW846	Std Methods		Lot #		Lot #		Lot #
Field Temp SOP 1156		2550 B	pH 4.0 Buffer	WC230418A	Conductivity Std. _____		_____ Std._____	
pH in the Field SOP 1152	9040B	4500-H B	pH 7.0 Buffer	WC230210B	Conductivity Std. _____		_____ Std._____	
Field Cond. SOP 1155	9050A	2510 B	pH 10.0 Buffer	WC230504C	Conductivity Std. _____		_____ Std._____	
Other: _____			pH LCS/LCSD __7___	WC230504B	Conductivity LCS/LCSD ____		_____ LCS/LCSD ____	

pH Calibration

	Reading
Date: 7-24-23	4.01
Time: 0758	7.02
	10.01

Field Analyst Sig & Date: [signature] 7-24-23
Reviewed By & Date: _____
Reviewed By & Date: _____

Conductivity Calibration

			Reading	units
_____	µS	0-199.9		µS
_____	µS	0-1999	1410	µS
_____	mS	0-19.99		mS

Field Analyst Sig & Date: [signature] 7-24-23
Reviewed By & Date: _____
Reviewed By & Date: _____

_____ Calibration

	Reading
Std_____ Units _____	
Std_____ Units _____	
Std_____ Units _____	

Field Analyst Sig & Date: _____
Reviewed By & Date: _____
Reviewed By & Date: _____

Comments:

Field Analysis Log

Cross Reference to Sample ID	Date mm/dd/yy	Time	Temp. C	pH Results Reading 1	pH Results Reading 2	pH Results LCSD	Conductivity Range Factor	Conductivity Reading 1	Conductivity Reading 2	Other: DF	Other: Read1/units	Other: DF	Other: Read2/units
LCS	7-25-23	0712	25.6		7.03			1412					
CCV	7-25-23	0319	24.8		7.06			1471					

****** Field Meter ID for Temp, pH & Conductivity :** _____ ****** Field Meter ID for (_____) :** _____

	SW846	Std Methods		Lot #		Lot #		Lot #
Field Temp SOP 1156		2550 B	pH 4.0 Buffer	WC230418A	Conductivity Std. _____	_____	_____ Std._____	_____
pH in the Field SOP 1152	9040B	4500-H B	pH 7.0 Buffer	WC230210B	Conductivity Std. _____	_____	_____ Std._____	_____
Field Cond. SOP 1155	9050A	2510 B	pH 10.0 Buffer	WC230504C	Conductivity Std. _____	_____	_____ Std._____	_____
Other: _____			pH LCS/LCSD __7___	WC230504B	Conductivity LCS/LCSD _____	_____	_____ LCS/LCSD _____	_____

pH Calibration	Reading
	4.01
	6.98
	9.98

Date: 7-25-23
Time: 0651

Field Analyst Sig & Date: [signature] 7-25-23
Reviewed By & Date: _____
Reviewed By & Date: _____

Conductivity Calibration			Reading	units
_____	µS	0-199.9	_____	µS
_____	µS	0-1999	~~1491~~ JC 1457	µS
_____	mS	0-19.99	_____	mS

Field Analyst Sig & Date: [signature] 7-25-23
Reviewed By & Date: _____
Reviewed By & Date: _____

_____ Calibration	Reading
Std_____ Units _____	_____
Std_____ Units _____	_____
Std_____ Units _____	_____

Field Analyst Sig & Date: _____
Reviewed By & Date: _____
Reviewed By & Date: _____

Comments:

Field Analysis Log

Cross Reference to Sample ID	Date mm/dd/yy	Time	Temp. C	pH Results			Conductivity			Other:			
				Reading 1	Reading 2	LCSD	Range Factor	Reading 1	Reading 2	DF	Read1/units	DF	Read2/units
LCS	7-25-23	9:29	24.7		7.02			1413					
CCV	7-25-23	0314	23.8		7.04			1443					

****** Field Meter ID for Temp, pH & Conductivity :** _____

	SW846	Std Methods		Lot #
Field Temp SOP 1156		2550 B	pH 4.0 Buffer	WC230418A
pH in the Field SOP 1152	9040B	4500-H B	pH 7.0 Buffer	WC230210B
Field Cond. SOP 1155	9050A	2510 B	pH 10.0 Buffer	WC230504C
Other: _____			pH LCS/LCSD __7___	WC230504B

	Lot #
Conductivity Std. _____	_____
Conductivity Std. _____	_____
Conductivity Std. _____	_____
Conductivity LCS/LCSD _____	_____

****** Field Meter ID for (_____) :** _____

	Lot #
_____ Std. _____	_____
_____ Std. _____	_____
_____ Std. _____	_____
_____ LCS/LCSD _____	_____

pH Calibration

	Reading
	4.02
	7.01
	10.

Date: 7-25-23
Time: 929
Field Analyst Sig & Date: Brett Gilbert 7-25-23
Reviewed By & Date: _____
Reviewed By & Date: _____

Conductivity Calibration

			Reading	units
_____	µS	0-199.9		µS
_____	µS	0-1999	1425	µS
_____	mS	0-19.99		mS

Field Analyst Sig & Date: Brett Gilbert 7-25-23
Reviewed By & Date: _____
Reviewed By & Date: _____

_____ Calibration	Reading
Std _____ Units _____	_____
Std _____ Units _____	_____
Std _____ Units _____	_____

Field Analyst Sig & Date: _____
Reviewed By & Date: _____
Reviewed By & Date: _____

Comments:

Field Analysis Log

Cross Reference to Sample ID	Date mm/dd/yy	Time	Temp. C	pH Results			Conductivity			Other:			
				Reading 1	Reading 2	LCSD	Range Factor	Reading 1	Reading 2	DF	Read1/units	DF	Read2/units
LCS	7-31-23	~~24.8~~ 1107	24.8		7.03			M22					
CCV	7-31-23	1552	21.3		7.02			1457					

****** Field Meter ID for Temp, pH & Conductivity :** _____

****** Field Meter ID for (_____) :** _____

	SW846	Std Methods		Lot #		Lot #		Lot #
Field Temp SOP 1156		2550 B	pH 4.0 Buffer	WC230418A	Conductivity Std. _____	_____	_____ Std._____	_____
pH in the Field SOP 1152	9040B	4500-H B	pH 7.0 Buffer	WC230210B	Conductivity Std. _____	_____	_____ Std._____	_____
Field Cond. SOP 1155	9050A	2510 B	pH 10.0 Buffer	WC230504C	Conductivity Std. _____	_____	_____ Std._____	_____
Other: _____			pH LCS/LCSD __7___	WC230504B	Conductivity LCS/LCSD _____	_____	_____ LCS/LCSD _____	_____

pH Calibration	Reading
	4.00
	7.01
	9.99

Date: 7-31-23
Time: 1050

Field Analyst Sig & Date: [signature] 7-31-23
Reviewed By & Date: _____
Reviewed By & Date: _____

Conductivity Calibration			Reading	units
_____	µS	0-199.9		µS
_____	µS	0-1999	1415	µS
_____	mS	0-19.99		mS

Field Analyst Sig & Date: [signature] 7-31-23
Reviewed By & Date: _____
Reviewed By & Date: _____

_____ Calibration	Reading
Std_____ Units _____	_____
Std_____ Units _____	_____
Std_____ Units _____	_____

Field Analyst Sig & Date: _____
Reviewed By & Date: _____
Reviewed By & Date: _____

Comments:

Field Analysis Log

Cross Reference to Sample ID	Date mm/dd/yy	Time	Temp. C	pH Results			Conductivity			Other: _____			
				Reading 1	Reading 2	LCSD	Range Factor	Reading 1	Reading 2	DF	Read1/units	DF	Read2/units
LCS	8-1-23	0806	21.6		7.02			1418					
CCV	8-1-23	1521	22.3		7.02			~~1459~~ 1459					

****** Field Meter ID for Temp, pH & Conductivity :** _____ ****** Field Meter ID for (** _____ **) :** _____

	SW846	Std Methods		Lot #		Lot #		Lot #
Field Temp SOP 1156		2550 B	pH 4.0 Buffer	WC230418A	Conductivity Std. _____	_____	_____ Std._____	_____
pH in the Field SOP 1152	9040B	4500-H B	pH 7.0 Buffer	WC230210B	Conductivity Std. _____	_____	_____ Std._____	_____
Field Cond. SOP 1155	9050A	2510 B	pH 10.0 Buffer	WC230504C	Conductivity Std. _____	_____	_____ Std._____	_____
Other: _____			pH LCS/LCSD __7___	WC230504B	Conductivity LCS/LCSD ____	_____	_____ LCS/LCSD _____	_____

pH Calibration	Reading
	4.00
	6.99
	9.98

Date: 8-1-23
Time: 0746

Field Analyst Sig & Date: [signature] 8-1-23
Reviewed By & Date: _____
Reviewed By & Date: _____

Conductivity Calibration			Reading	units
_____	µS	0-199.9	_____	µS
_____	µS	0-1999	1413	µS
_____	mS	0-19.99	_____	mS

Field Analyst Sig & Date: [signature] 8-1-23
Reviewed By & Date: _____
Reviewed By & Date: _____

_____ Calibration		Reading
Std_____	Units _____	_____
Std_____	Units _____	_____
Std_____	Units _____	_____

Field Analyst Sig & Date: _____
Reviewed By & Date: _____
Reviewed By & Date: _____

Comments:

Field Analysis Log

Cross Reference to Sample ID	Date mm/dd/yy	Time	Temp. C	pH Results			Conductivity			Other:			
				Reading 1	Reading 2	LCSD	Range Factor	Reading 1	Reading 2	DF	Read1/units	DF	Read2/units
LCS	8-17-23	1051	20.8		7.02			1431					
CCV	8-17-23	1135	21.3		7.02			1429					

****** Field Meter ID for Temp, pH & Conductivity :** _____

****** Field Meter ID for (_____) :** _____

	SW846	Std Methods		Lot #		Lot #		Lot #
Field Temp SOP 1156		2550 B	pH 4.0 Buffer		Conductivity Std. _____		_____ Std._____	
pH in the Field SOP 1152	9040B	4500-H B	pH 7.0 Buffer		Conductivity Std. _____		_____ Std._____	
Field Cond. SOP 1155	9050A	2510 B	pH 10.0 Buffer		Conductivity Std. _____		_____ Std._____	
Other: _____			pH LCS/LCSD __7___		Conductivity LCS/LCSD _____		_____ LCS/LCSD _____	

pH Calibration	Reading
Date: 8-17-23	4.01
	7.00
Time: 1037	9.99

Field Analyst Sig & Date: [signature] 8-17-23
Reviewed By & Date: _____
Reviewed By & Date: _____

Conductivity Calibration			Reading	units
_____	µS	0-199.9	_____	µS
_____	µS	0-1999	1415	µS
_____	mS	0-19.99	_____	mS

Field Analyst Sig & Date: [signature] 8-17-23
Reviewed By & Date: _____
Reviewed By & Date: _____

_____ Calibration	Reading
Std_____ Units _____	_____
Std_____ Units _____	_____
Std_____ Units _____	_____

Field Analyst Sig & Date: _____
Reviewed By & Date: _____
Reviewed By & Date: _____

Comments:

May 14, 2024

Eric Bauer
Ramboll
234 W. Florida Street
Fifth Floor
Milwaukee, WI 53204
TEL: (414) 837-3607
FAX: (414) 837-3608

Illinois	100226
Illinois	1004652024-2
Kansas	E-10374
Louisiana	05002
Louisiana	05003
Oklahoma	9978

RE: NEW-24Q2 **WorkOrder:** 24031341

Dear Eric Bauer:

TEKLAB, INC received 7 samples for NEW_SUP_000 on 4/10/2024 3:16:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report,Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Elizabeth A. Hurley

Elizabeth A. Hurley
Director of Customer Service
(618)344-1004 ex 33
ehurley@teklabinc.com

Report Contents

Client: Ramboll
Client Project: NEW-24Q2

Work Order: 24031341
Report Date: 14-May-24

This reporting package includes the following:

Cover Letter	1
Report Contents	2
Definitions	3
Case Narrative	5
Accreditations	6
Laboratory Results	7
Sample Summary	14
Quality Control Results	15
Receiving Check List	50
Chain of Custody	Appended

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

Abbr Definition

*	Analytes on report marked with an asterisk are not NELAP accredited
CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
CRQL	A Client Requested Quantitation Limit is a reporting limit that varies according to customer request. The CRQL may not be less than the MDL.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilution factors.
DNI	Did not ignite
DUP	Laboratory duplicate is a replicate aliquot prepared under the same laboratory conditions and independently analyzed to obtain a measure of precision.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample is a sample matrix, free from the analytes of interest,spiked with verified known amounts of analytes and analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system.
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MBLK	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	"The method detection limit is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results."
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
NC	Data is not acceptable for compliance purposes
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions.
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TIC	Tentatively identified compound: Analytes tentatively identified in the sample by using a library search. Only results not in the calibration standard will be reported as tentatively identified compounds. Results for tentatively identified compounds that are not present in the calibration standard, but are assigned a specific chemical name based upon the library search, are calculated using total peak areas from reconstructed ion chromatograms and a response factor of one. The nearest Internal Standard is used for the calculation. The results of any TICs must be considered estimated, and are flagged with a "T". If the estimated result is above the calibration range it is flagged "ET"
TNTC	Too numerous to count (> 200 CFU)

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

Qualifiers

- # - Unknown hydrocarbon
- B - Analyte detected in associated Method Blank
- C - RL shown is a Client Requested Quantitation Limit
- E - Value above quantitation range
- H - Holding times exceeded
- I - Associated internal standard was outside method criteria
- J - Analyte detected below quantitation limits
- M - Manual Integration used to determine area response
- ND - Not Detected at the Reporting Limit
- R - RPD outside accepted recovery limits
- S - Spike Recovery outside recovery limits
- T - TIC(Tentatively identified compound)
- X - Value exceeds Maximum Contaminant Level

Case Narrative

http://www.teklabinc.com/

Client: Ramboll
Client Project: NEW-24Q2

Work Order: 24031341
Report Date: 14-May-24

Cooler Receipt Temp: 14.1 °C

An employee of Teklab, Inc. collected the sample(s).

Equipment Blanks 2 and 3 were not needed.

Per Eric Bauer's request, only NEW_SUP_000 data is included in this report. EAH 5/14/24

Locations

Collinsville

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email jhriley@teklabinc.com

Springfield

Address 3920 Pintail Dr
Springfield, IL 62711-9415
Phone (217) 698-1004
Fax (217) 698-1005
Email KKlostermann@teklabinc.com

Kansas City

Address 8421 Nieman Road
Lenexa, KS 66214
Phone (913) 541-1998
Fax (913) 541-1998
Email jhriley@teklabinc.com

Collinsville Air

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email EHurley@teklabinc.com

Chicago

Address 1319 Butterfield Rd.
Downers Grove, IL 60515
Phone (630) 324-6855
Fax
Email arenner@teklabinc.com

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2025	Collinsville
Illinois	IEPA	1004652024-2	NELAP	4/30/2025	Collinsville
Kansas	KDHE	E-10374	NELAP	4/30/2025	Collinsville
Louisiana	LDEQ	05002	NELAP	6/30/2024	Collinsville
Louisiana	LDEQ	05003	NELAP	6/30/2024	Collinsville
Oklahoma	ODEQ	9978	NELAP	8/31/2024	Collinsville
Arkansas	ADEQ	88-0966		3/14/2025	Collinsville
Illinois	IDPH	17584		5/31/2025	Collinsville
Iowa	IDNR	430		6/1/2024	Collinsville
Kentucky	UST	0073		1/31/2025	Collinsville
Mississippi	MSDH			4/30/2025	Collinsville
Missouri	MDNR	930		1/31/2025	Collinsville
Missouri	MDNR	00930		10/31/2026	Collinsville

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

Lab ID: 24031341-007 **Client Sample ID:** APW05

Matrix: GROUNDWATER **Collection Date:** 04/04/2024 14:41

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Arsenic	NELAP	0.4	1.0		**33.7**	µg/L	5	04/09/2024 18:48	221039
Iron	NELAP	11.5	25.0		**1820**	µg/L	5	04/09/2024 18:48	221039

Client: Ramboll
Work Order: 24031341
Client Project: NEW-24Q2
Report Date: 14-May-24
Lab ID: 24031341-010
Client Sample ID: APW07
Matrix: GROUNDWATER
Collection Date: 04/09/2024 12:20

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Arsenic	NELAP	0.4	1.0		**8.7**	µg/L	5	04/13/2024 4:11	221242
Iron	NELAP	11.5	25.0		**1750**	µg/L	5	04/16/2024 15:10	221242

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

Lab ID: 24031341-011 **Client Sample ID:** APW08

Matrix: GROUNDWATER **Collection Date:** 04/08/2024 14:07

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Arsenic	NELAP	0.4	1.0		**19.2**	µg/L	5	04/11/2024 1:34	221122
Iron	NELAP	11.5	25.0		**2400**	µg/L	5	04/11/2024 1:34	221122

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

Lab ID: 24031341-012 **Client Sample ID:** APW09

Matrix: GROUNDWATER **Collection Date:** 04/09/2024 13:12

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Arsenic	NELAP	0.4	1.0		**29.8**	µg/L	5	04/13/2024 3:04	221242
Iron	NELAP	11.5	25.0		**4000**	µg/L	5	04/16/2024 14:16	221242

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

Lab ID: 24031341-020 **Client Sample ID:** APW17

Matrix: GROUNDWATER **Collection Date:** 04/04/2024 12:38

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Arsenic	NELAP	0.4	1.0		**15.1**	µg/L	5	04/09/2024 18:06	221039
Iron	NELAP	11.5	25.0		**1580**	µg/L	5	04/09/2024 18:06	221039

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

Lab ID: 24031341-067 **Client Sample ID:** Field Blank

Matrix: AQUEOUS **Collection Date:** 04/10/2024 10:45

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Arsenic	NELAP	0.4	1.0		**< 1.0**	µg/L	5	04/16/2024 7:44	221272
Iron	NELAP	11.5	25.0		**< 25.0**	µg/L	5	04/16/2024 7:44	221272

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

Lab ID: 24031341-071 **Client Sample ID:** Equipment Blank 1

Matrix: AQUEOUS **Collection Date:** 04/10/2024 15:16

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Arsenic	NELAP	0.4	1.0		**< 1.0**	µg/L	5	04/20/2024 15:51	221272
Iron	NELAP	11.5	25.0		**< 25.0**	µg/L	5	04/20/2024 15:51	221272

CCV recovered outside the upper control limits for Cr. Sample results are below the reporting limit. Data is reportable per the TNI standard.

Client: Ramboll
Client Project: NEW-24Q2

Work Order: 24031341
Report Date: 14-May-24

Lab Sample ID	Client Sample ID	Matrix	Fractions	Collection Date
24031341-007	APW05	Groundwater	3	04/04/2024 14:41
24031341-010	APW07	Groundwater	3	04/09/2024 12:20
24031341-011	APW08	Groundwater	3	04/08/2024 14:07
24031341-012	APW09	Groundwater	3	04/09/2024 13:12
24031341-020	APW17	Groundwater	3	04/04/2024 12:38
24031341-067	Field Blank	Aqueous	16	04/10/2024 10:45
24031341-071	Equipment Blank 1	Aqueous	16	04/10/2024 15:16

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 220875 **SampType:** MBLK Units **mg/L**

SampID: MBLK-220875

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	04/05/2024
Chromium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	04/05/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	04/05/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	04/05/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	04/05/2024

Batch 220875 **SampType:** LCS Units **mg/L**

SampID: LCS-220875

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.49**	2.500	0	99.4	85	115	04/05/2024
Chromium		0.0050		**0.186**	0.2000	0	93.2	85	115	04/05/2024
Magnesium		0.0500		**2.20**	2.500	0	87.9	85	115	04/05/2024
Potassium		0.100		**2.48**	2.500	0	99.1	85	115	04/05/2024
Sodium		0.0500		**2.47**	2.500	0	99.0	85	115	04/05/2024

Batch 220875 **SampType:** MS Units **mg/L**

SampID: 24031341-041CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**124**	2.500	122.1	84.0	75	125	04/05/2024
Magnesium		0.050		**81.1**	2.500	78.81	91.6	75	125	04/05/2024
Potassium		0.100		**4.43**	2.500	1.814	104.4	75	125	04/05/2024
Sodium		0.050	S	**80.3**	2.500	80.91	-22.8	75	125	04/05/2024

Batch 220875 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24031341-041CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**124**	2.500	122.1	61.6	124.2	0.45	04/05/2024
Magnesium		0.050		**80.7**	2.500	78.81	76.3	81.10	0.47	04/05/2024
Potassium		0.100		**4.38**	2.500	1.814	102.6	4.425	1.07	04/05/2024
Sodium		0.050	S	**79.7**	2.500	80.91	-47.2	80.34	0.76	04/05/2024

Batch 220875 **SampType:** MS Units **mg/L**

SampID: 24032399-004CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chromium		0.0050		**0.189**	0.2000	0	94.5	75	125	04/05/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 220875 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24032399-004CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chromium		0.0050		**0.188**	0.2000	0	94.0	0.1890	0.58	04/05/2024

Batch 221122 **SampType:** MBLK Units **mg/L**

SampID: MBLK-221122

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	04/09/2024
Magnesium		0.050		**< 0.050**	0.0055	0	0	-100	100	04/09/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	04/09/2024
Sodium		0.050		**< 0.050**	0.0180	0	0	-100	100	04/09/2024

Batch 221122 **SampType:** LCS Units **mg/L**

SampID: LCS-221122

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.52**	2.500	0	100.7	85	115	04/09/2024
Magnesium		0.050		**2.43**	2.500	0	97.2	85	115	04/09/2024
Potassium		0.100		**2.52**	2.500	0	100.7	85	115	04/09/2024
Sodium		0.050		**2.40**	2.500	0	95.8	85	115	04/09/2024

Batch 221242 **SampType:** MBLK Units **mg/L**

SampID: MBLK-221242

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	04/11/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	04/11/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	04/11/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	04/11/2024

Batch 221242 **SampType:** LCS Units **mg/L**

SampID: LCS-221242

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.27**	2.500	0	90.8	85	115	04/11/2024
Magnesium		0.0500		**2.26**	2.500	0	90.5	85	115	04/11/2024
Potassium		0.100		**2.47**	2.500	0	98.9	85	115	04/11/2024
Sodium		0.0500		**2.30**	2.500	0	92.0	85	115	04/11/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 221272 **SampType:** MBLK Units **mg/L**

SampID: MBLK-221272

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**< 0.0500**	0.0068	0	0	-100	100	04/12/2024
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	04/12/2024
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	04/12/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	04/12/2024
Chromium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	04/12/2024
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	04/12/2024
Lead		0.0150		**< 0.0150**	0.0014	0	0	-100	100	04/12/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	04/12/2024
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	04/12/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	04/12/2024
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	04/12/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	04/12/2024
Vanadium		0.0100		**< 0.0100**	0.0009	0	0	-100	100	04/12/2024
Zinc		0.0100		**< 0.0100**	0.0050	0	0	-100	100	04/12/2024

Batch 221272 **SampType:** LCS Units **mg/L**

SampID: LCS-221272

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**0.454**	0.5000	0	90.7	85	115	04/12/2024
Arsenic		0.0250		**0.467**	0.5000	0	93.3	85	115	04/12/2024
Boron		0.0200		**0.442**	0.5000	0	88.3	85	115	04/12/2024
Calcium		0.100		**2.21**	2.500	0	88.6	85	115	04/12/2024
Chromium		0.0050		**0.180**	0.2000	0	89.8	85	115	04/12/2024
Iron		0.0400		**1.84**	2.000	0	91.9	85	115	04/12/2024
Lead		0.0150		**0.455**	0.5000	0	91.0	85	115	04/12/2024
Magnesium		0.0500		**2.18**	2.500	0	87.2	85	115	04/12/2024
Manganese		0.0070		**0.449**	0.5000	0	89.7	85	115	04/12/2024
Potassium		0.100		**2.28**	2.500	0	91.0	85	115	04/12/2024
Selenium		0.0400		**0.463**	0.5000	0	92.7	85	115	04/12/2024
Sodium		0.0500		**2.13**	2.500	0	85.4	85	115	04/12/2024
Vanadium		0.0100		**0.441**	0.5000	0	88.2	85	115	04/12/2024
Zinc		0.0100		**0.460**	0.5000	0	92.0	85	115	04/12/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 221272 **SampType:** MS Units **mg/L**

SampID: 24031341-067IMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.35**	2.500	0	93.8	75	125	04/12/2024
Magnesium		0.050		**2.31**	2.500	0	92.5	75	125	04/12/2024
Potassium		0.100		**2.45**	2.500	0	97.8	75	125	04/12/2024
Sodium		0.050		**2.31**	2.500	0.02490	91.4	75	125	04/12/2024

Batch 221272 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24031341-067IMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100		**2.33**	2.500	0	93.2	2.346	0.71	04/12/2024
Magnesium		0.050		**2.29**	2.500	0	91.7	2.313	0.93	04/12/2024
Potassium		0.100		**2.40**	2.500	0	95.9	2.446	2.03	04/12/2024
Sodium		0.050		**2.27**	2.500	0.02490	89.8	2.311	1.76	04/12/2024

Batch 221272 **SampType:** MS Units **mg/L**

SampID: 24040873-004BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		1.00	S	**186**	0.5000	199.1	-2551	75	125	04/17/2024
Calcium		5.00	S	**2280**	2.500	2344	-2600	75	125	04/17/2024
Iron		2.00		**5.99**	2.000	4.155	91.8	75	125	04/17/2024
Magnesium		2.50	S	**1820**	2.500	1881	-2321	75	125	04/17/2024
Manganese		0.350	S	**17.2**	0.5000	17.30	-13.0	75	125	04/17/2024
Potassium		5.00	S	**392**	2.500	401.4	-364.8	75	125	04/17/2024
Sodium		2.50	S	**1640**	2.500	1688	-2060	75	125	04/17/2024

Batch 221272 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24040873-004BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Boron		1.00	S	**187**	0.5000	199.1	-2466	186.4	0.23	04/17/2024
Calcium		5.00	S	**2300**	2.500	2344	-1560	2279	1.13	04/17/2024
Iron		2.00		**5.97**	2.000	4.155	90.8	5.990	0.33	04/17/2024
Magnesium		2.50	S	**1850**	2.500	1881	-1343	1823	1.33	04/17/2024
Manganese		0.350	S	**17.4**	0.5000	17.30	21.0	17.23	0.98	04/17/2024
Potassium		5.00	S	**396**	2.500	401.4	-235.2	392.3	0.82	04/17/2024
Sodium		2.50	S	**1650**	2.500	1688	-1500	1637	0.85	04/17/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 222313 **SampType:** MBLK Units **mg/L**

SampID: MBLK-222313

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**< 0.0500**	0.0068	0	0	-100	100	05/01/2024
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	05/01/2024
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	05/01/2024
Cadmium		0.0020		**< 0.0020**	0.0005	0	0	-100	100	05/01/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	05/01/2024
Chromium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	05/01/2024
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	05/01/2024
Lead		0.0150		**< 0.0150**	0.0014	0	0	-100	100	05/01/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	05/01/2024
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	05/01/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	05/01/2024
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	05/01/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	05/01/2024
Vanadium		0.0100		**< 0.0100**	0.0009	0	0	-100	100	05/01/2024
Zinc		0.0100		**< 0.0100**	0.0050	0	0	-100	100	05/01/2024

Batch 222313 **SampType:** LCS Units **mg/L**

SampID: LCS-222313

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**0.485**	0.5000	0	96.9	85	115	05/01/2024
Arsenic		0.0250		**0.491**	0.5000	0	98.2	85	115	05/01/2024
Boron		0.0200		**0.476**	0.5000	0	95.2	85	115	05/01/2024
Cadmium		0.0020		**0.0501**	0.0500	0	100.2	85	115	05/01/2024
Calcium		0.100		**2.30**	2.500	0	91.9	85	115	05/01/2024
Chromium		0.0050		**0.193**	0.2000	0	96.5	85	115	05/01/2024
Iron		0.0400		**1.97**	2.000	0	98.5	85	115	05/01/2024
Lead		0.0150		**0.478**	0.5000	0	95.5	85	115	05/01/2024
Magnesium		0.0500		**2.35**	2.500	0	94.0	85	115	05/01/2024
Manganese		0.0070		**0.490**	0.5000	0	98.1	85	115	05/01/2024
Potassium		0.100		**2.75**	2.500	0	109.9	85	115	05/01/2024
Selenium		0.0400		**0.481**	0.5000	0	96.2	85	115	05/01/2024
Sodium		0.0500		**2.46**	2.500	0	98.4	85	115	05/01/2024
Vanadium		0.0100		**0.483**	0.5000	0	96.6	85	115	05/01/2024
Zinc		0.0100		**0.484**	0.5000	0	96.8	85	115	05/01/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 222313 **SampType:** MS Units **mg/L**

SampID: 24042058-002GMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**63.9**	2.500	62.05	74.8	75	125	05/01/2024
Magnesium		0.050		**26.9**	2.500	24.70	88.9	75	125	05/01/2024
Potassium		0.100		**3.71**	2.500	1.179	101.2	75	125	05/02/2024
Sodium		0.050	S	**69.3**	2.500	67.80	59.2	75	125	05/01/2024

Batch 222313 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24042058-002GMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100		**65.1**	2.500	62.05	120.4	63.92	1.77	05/01/2024
Magnesium		0.050		**27.3**	2.500	24.70	104.0	26.92	1.39	05/01/2024
Potassium		0.100		**3.62**	2.500	1.179	97.7	3.709	2.35	05/02/2024
Sodium		0.050		**70.5**	2.500	67.80	108.4	69.28	1.76	05/01/2024

Batch 222313 **SampType:** MS Units **mg/L**

SampID: 24042186-001EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Iron		0.0400		**5.30**	2.000	3.520	89.0	75	125	05/02/2024
Manganese		0.0070		**1.69**	0.5000	1.211	95.0	75	125	05/01/2024

Batch 222313 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24042186-001EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Iron		0.0400		**5.30**	2.000	3.520	89.0	5.300	0.00	05/02/2024
Manganese		0.0070		**1.68**	0.5000	1.211	93.1	1.686	0.57	05/01/2024

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 220750 **SampType:** MBLK Units **mg/L**

SampID: MBLK-220750

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	04/04/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	04/04/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	04/04/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	04/04/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 220750 **SampType:** LCS Units **mg/L**
SampID: LCS-220750

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.69**	2.500	0	107.7	85	115	04/04/2024
Magnesium		0.0500		**2.51**	2.500	0	100.5	85	115	04/04/2024
Potassium		0.100		**2.65**	2.500	0	106.0	85	115	04/04/2024
Sodium		0.0500		**2.60**	2.500	0	104.1	85	115	04/04/2024

Batch 220750 **SampType:** MS Units **mg/L**
SampID: 24040264-003EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**93.9**	2.500	89.68	169.6	75	125	04/04/2024
Magnesium		0.0500		**18.5**	2.500	15.96	101.8	75	125	04/04/2024

Batch 220750 **SampType:** MSD Units **mg/L** RPD Limit **20**
SampID: 24040264-003EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**94.2**	2.500	89.68	178.8	93.92	0.24	04/04/2024
Magnesium		0.0500		**18.7**	2.500	15.96	110.0	18.51	1.10	04/04/2024

Batch 221023 **SampType:** MBLK Units **mg/L**
SampID: MBLK-221023

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Barium		0.0025		**< 0.0025**	0.0007	0	0	-100	100	04/09/2024
Beryllium		0.0005		**< 0.0005**	0.0002	0	0	-100	100	04/09/2024
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	04/09/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	04/09/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	04/09/2024
Molybdenum		0.0100		**< 0.0100**	0.0037	0	0	-100	100	04/09/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	04/09/2024
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	04/09/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	04/09/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 221023 **SampType:** LCS Units **mg/L**

SampID: LCS-221023

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Barium		0.0025		**2.10**	2.000	0	105.0	85	115	04/09/2024
Beryllium		0.0005		**0.0543**	0.0500	0	108.6	85	115	04/09/2024
Boron		0.0200		**0.515**	0.5000	0	103.0	85	115	04/09/2024
Calcium		0.100		**2.69**	2.500	0	107.5	85	115	04/09/2024
Magnesium		0.0500		**2.61**	2.500	0	104.4	85	115	04/09/2024
Molybdenum		0.0100		**0.511**	0.5000	0	102.2	85	115	04/09/2024
Potassium		0.100		**2.61**	2.500	0	104.3	85	115	04/09/2024
Selenium		0.0400		**0.517**	0.5000	0	103.4	85	115	04/09/2024
Sodium		0.0500		**2.59**	2.500	0	103.7	85	115	04/09/2024

Batch 221023 **SampType:** MS Units **mg/L**

SampID: 24031341-015BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**283**	2.500	285.3	-78.8	75	125	04/09/2024
Magnesium		0.050	S	**135**	2.500	134.9	-11.8	75	125	04/09/2024
Potassium		0.100		**3.94**	2.500	1.277	106.6	75	125	04/09/2024
Sodium		0.050	S	**152**	2.500	154.2	-100.4	75	125	04/09/2024

Batch 221023 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24031341-015BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100		**287**	2.500	285.3	83.6	283.3	1.42	04/09/2024
Magnesium		0.050	S	**137**	2.500	134.9	74.0	134.7	1.58	04/09/2024
Potassium		0.100		**4.02**	2.500	1.277	109.6	3.941	1.93	04/09/2024
Sodium		0.050	S	**154**	2.500	154.2	-25.6	151.6	1.23	04/09/2024

Batch 221023 **SampType:** MS Units **mg/L**

SampID: 24040646-006BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Barium		0.0025		**2.16**	2.000	0.05160	105.4	75	125	04/09/2024
Beryllium		0.0005		**0.0557**	0.0500	0	111.4	75	125	04/09/2024
Boron		0.0200		**0.886**	0.5000	0.3485	107.5	75	125	04/09/2024
Molybdenum		0.0100		**0.527**	0.5000	0	105.5	75	125	04/09/2024
Selenium		0.0400		**0.548**	0.5000	0	109.5	75	125	04/09/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 221023 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24040646-006BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Barium		0.0025		**2.18**	2.000	0.05160	106.4	2.160	0.92	04/09/2024
Beryllium		0.0005		**0.0563**	0.0500	0	112.6	0.05570	1.07	04/09/2024
Boron		0.0200		**0.895**	0.5000	0.3485	109.3	0.8859	1.04	04/09/2024
Molybdenum		0.0100		**0.533**	0.5000	0	106.6	0.5273	1.08	04/09/2024
Selenium		0.0400		**0.559**	0.5000	0	111.8	0.5477	2.06	04/09/2024

Batch 221127 **SampType:** MBLK Units **mg/L**

SampID: MBLK-221127

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**< 0.0500**	0.0068	0	0	-100	100	04/12/2024
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	04/12/2024
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	04/12/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	04/10/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	04/12/2024
Chromium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	04/12/2024
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	04/12/2024
Lead		0.0150		**< 0.0150**	0.0040	0	0	-100	100	04/12/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	04/10/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	04/12/2024
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	04/12/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	04/12/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	04/10/2024
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	04/12/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	04/10/2024
Sodium		0.0500	JS	**0.022**	0.0180	0	122.8	-100	100	04/12/2024
Zinc		0.0100		**< 0.0100**	0.0050	0	0	-100	100	04/12/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 221127 **SampType:** LCS Units **mg/L**

SampID: LCS-221127

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**0.527**	0.5000	0	105.4	85	115	04/12/2024
Arsenic		0.0250		**0.552**	0.5000	0	110.4	85	115	04/12/2024
Boron		0.0200		**0.512**	0.5000	0	102.4	85	115	04/12/2024
Calcium		0.100		**2.56**	2.500	0	102.5	85	115	04/12/2024
Calcium		0.100		**2.76**	2.500	0	110.3	85	115	04/10/2024
Chromium		0.0050		**0.209**	0.2000	0	104.6	85	115	04/12/2024
Iron		0.0400		**2.20**	2.000	0	110.0	85	115	04/12/2024
Lead		0.0150		**0.525**	0.5000	0	105.0	85	115	04/12/2024
Magnesium		0.0500		**2.51**	2.500	0	100.3	85	115	04/10/2024
Magnesium		0.0500		**2.57**	2.500	0	102.7	85	115	04/12/2024
Manganese		0.0070		**0.517**	0.5000	0	103.5	85	115	04/12/2024
Potassium		0.100		**2.68**	2.500	0	107.1	85	115	04/12/2024
Potassium		0.100		**2.66**	2.500	0	106.6	85	115	04/10/2024
Selenium		0.0400		**0.525**	0.5000	0	105.0	85	115	04/12/2024
Sodium		0.0500		**2.61**	2.500	0	104.4	85	115	04/10/2024
Sodium		0.0500	B	**2.57**	2.500	0	102.7	85	115	04/12/2024
Zinc		0.0100		**0.533**	0.5000	0	106.7	85	115	04/12/2024

Batch 221211 **SampType:** MBLK Units **mg/L**

SampID: MBLK-221211

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	04/12/2024
Lead		0.0150		**< 0.0150**	0.0040	0	0	-100	100	04/12/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	04/12/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	04/12/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	04/12/2024

Batch 221211 **SampType:** LCS Units **mg/L**

SampID: LCS-221211

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.49**	2.500	0	99.6	85	115	04/12/2024
Lead		0.0150		**0.478**	0.5000	0	95.7	85	115	04/12/2024
Magnesium		0.0500		**2.27**	2.500	0	90.9	85	115	04/12/2024
Potassium		0.100		**2.48**	2.500	0	99.3	85	115	04/12/2024
Sodium		0.0500		**2.47**	2.500	0	98.7	85	115	04/12/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 221211 **SampType:** MS Units **mg/L**

SampID: 24031341-010BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**95.4**	2.500	94.42	37.6	75	125	04/12/2024
Magnesium		0.050		**37.5**	2.500	35.61	75.1	75	125	04/12/2024
Potassium		0.100		**4.11**	2.500	1.641	98.6	75	125	04/12/2024
Sodium		0.050	S	**87.8**	2.500	86.97	34.8	75	125	04/12/2024

Batch 221211 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24031341-010BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**93.7**	2.500	94.42	-27.2	95.36	1.71	04/12/2024
Magnesium		0.050	S	**37.0**	2.500	35.61	53.8	37.49	1.43	04/12/2024
Potassium		0.100		**4.03**	2.500	1.641	95.6	4.106	1.87	04/12/2024
Sodium		0.050	S	**86.4**	2.500	86.97	-24.0	87.84	1.69	04/12/2024

Batch 221211 **SampType:** MS Units **mg/L**

SampID: 24040816-007AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead		0.0150		**0.488**	0.5000	0.007200	96.1	75	125	04/12/2024

Batch 221211 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24040816-007AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lead		0.0150		**0.471**	0.5000	0.007200	92.8	0.4879	3.52	04/12/2024

Batch 221254 **SampType:** MBLK Units **mg/L**

SampID: MBLK-221254

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	04/11/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	04/11/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	04/11/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	04/11/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 221254 **SampType:** LCS Units **mg/L**

SampID: LCS-221254

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.66**	2.500	0	106.6	85	115	04/11/2024
Magnesium		0.0500		**2.47**	2.500	0	98.9	85	115	04/11/2024
Potassium		0.100		**2.62**	2.500	0	104.6	85	115	04/11/2024
Sodium		0.0500		**2.57**	2.500	0	102.7	85	115	04/11/2024

Batch 221254 **SampType:** MS Units **mg/L**

SampID: 24031341-071HMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.74**	2.500	0	109.6	75	125	04/11/2024
Magnesium		0.050		**2.51**	2.500	0	100.5	75	125	04/11/2024
Potassium		0.100		**2.68**	2.500	0	107.2	75	125	04/11/2024
Sodium		0.050		**2.61**	2.500	0	104.6	75	125	04/11/2024

Batch 221254 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24031341-071HMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100		**2.70**	2.500	0	108.1	2.741	1.44	04/11/2024
Magnesium		0.050		**2.49**	2.500	0	99.7	2.512	0.79	04/11/2024
Potassium		0.100		**2.65**	2.500	0	106.1	2.679	1.04	04/11/2024
Sodium		0.050		**2.59**	2.500	0	103.6	2.615	0.93	04/11/2024

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 220875 **SampType:** MBLK Units **µg/L**

SampID: MBLK-220875

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	04/08/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	04/06/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	04/06/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	04/06/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	04/06/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	04/06/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	04/06/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	04/06/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	04/08/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	04/06/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	04/06/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 220875 **SampType:** LCS Units **µg/L**

SampID: LCS-220875

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**491**	500.0	0	98.2	80	120	04/08/2024
Arsenic		1.0		**478**	500.0	0	95.6	80	120	04/06/2024
Boron		25.0		**448**	500.0	0	89.7	80	120	04/06/2024
Cadmium		1.0		**52.3**	50.00	0	104.6	80	120	04/06/2024
Chromium		1.5		**193**	200.0	0	96.5	80	120	04/06/2024
Iron		25.0		**1940**	2000	0	96.9	80	120	04/06/2024
Lead		1.0		**493**	500.0	0	98.5	80	120	04/06/2024
Manganese		2.0		**482**	500.0	0	96.5	80	120	04/06/2024
Selenium		1.0		**475**	500.0	0	95.0	80	120	04/08/2024
Vanadium		5.0		**494**	500.0	0	98.8	80	120	04/06/2024
Zinc		15.0		**452**	500.0	0	90.3	80	120	04/06/2024

Batch 220875 **SampType:** MS Units **µg/L**

SampID: 24031341-041CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**535**	500.0	0	107.0	75	125	04/08/2024
Arsenic		1.0		**478**	500.0	0	95.5	75	125	04/06/2024
Boron		25.0		**505**	500.0	22.56	96.5	75	125	04/06/2024
Cadmium		1.0		**55.7**	50.00	0	111.4	75	125	04/06/2024
Chromium		1.5		**196**	200.0	1.426	97.1	75	125	04/06/2024
Lead		1.0		**488**	500.0	0	97.7	75	125	04/06/2024
Selenium		1.0		**478**	500.0	0	95.7	75	125	04/08/2024
Vanadium		5.0		**500**	500.0	0	100.0	75	125	04/06/2024
Zinc		15.0		**453**	500.0	0	90.6	75	125	04/06/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 220875 **SampType:** MSD Units µg/L RPD Limit 20

SampID: 24031341-041CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		1.0		**542**	500.0	0	108.4	534.9	1.29	04/08/2024
Arsenic		1.0		**470**	500.0	0	94.1	477.5	1.50	04/06/2024
Boron		25.0		**500**	500.0	22.56	95.4	505.2	1.11	04/06/2024
Cadmium		1.0		**54.5**	50.00	0	108.9	55.70	2.25	04/06/2024
Chromium		1.5		**189**	200.0	1.426	93.7	195.7	3.50	04/06/2024
Lead		1.0		**477**	500.0	0	95.5	488.5	2.30	04/06/2024
Selenium		1.0		**483**	500.0	0	96.6	478.3	0.94	04/08/2024
Vanadium		5.0		**491**	500.0	0	98.1	500.2	1.94	04/06/2024
Zinc		15.0		**444**	500.0	0	88.7	452.8	2.06	04/06/2024

Batch 221039 **SampType:** MBLK Units µg/L

SampID: MBLK-221039

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	04/09/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	04/09/2024

Batch 221039 **SampType:** LCS Units µg/L

SampID: LCS-221039

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		1.0		**464**	500.0	0	92.7	80	120	04/09/2024
Iron		25.0		**2010**	2000	0	100.6	80	120	04/09/2024

Batch 221039 **SampType:** MS Units µg/L

SampID: 24031341-020CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		1.0		**489**	500.0	15.07	94.8	75	125	04/09/2024
Iron		25.0		**3430**	2000	1583	92.4	75	125	04/09/2024

Batch 221039 **SampType:** MSD Units µg/L RPD Limit 20

SampID: 24031341-020CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		1.0		**493**	500.0	15.07	95.6	489.0	0.80	04/09/2024
Iron		25.0		**3490**	2000	1583	95.3	3430	1.69	04/09/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 221122 **SampType:** MBLK Units µg/L

SampID: MBLK-221122

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	04/16/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	04/11/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	04/16/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	04/11/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	04/16/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	04/11/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	04/11/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	04/11/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	04/11/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	04/11/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	04/11/2024

Batch 221122 **SampType:** LCS Units µg/L

SampID: LCS-221122

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**524**	500.0	0	104.9	80	120	04/16/2024
Arsenic		1.0		**467**	500.0	0	93.4	80	120	04/11/2024
Boron		25.0		**496**	500.0	0	99.1	80	120	04/16/2024
Cadmium		1.0		**59.7**	50.00	0	119.5	80	120	04/11/2024
Chromium		1.5		**201**	200.0	0	100.7	80	120	04/16/2024
Iron		25.0		**1910**	2000	0	95.3	80	120	04/11/2024
Lead		1.0		**472**	500.0	0	94.4	80	120	04/11/2024
Manganese		2.0		**479**	500.0	0	95.7	80	120	04/11/2024
Selenium		1.0		**444**	500.0	0	88.8	80	120	04/11/2024
Vanadium		5.0		**416**	500.0	0	83.3	80	120	04/11/2024
Zinc		15.0		**430**	500.0	0	85.9	80	120	04/11/2024

Batch 221122 **SampType:** MS Units µg/L

SampID: 24031341-011CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		1.0		**494**	500.0	19.24	94.9	75	125	04/11/2024
Iron		25.0		**4300**	2000	2403	95.1	75	125	04/11/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 221122 **SampType:** MSD Units µg/L RPD Limit 20

SampID: 24031341-011CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		1.0		**484**	500.0	19.24	92.9	493.9	2.12	04/11/2024
Iron		25.0		**4250**	2000	2403	92.4	4305	1.26	04/11/2024

Batch 221242 **SampType:** MBLK Units µg/L

SampID: MBLK-221242

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	04/16/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	04/13/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	04/18/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	04/16/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	04/16/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	04/16/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	04/16/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	04/16/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	04/16/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	04/16/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	04/13/2024

Batch 221242 **SampType:** LCS Units µg/L

SampID: LCS-221242

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**561**	500.0	0	112.1	80	120	04/16/2024
Arsenic		1.0		**487**	500.0	0	97.4	80	120	04/13/2024
Boron		25.0		**416**	500.0	0	83.2	80	120	04/18/2024
Cadmium		1.0		**53.3**	50.00	0	106.7	80	120	04/16/2024
Chromium		1.5		**220**	200.0	0	109.8	80	120	04/16/2024
Iron		25.0		**2290**	2000	0	114.5	80	120	04/16/2024
Lead		1.0		**552**	500.0	0	110.4	80	120	04/16/2024
Manganese		2.0		**564**	500.0	0	112.8	80	120	04/16/2024
Selenium		1.0		**505**	500.0	0	101.0	80	120	04/16/2024
Vanadium		5.0		**554**	500.0	0	110.9	80	120	04/16/2024
Zinc		15.0		**454**	500.0	0	90.8	80	120	04/13/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 221242 **SampType:** MS Units **µg/L**

SampID: 24031341-012CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		1.0		**499**	500.0	29.81	93.8	75	125	04/13/2024
Iron		25.0		**6000**	2000	3996	100.2	75	125	04/16/2024

Batch 221242 **SampType:** MSD Units **µg/L** RPD Limit **20**

SampID: 24031341-012CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		1.0		**489**	500.0	29.81	91.9	499.0	1.96	04/13/2024
Iron		25.0		**5810**	2000	3996	90.9	6000	3.17	04/16/2024

Batch 221272 **SampType:** MBLK Units **µg/L**

SampID: MBLK-221272

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	04/20/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	04/13/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	04/16/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	04/13/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	04/16/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	04/16/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	04/13/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	04/16/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	04/13/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	04/16/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	04/16/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 221272 **SampType:** LCS Units **µg/L**

SampID: LCS-221272

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**504**	500.0	0	100.7	80	120	04/20/2024
Arsenic		1.0		**476**	500.0	0	95.1	80	120	04/13/2024
Boron		25.0		**513**	500.0	0	102.6	80	120	04/16/2024
Cadmium		1.0		**48.0**	50.00	0	96.0	80	120	04/13/2024
Chromium		1.5		**209**	200.0	0	104.3	80	120	04/16/2024
Iron		25.0		**2170**	2000	0	108.5	80	120	04/16/2024
Lead		1.0		**503**	500.0	0	100.7	80	120	04/13/2024
Manganese		2.0		**544**	500.0	0	108.9	80	120	04/16/2024
Selenium		1.0		**426**	500.0	0	85.2	80	120	04/13/2024
Vanadium		5.0		**525**	500.0	0	105.1	80	120	04/16/2024
Zinc		15.0		**468**	500.0	0	93.6	80	120	04/16/2024

Batch 221272 **SampType:** MS Units **µg/L**

SampID: 24031341-067IMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**497**	500.0	0.6284	99.2	75	125	04/20/2024
Arsenic		1.0		**456**	500.0	0	91.2	75	125	04/16/2024
Boron		25.0		**497**	500.0	0	99.3	75	125	04/16/2024
Cadmium		1.0		**48.2**	50.00	0	96.5	75	125	04/16/2024
Chromium		1.5		**194**	200.0	0	97.0	75	125	04/16/2024
Iron		25.0		**1990**	2000	0	99.7	75	125	04/16/2024
Lead		1.0		**496**	500.0	0	99.1	75	125	04/16/2024
Manganese		2.0		**497**	500.0	0	99.4	75	125	04/16/2024
Selenium		1.0		**448**	500.0	0	89.7	75	125	04/16/2024
Vanadium		5.0		**488**	500.0	0	97.7	75	125	04/16/2024
Zinc		15.0		**423**	500.0	0	84.5	75	125	04/16/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 221272 **SampType:** MSD Units µg/L RPD Limit 20

SampID: 24031341-067IMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		1.0		**512**	500.0	0.6284	102.2	496.8	2.94	04/20/2024
Arsenic		1.0		**476**	500.0	0	95.1	456.2	4.18	04/16/2024
Boron		25.0		**535**	500.0	0	107.0	496.7	7.40	04/16/2024
Cadmium		1.0		**49.2**	50.00	0	98.4	48.24	2.01	04/16/2024
Chromium		1.5		**203**	200.0	0	101.5	193.9	4.62	04/16/2024
Iron		25.0		**2120**	2000	0	105.9	1994	6.04	04/16/2024
Lead		1.0		**515**	500.0	0	103.0	495.7	3.81	04/16/2024
Manganese		2.0		**522**	500.0	0	104.5	497.2	4.92	04/16/2024
Selenium		1.0		**461**	500.0	0	92.2	448.5	2.71	04/16/2024
Vanadium		5.0		**505**	500.0	0	100.9	488.3	3.30	04/16/2024
Zinc		15.0		**455**	500.0	0	91.0	422.7	7.39	04/16/2024

Batch 222066 **SampType:** MBLK Units µg/L

SampID: MBLK-222066

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	04/30/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	04/30/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	04/30/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	04/30/2024

Batch 222066 **SampType:** LCS Units µg/L

SampID: LCS-222066

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**488**	500.0	0	97.5	80	120	04/30/2024
Iron		25.0		**1950**	2000	0	97.6	80	120	04/30/2024
Manganese		2.0		**494**	500.0	0	98.8	80	120	04/30/2024

Batch 222313 **SampType:** MBLK Units µg/L

SampID: MBLK-222313

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	05/07/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	05/01/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	05/01/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	05/01/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	05/01/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 222313 **SampType:** LCS Units **µg/L**

SampID: LCS-222313

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**458**	500.0	0	91.7	80	120	05/07/2024
Arsenic		1.0		**451**	500.0	0	90.1	80	120	05/01/2024
Lead		1.0		**485**	500.0	0	97.1	80	120	05/01/2024
Selenium		1.0		**466**	500.0	0	93.3	80	120	05/01/2024
Zinc		15.0		**423**	500.0	0	84.6	80	120	05/01/2024

Batch 222313 **SampType:** MS Units **µg/L**

SampID: 24042058-002GMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**490**	500.0	0	98.0	75	125	05/07/2024
Arsenic		1.0		**467**	500.0	23.30	88.8	75	125	05/02/2024
Lead		1.0		**459**	500.0	0	91.8	75	125	05/02/2024
Selenium		1.0		**472**	500.0	0	94.4	75	125	05/02/2024

Batch 222313 **SampType:** MSD Units **µg/L** RPD Limit **20**

SampID: 24042058-002GMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		1.0		**482**	500.0	0	96.4	490.2	1.65	05/07/2024
Arsenic		1.0		**472**	500.0	23.30	89.8	467.3	1.03	05/02/2024
Lead		1.0		**462**	500.0	0	92.4	458.9	0.65	05/02/2024
Selenium		1.0		**475**	500.0	0	95.1	471.9	0.70	05/02/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 220750 **SampType:** MBLK Units µg/L

SampID: MBLK-220750

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	04/04/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	04/06/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	04/06/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	04/08/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	04/06/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	04/06/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	04/06/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	04/06/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	04/06/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	04/06/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	04/09/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	04/06/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	04/10/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	04/06/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	04/08/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	04/06/2024

Batch 220750 **SampType:** LCS Units µg/L

SampID: LCS-220750

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**462**	500.0	0	92.4	80	120	04/04/2024
Arsenic		1.0		**474**	500.0	0	94.8	80	120	04/04/2024
Barium		1.0		**1850**	2000	0	92.5	80	120	04/04/2024
Beryllium		1.0		**58.5**	50.00	0	116.9	80	120	04/08/2024
Boron		25.0		**457**	500.0	0	91.5	80	120	04/04/2024
Cadmium		1.0		**45.7**	50.00	0	91.5	80	120	04/04/2024
Chromium		1.5		**185**	200.0	0	92.4	80	120	04/04/2024
Cobalt		1.0		**464**	500.0	0	92.9	80	120	04/04/2024
Lead		1.0		**444**	500.0	0	88.8	80	120	04/04/2024
Lithium	*	3.0		**543**	500.0	0	108.7	80	120	04/09/2024
Molybdenum		1.5		**423**	500.0	0	84.6	80	120	04/10/2024
Selenium		1.0		**490**	500.0	0	98.0	80	120	04/04/2024
Thallium		2.0		**248**	250.0	0	99.3	80	120	04/08/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 221023 **SampType:** MBLK Units µg/L

SampID: MBLK-221023

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	04/12/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	04/09/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	04/09/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	04/09/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	04/10/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	04/10/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	04/09/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	04/09/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	04/09/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	04/10/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	04/12/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	04/09/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	04/09/2024

Batch 221023 **SampType:** LCS Units µg/L

SampID: LCS-221023

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**565**	500.0	0	113.0	80	120	04/12/2024
Arsenic		1.0		**521**	500.0	0	104.2	80	120	04/09/2024
Barium		1.0		**2350**	2000	0	117.5	80	120	04/09/2024
Beryllium		1.0		**56.5**	50.00	0	112.9	80	120	04/09/2024
Boron		25.0		**529**	500.0	0	105.7	80	120	04/10/2024
Cadmium		1.0		**53.4**	50.00	0	106.8	80	120	04/12/2024
Cadmium		1.0	S	**68.2**	50.00	0	136.4	80	120	04/10/2024
Chromium		1.5		**206**	200.0	0	103.2	80	120	04/09/2024
Cobalt		1.0		**548**	500.0	0	109.7	80	120	04/09/2024
Lead		1.0		**545**	500.0	0	109.0	80	120	04/09/2024
Lithium	*	3.0		**536**	500.0	0	107.2	80	120	04/10/2024
Molybdenum		1.5		**496**	500.0	0	99.1	80	120	04/12/2024
Selenium		1.0		**488**	500.0	0	97.6	80	120	04/09/2024
Thallium		2.0		**296**	250.0	0	118.6	80	120	04/09/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 221023 **SampType:** MS Units µg/L

SampID: 24031341-015BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**558**	500.0	0	111.5	75	125	04/12/2024
Arsenic		1.0		**507**	500.0	0.5448	101.3	75	125	04/09/2024
Barium		1.0		**2320**	2000	31.72	114.3	75	125	04/09/2024
Beryllium		1.0		**51.8**	50.00	0	103.7	75	125	04/09/2024
Boron		25.0		**1260**	500.0	739.7	104.3	75	125	04/10/2024
Cadmium		1.0	S	**66.2**	50.00	0	132.3	75	125	04/10/2024
Chromium		1.5		**192**	200.0	0	96.1	75	125	04/09/2024
Cobalt		1.0		**504**	500.0	1.001	100.5	75	125	04/09/2024
Lead		1.0		**517**	500.0	0	103.3	75	125	04/09/2024
Lithium	*	3.0		**555**	500.0	33.77	104.2	75	125	04/12/2024
Molybdenum		1.5		**492**	500.0	0.6612	98.2	75	125	04/12/2024
Selenium		1.0		**478**	500.0	0	95.5	75	125	04/09/2024
Thallium		2.0		**283**	250.0	0	113.1	75	125	04/09/2024

Batch 221023 **SampType:** MSD Units µg/L RPD Limit **20**

SampID: 24031341-015BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		1.0		**555**	500.0	0	111.0	557.7	0.51	04/12/2024
Arsenic		1.0		**519**	500.0	0.5448	103.6	506.8	2.32	04/09/2024
Barium		1.0		**2350**	2000	31.72	115.7	2317	1.28	04/09/2024
Beryllium		1.0		**54.9**	50.00	0	109.8	51.84	5.73	04/09/2024
Boron		25.0		**1270**	500.0	739.7	106.4	1261	0.82	04/10/2024
Cadmium		1.0	S	**67.6**	50.00	0	135.2	66.17	2.14	04/10/2024
Chromium		1.5		**197**	200.0	0	98.7	192.3	2.65	04/09/2024
Cobalt		1.0		**519**	500.0	1.001	103.7	503.7	3.08	04/09/2024
Lead		1.0		**524**	500.0	0	104.7	516.6	1.38	04/09/2024
Lithium	*	3.0		**560**	500.0	33.77	105.3	554.7	1.04	04/12/2024
Molybdenum		1.5		**491**	500.0	0.6612	98.0	491.6	0.17	04/12/2024
Selenium		1.0		**484**	500.0	0	96.7	477.7	1.23	04/09/2024
Thallium		2.0		**289**	250.0	0	115.7	282.7	2.33	04/09/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 221127 **SampType:** MBLK Units µg/L

SampID: MBLK-221127

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	04/17/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	04/11/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	04/11/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	04/17/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	04/16/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	04/13/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	04/11/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	04/11/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	04/11/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	04/11/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	04/11/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	04/16/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	04/13/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	04/11/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	04/11/2024

Batch 221127 **SampType:** LCS Units µg/L

SampID: LCS-221127

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**512**	500.0	0	102.4	80	120	04/17/2024
Arsenic		1.0		**519**	500.0	0	103.8	80	120	04/11/2024
Barium		1.0		**2040**	2000	0	101.9	80	120	04/17/2024
Beryllium		1.0		**53.4**	50.00	0	106.8	80	120	04/17/2024
Boron		25.0		**591**	500.0	0	118.1	80	120	04/16/2024
Cadmium		1.0	S	**66.6**	50.00	0	133.2	80	120	04/11/2024
Cadmium		1.0		**54.0**	50.00	0	107.9	80	120	04/13/2024
Chromium		1.5		**220**	200.0	0	110.2	80	120	04/11/2024
Cobalt		1.0		**525**	500.0	0	105.0	80	120	04/11/2024
Lead		1.0		**516**	500.0	0	103.3	80	120	04/11/2024
Lithium	*	3.0		**547**	500.0	0	109.4	80	120	04/11/2024
Lithium	*	3.0		**592**	500.0	0	118.4	80	120	04/16/2024
Molybdenum		1.5		**509**	500.0	0	101.8	80	120	04/13/2024
Selenium		1.0		**498**	500.0	0	99.5	80	120	04/11/2024
Thallium		2.0		**248**	250.0	0	99.0	80	120	04/11/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 221211 **SampType:** MBLK Units µg/L

SampID: MBLK-221211

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	04/15/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	04/13/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	04/15/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	04/15/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	04/17/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	04/13/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	04/15/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	04/13/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	04/15/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	04/15/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	04/13/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	04/13/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	04/15/2024

Batch 221211 **SampType:** LCS Units µg/L

SampID: LCS-221211

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**471**	500.0	0	94.2	80	120	04/17/2024
Arsenic		1.0		**482**	500.0	0	96.4	80	120	04/13/2024
Barium		1.0		**2200**	2000	0	110.2	80	120	04/16/2024
Beryllium		1.0		**57.0**	50.00	0	114.0	80	120	04/15/2024
Boron		25.0		**457**	500.0	0	91.4	80	120	04/17/2024
Cadmium		1.0		**48.9**	50.00	0	97.9	80	120	04/13/2024
Chromium		1.5		**221**	200.0	0	110.3	80	120	04/15/2024
Cobalt		1.0		**502**	500.0	0	100.4	80	120	04/13/2024
Lead		1.0		**554**	500.0	0	110.9	80	120	04/15/2024
Lithium	*	3.0		**550**	500.0	0	110.0	80	120	04/15/2024
Molybdenum		1.5		**468**	500.0	0	93.6	80	120	04/13/2024
Selenium		1.0		**465**	500.0	0	93.0	80	120	04/13/2024
Thallium		2.0		**268**	250.0	0	107.2	80	120	04/15/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 221211 **SampType:** MS Units µg/L

SampID: 24031341-010BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**510**	500.0	0	101.9	75	125	04/17/2024
Arsenic		1.0		**509**	500.0	8.960	100.1	75	125	04/13/2024
Barium		1.0		**2440**	2000	454.2	99.3	75	125	04/17/2024
Beryllium		1.0		**55.5**	50.00	0	111.0	75	125	04/16/2024
Boron		25.0		**593**	500.0	79.19	102.7	75	125	04/17/2024
Cadmium		1.0		**51.5**	50.00	0	103.0	75	125	04/13/2024
Chromium		1.5		**208**	200.0	0	104.0	75	125	04/16/2024
Cobalt		1.0		**509**	500.0	0.1998	101.7	75	125	04/13/2024
Lead		1.0		**543**	500.0	0	108.7	75	125	04/16/2024
Lithium	*	3.0		**504**	500.0	3.200	100.1	75	125	04/18/2024
Molybdenum		1.5		**499**	500.0	2.112	99.4	75	125	04/13/2024
Selenium		1.0		**500**	500.0	0	100.1	75	125	04/13/2024
Thallium		2.0		**262**	250.0	0	105.0	75	125	04/16/2024

Batch 221211 **SampType:** MSD Units µg/L RPD Limit **20**

SampID: 24031341-010BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		1.0		**486**	500.0	0	97.2	509.7	4.73	04/17/2024
Arsenic		1.0		**509**	500.0	8.960	100.1	509.3	0.03	04/13/2024
Barium		1.0		**2330**	2000	454.2	93.9	2441	4.60	04/17/2024
Beryllium		1.0		**55.1**	50.00	0	110.1	55.49	0.75	04/16/2024
Boron		25.0		**584**	500.0	79.19	101.0	592.8	1.44	04/17/2024
Cadmium		1.0		**49.9**	50.00	0	99.7	51.48	3.17	04/13/2024
Chromium		1.5		**213**	200.0	0	106.5	208.0	2.44	04/16/2024
Cobalt		1.0		**503**	500.0	0.1998	100.6	508.9	1.09	04/13/2024
Lead		1.0		**550**	500.0	0	110.1	543.4	1.29	04/16/2024
Lithium	*	3.0		**501**	500.0	3.200	99.6	503.8	0.48	04/18/2024
Molybdenum		1.5		**500**	500.0	2.112	99.5	499.0	0.15	04/13/2024
Selenium		1.0		**486**	500.0	0	97.3	500.4	2.86	04/13/2024
Thallium		2.0		**269**	250.0	0	107.4	262.5	2.31	04/16/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 221254 **SampType:** MBLK Units **µg/L**

SampID: MBLK-221254

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		25.0		**< 25.0**	12.50	0	0	-100	100	04/15/2024
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	04/17/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	04/13/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	04/15/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	04/15/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	04/17/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	04/15/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	04/15/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	04/13/2024
Copper		1.0		**< 1.0**	0.2980	0	0	-100	100	04/15/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	04/15/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	04/15/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	04/15/2024
Manganese		2.0	S	**2.5**	0.7500	0	338.9	-100	100	04/15/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	04/11/2024
Nickel		1.0		**< 1.0**	0.4300	0	0	-100	100	04/15/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	04/15/2024
Silver		1.0		**< 1.0**	0.1110	0	0	-100	100	04/15/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	04/15/2024
Tin	*	5.0		**< 5.0**	0.5000	0	0	-100	100	04/13/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	04/13/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch **221254** **SampType:** **LCS** Units **µg/L**

SampID: LCS-221254

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		25.0		**2070**	2000	0	103.3	80	120	04/15/2024
Antimony		1.0		**487**	500.0	0	97.4	80	120	04/17/2024
Arsenic		1.0		**512**	500.0	0	102.3	80	120	04/13/2024
Barium		1.0	S	**2610**	2000	0	130.3	80	120	04/15/2024
Beryllium		1.0		**57.0**	50.00	0	113.9	80	120	04/15/2024
Boron		25.0		**480**	500.0	0	96.0	80	120	04/17/2024
Cadmium		1.0		**55.6**	50.00	0	111.3	80	120	04/15/2024
Chromium		1.5		**226**	200.0	0	112.8	80	120	04/15/2024
Cobalt		1.0		**540**	500.0	0	108.1	80	120	04/13/2024
Copper		1.0		**285**	250.0	0	114.1	80	120	04/15/2024
Iron		25.0		**2330**	2000	0	116.6	80	120	04/15/2024
Lead		1.0		**554**	500.0	0	110.7	80	120	04/15/2024
Lithium	*	3.0		**554**	500.0	0	110.7	80	120	04/15/2024
Manganese		2.0	B	**573**	500.0	0	114.5	80	120	04/15/2024
Molybdenum		1.5		**499**	500.0	0	99.9	80	120	04/13/2024
Nickel		1.0		**561**	500.0	0	112.3	80	120	04/15/2024
Selenium		1.0		**534**	500.0	0	106.7	80	120	04/15/2024
Silver		1.0		**53.6**	50.00	0	107.2	80	120	04/15/2024
Thallium		2.0		**265**	250.0	0	105.9	80	120	04/15/2024
Tin	*	5.0		**523**	500.0	0	104.5	80	120	04/13/2024
Zinc		15.0		**497**	500.0	0	99.4	80	120	04/13/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch **221254** **SampType:** **MS** Units **µg/L**

SampID: 24031341-071HMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		25.0		**2040**	2000	0	102.2	75	125	04/15/2024
Antimony		1.0		**476**	500.0	0	95.3	75	125	04/17/2024
Arsenic		1.0		**512**	500.0	0	102.3	75	125	04/13/2024
Barium		1.0	S	**2630**	2000	0	131.6	75	125	04/15/2024
Beryllium		1.0		**60.9**	50.00	0	121.8	75	125	04/15/2024
Boron		25.0		**503**	500.0	0	100.7	75	125	04/17/2024
Cadmium		1.0		**56.5**	50.00	0	113.0	75	125	04/15/2024
Chromium		1.5		**227**	200.0	0	113.3	75	125	04/15/2024
Cobalt		1.0		**532**	500.0	0	106.4	75	125	04/13/2024
Copper		1.0		**292**	250.0	0.5094	116.6	75	125	04/15/2024
Iron		25.0		**2360**	2000	0	118.2	75	125	04/15/2024
Lead		1.0		**572**	500.0	0	114.3	75	125	04/15/2024
Lithium	*	3.0		**603**	500.0	0	120.7	75	125	04/15/2024
Manganese		2.0	B	**585**	500.0	0	117.0	75	125	04/15/2024
Molybdenum		1.5		**489**	500.0	0	97.8	75	125	04/13/2024
Nickel		1.0		**574**	500.0	0	114.9	75	125	04/15/2024
Selenium		1.0		**544**	500.0	0	108.8	75	125	04/15/2024
Silver		1.0		**54.5**	50.00	0	109.0	75	125	04/15/2024
Thallium		2.0		**276**	250.0	0	110.4	75	125	04/15/2024
Zinc		15.0		**478**	500.0	0	95.6	75	125	04/13/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 221254 **SampType:** MSD Units µg/L RPD Limit 20

SampID: 24031341-071HMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Aluminum		25.0		**2060**	2000	0	102.9	2044	0.70	04/15/2024
Antimony		1.0		**487**	500.0	0	97.4	476.5	2.19	04/17/2024
Arsenic		1.0		**503**	500.0	0	100.6	511.6	1.71	04/13/2024
Barium		1.0	S	**2600**	2000	0	129.8	2631	1.36	04/15/2024
Beryllium		1.0		**58.8**	50.00	0	117.6	60.88	3.47	04/15/2024
Boron		25.0		**488**	500.0	0	97.5	503.4	3.20	04/17/2024
Cadmium		1.0		**55.9**	50.00	0	111.9	56.48	0.97	04/15/2024
Chromium		1.5		**223**	200.0	0	111.3	226.6	1.75	04/15/2024
Cobalt		1.0		**523**	500.0	0	104.5	532.1	1.79	04/13/2024
Copper		1.0		**287**	250.0	0.5094	114.6	292.1	1.74	04/15/2024
Iron		25.0		**2320**	2000	0	116.2	2363	1.66	04/15/2024
Lead		1.0		**563**	500.0	0	112.5	571.6	1.59	04/15/2024
Lithium	*	3.0		**584**	500.0	0	116.8	603.4	3.29	04/15/2024
Manganese		2.0	B	**572**	500.0	0	114.5	584.8	2.16	04/15/2024
Molybdenum		1.5		**484**	500.0	0	96.9	489.1	0.96	04/13/2024
Nickel		1.0		**562**	500.0	0	112.4	574.3	2.15	04/15/2024
Selenium		1.0		**536**	500.0	0	107.2	543.8	1.45	04/15/2024
Silver		1.0		**53.8**	50.00	0	107.6	54.52	1.33	04/15/2024
Thallium		2.0		**273**	250.0	0	109.3	276.0	0.99	04/15/2024
Zinc		15.0		**481**	500.0	0	96.1	477.9	0.58	04/13/2024

Batch 222063 **SampType:** MBLK Units µg/L

SampID: MBLK-222063

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	04/30/2024

Batch 222063 **SampType:** LCS Units µg/L

SampID: LCS-222063

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead		1.0		**517**	500.0	0	103.4	80	120	04/30/2024

SW-846 7470A (DISSOLVED)

Batch 221024 **SampType:** MS Units µg/L

SampID: 24031341-061DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.27**	5.000	0.2289	100.9	75	125	04/09/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 7470A (DISSOLVED)

Batch 221024 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24031341-061DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**5.23**	5.000	0.2289	100.0	5.273	0.85	04/09/2024

Batch 221259 **SampType:** MS Units µg/L

SampID: 24031341-002CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.96**	5.000	0	99.2	75	125	04/11/2024

Batch 221259 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24031341-002CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.83**	5.000	0	96.6	4.958	2.61	04/11/2024

Batch 221259 **SampType:** MS Units µg/L

SampID: 24031341-034CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.10**	5.000	0	101.9	75	125	04/11/2024

Batch 221259 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24031341-034CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**5.10**	5.000	0	102.0	5.095	0.12	04/11/2024

Batch 221337 **SampType:** MBLK Units µg/L

SampID: MBLK-221337

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	04/12/2024

Batch 221337 **SampType:** LCS Units µg/L

SampID: LCS-221337

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.60**	5.000	0	111.9	85	115	04/12/2024

Batch 221337 **SampType:** MS Units µg/L

SampID: 24031341-055CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**9.10**	10.00	0	91.0	75	125	04/12/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 7470A (DISSOLVED)

Batch 221337 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24031341-055CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**8.52**	10.00	0	85.2	9.104	6.67	04/12/2024

Batch 221952 **SampType:** MS Units µg/L

SampID: 24041754-010CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.40		**9.64**	10.00	0	96.4	75	125	04/25/2024

Batch 221952 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24041754-010CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.40		**9.68**	10.00	0	96.8	9.641	0.35	04/25/2024

Batch 222067 **SampType:** MS Units µg/L

SampID: 24042058-006GMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.07**	5.000	0.2982	95.5	75	125	05/01/2024

Batch 222067 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24042058-006GMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**5.00**	5.000	0.2982	94.1	5.074	1.38	05/01/2024

SW-846 7470A (TOTAL)

Batch 220853 **SampType:** MBLK Units µg/L

SampID: MBLK-220853

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	04/05/2024

Batch 220853 **SampType:** LCS Units µg/L

SampID: LCS-220853

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.65**	5.000	0	92.9	85	115	04/05/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 7470A (TOTAL)

Batch 221024 **SampType:** MBLK Units µg/L
SampID: MBLK-221024

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	04/09/2024

Batch 221024 **SampType:** LCS Units µg/L
SampID: LCS-221024

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.27**	5.000	0	105.3	85	115	04/09/2024

Batch 221024 **SampType:** MS Units µg/L
SampID: 24031341-017BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.10**	5.000	0	101.9	75	125	04/09/2024

Batch 221024 **SampType:** MSD Units µg/L RPD Limit **15**
SampID: 24031341-017BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**5.13**	5.000	0	102.7	5.096	0.73	04/09/2024

Batch 221096 **SampType:** MBLK Units µg/L
SampID: MBLK-221096

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	04/09/2024

Batch 221096 **SampType:** LCS Units µg/L
SampID: LCS-221096

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.98**	5.000	0	99.5	85	115	04/09/2024

Batch 221096 **SampType:** MS Units µg/L
SampID: 24031341-063BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.79**	5.000	0	95.8	75	125	04/09/2024

Batch 221096 **SampType:** MSD Units µg/L RPD Limit **15**
SampID: 24031341-063BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.81**	5.000	0	96.2	4.790	0.40	04/09/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 7470A (TOTAL)

Batch 221138 **SampType:** MBLK Units µg/L
SampID: MBLK-221138

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	04/10/2024

Batch 221138 **SampType:** LCS Units µg/L
SampID: LCS-221138

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.42**	5.000	0	108.5	85	115	04/10/2024

Batch 221259 **SampType:** MBLK Units µg/L
SampID: MBLK-221259

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	04/11/2024

Batch 221259 **SampType:** LCS Units µg/L
SampID: LCS-221259

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.11**	5.000	0	102.2	85	115	04/11/2024

Batch 221268 **SampType:** MBLK Units µg/L
SampID: MBLK-221268

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	04/12/2024

Batch 221268 **SampType:** LCS Units µg/L
SampID: LCS-221268

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.63**	5.000	0	112.7	85	115	04/12/2024

Batch 221268 **SampType:** MS Units µg/L
SampID: 24031341-071HMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.50**	5.000	0	110.1	75	125	04/12/2024

Batch 221268 **SampType:** MSD Units µg/L RPD Limit **15**
SampID: 24031341-071HMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**5.53**	5.000	0	110.6	5.504	0.42	04/12/2024

Client: Ramboll **Work Order:** 24031341

Client Project: NEW-24Q2 **Report Date:** 14-May-24

SW-846 7470A (TOTAL)

Batch 221952 **SampType:** MBLK Units µg/L

SampID: MBLK-221952

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	04/25/2024

Batch 221952 **SampType:** LCS Units µg/L

SampID: LCS-221952

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.96**	5.000	0	99.3	85	115	04/25/2024

Batch 222067 **SampType:** MBLK Units µg/L

SampID: MBLK-222067

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	05/01/2024

Batch 222067 **SampType:** LCS Units µg/L

SampID: LCS-222067

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.47**	5.000	0	89.4	85	115	04/29/2024

Receiving Check List

Teklab, Inc. Environmental Laboratory

http://www.teklabinc.com/

Client: Ramboll
Client Project: NEW-24Q2

Work Order: 24031341
Report Date: 14-May-24

Carrier: Tracy Carroll

Received By: PRS

Completed by: Paul Schultz
On: 03-Apr-24

Reviewed by: Ellie Hopkins
On: 11-Apr-24

Pages to follow: Chain of custody 24 Extra pages included 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C	14.1
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice	☐
Chain of custody present?	Yes ☑	No ☐			
Chain of custody signed when relinquished and received?	Yes ☑	No ☐			
Chain of custody agrees with sample labels?	Yes ☑	No ☐			
Samples in proper container/bottle?	Yes ☑	No ☐			
Sample containers intact?	Yes ☑	No ☐			
Sufficient sample volume for indicated test?	Yes ☑	No ☐			
All samples received within holding time?	Yes ☑	No ☐			
Reported field parameters measured:	Field ☑	Lab ☐	NA ☐		
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐			

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water – at least one vial per sample has zero headspace?	Yes ☑	No ☐	No VOA vials ☐
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	NA ☐
NPDES/CWA TCN interferences checked/treated in the field?	Yes ☐	No ☐	NA ☑

Any No responses must be detailed below or on the COC.

Preservation checks for O&G analysis are to be completed by the laboratory technician prior to analysis. - pschultz - 4/3/2024 9:59:21 AM

pH strip #96651/89660. - pschultz - 4/3/2024 9:59:25 AM

Additional Nitric Acid (96331) and Sulfuric Acid (94915) were needed upon arrival at the laboratory. - pschultz - 4/3/2024 9:59:42 AM

G232 was filtered for the dissolved parameters upon arrival at the laboratory. - pschultz - 4/3/2024 10:00:12 AM

Samples were received on 4/3/24 at 17:39 on ice [1.6C - LTG#7]. - pschultz - 4/4/2024 12:05:39 PM

Additional Sodium Hydroxide (95443) and Sulfuric Acid (94915) were needed upon arrival at the laboratory. - pschultz - 4/4/2024 12:07:21 PM

pH strip #96651/89660. - pschultz - 4/4/2024 12:08:05 PM

Samples were received on 4/5/2024 at 11:04 on ice [0.5C - LTG#7]. NR - pschultz - 4/5/2024 11:59:34 AM

Additional Nitric Acid (96869) was needed upon arrival at the laboratory. NR - pschultz - 4/5/2024 12:01:15 PM

pH strip #96651. NR - pschultz - 4/5/2024 12:01:28 PM

Samples were received on 4/8/24 at 1725 on ice [4.8C - LTG7]. pH strip #89660/96651. Preservation checks for O&G analysis are to be completed by the laboratory technician prior to analysis. Additional Sulfuric Acid (94915), Nitric Acid (96869) and Sodium Hydroxide (95443) were

Client: Ramboll
Work Order: 24031341
Client Project: NEW-24Q2
Report Date: 14-May-24

needed upon arrival at the laboratory. L1R, S101 and S102 were filtered and preserved Nitric Acid (96869) and Sulfuric Acid (94915) and left unpreserved for the dissolved parameters upon arrival at the laboratory. - amberdilallo - 4/9/2024 9:34:29 AM

Samples were received on 4/9/2024 at 6:18 PM (on ice temp C 0.2 - LTG# 7). - wolinger - 4/10/2024 9:23:49 AM

pH strip #66651/89660. - wolinger - 4/10/2024 9:26:00 AM Additional Sulfuric Acid (94915) was needed in A215, A214, A213, A213 DUP, R219, G2175, and G141. Additional Nitric Acid (96869) was needed in A215, APW02 DUP, and APW09. Additional Sodium Hydroxide (95443) was needed in A215, A214, and A213 upon arrival at the laboratory. PS 4/10/24

Preservation checks for O&G analysis are to be completed by the laboratory technician prior to analysis. - wolinger - 4/10/2024 9:37:24 AM

pH strip #66651/89660. - wolinger - 4/10/2024 4:24 PM

Additional Sulfuric Acid (94915) was needed in Field Blank and EQ Blank, Nitric Acid (96869) was needed in Field Blank and EQ Blank upon arrival at the laboratory. PS 4/10/24

Preservation checks for O&G analysis are to be completed by the laboratory technician prior to analysis. - wolinger - 4/10/2024 4:24 PM

Fieldf Blank and EQ Blank were filtered and preserved with nitric acid (96869) and sulfuric acid (94915) for the dissolved parameters upon arrival at the laboratory. - wolinger - 4/10/2024 4:27:53 PM

Samples were received on 4/10/2024 at 15.16 on ice [10.5C - LTG#7]. - WO - 4/10/2024 4:27:53 PM

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 5

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Terry Hanratty
Address:	6725 N 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448		Sam Davies - samantha.davies@vistracorp.com	Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:	2285	Profile #:	

REGULATORY AGENCY		
NPDES	GROUND WATER	DRINKING WATER
UST	RCRA	OTHER
Site Location STATE:	IL	

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A213	WT	G				10	2	3	1	3	1						X						24031341-001
2	A214	WT	G				10	2	3	1	3	1						X						24031341-002
3	A215	WT	G				10	2	3	1	3	1						X						24031341-003
4	APW02	WT	G				4	2		2							X				X	X			24031341-004
5	APW03	WT	G				4	2		2							X				X	X			24031341-005
6	APW04	WT	G				4	2		2							X				X	X			24031341-006
7	APW05	WT	G				3	1		2							X					X	X			24031341-007
8	APW05S	WT	G	4/2/24	1352		2	1		1							X				X					24031341-008
9	APW06	WT	G				2	1		1							X				X					24031341-009
10	APW07	WT	G				3	1		2							X					X	X			24031341-010
11	APW08	WT	G				3	1		2							X					X	X			24031341-011
12	APW09	WT	G				3	1		2							X					X	X			24031341-012
13	APW10	WT	G				2	1		1							X					X				24031341-013
14	APW11	WT	G				2	1		1							X					X				24031341-014
15	APW12	WT	G				2	1		1							X					X				24031341-015
16	APW13	WT	G				2	1		1							X					X				24031341-016

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q2 Rev 0	Tracy Carroll	4/2/24	1855	Paul Delay	4/2/24	18:55	4.5 (Y) N
							4.1

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tracy Carroll

SIGNATURE of SAMPLER: Tracy Carroll DATE Signed (MM/DD/YY): 4/2/24

Temp in °C	Received on ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

PM / 96951/89660 HS OK

Added HNO_3(96371) and H_2SO_4(99115) to samples.

PS 4/3/24

sample G232 Filtered in Lab

PS 4/3/24

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp-Newton	Report To: Brian Voelker	Attention: Terry Hanratty
Address: 6725 N 500th St	Copy To: Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name: Vistra Corp
Newton, IL 62448	Sam Davies - samantha.davies@vistracorp.com	Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY: NPDES, GROUND WATER, DRINKING WATER, UST, RCRA, OTHER

Site Location STATE: IL

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analysis Test: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G208	WT	G				0											X						24031341-033
2	G217S	WT	G				10	2	3	1	3	1						X						24031341-034
3	G218	WT	G				0											X						24031341-035
4	G220	WT	G				0											X						24031341-036
5	G221	WT	G				10	2	3	1	3	1						X						24031341-037
6	G222	WT	G				0											X						24031341-038
7	G223	WT	G				0											X						24031341-039
8	G224	WT	G				0											X						24031341-040
9	G225	WT	G	4/2/24	1252		10	2	3	1	3	1						X						24031341-041
10	G230	WT	G	4-2-24	1034		10	2	3	1	3	1						X						24031341-042
11	G231	WT	G	4-2-24	1213		10	2	3	1	3	1						X						24031341-043
12	G232 Filter in lab	WT	G	4-2-24	1334		10	2	3	1	3	1						X						24031341-044
13	G233	WT	G	4-2-24	1441		10	2	3	1	3	1						X						24031341-045
14	G234	WT	G				10	2	3	1	3	1						X						24031341-046
15	L1R	WT	G				7	2	3	2									X					24031341-047
16	L201	WT	G				0												X					24031341-048

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q2 Rev 0	Justin Carroll	4/2/24	1855	Paul Zeltner	4/2/24	1855	

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Justin Colp			Y	N	
SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY): 4-2-24				

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Terry Hanratty
Address:	6725 N 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448		Sam Davies - samantha.davies@vistracorp.com	Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:	2285	Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	L202	WT	G				0												X					24031341-049
2	L203	WT	G				0												X					24031341-050
3	L204	WT	G				0												X					24031341-051
4	L205	WT	G				0												X					24031341-052
5	L301	WT	G				20	12	3	1	3	1						X						24031341-053
6	LREP	WT	G				8	4		1	3							X						24031341-054
7	R217D	WT	G				10	2	3	1	3	1						X						24031341-055
8	R219	WT	G				10	2	3	1	3	1						X						24031341-056
9	S101	WT	G				7	2	3	2									X					24031341-057
10	S102	WT	G				7	2	3	2									X					24031341-058
11	SG02	WT	G				0													X				24031341-059
12	T101	WT	G	4/2/24	1040		7	2	3	2									X					24031341-060
13	T102	WT	G	4/2/24	1147		7	2	3	2									X					24031341-061
14	XPW01	WT	G				2	1		1										X				24031341-062
15	XPW02	WT	G				2	1		1										X				24031341-063
16	XPW03	WT	G				2	1		1										X				24031341-064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q2 Rev 0	Tracy Carroll	4/2/24	1855	Paul DeStefano	4/2/24	1855	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tracy Carroll

SIGNATURE of SAMPLER: Tracy Carroll DATE Signed (MM/DD/YY): 4/2/24

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Y	N	

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp-Newton	Report To: Brian Voelker	Attention: Terry Hanratty
Address: 6725 N 500th St	Copy To: Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name: Vistra Corp
Newton, IL 62448	Sam Davies - samantha.davies@vistracorp.com	Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A213	WT	G				10	2	3	1	3	1						X						24031341-001
2	A214	WT	G				10	2	3	1	3	1						X						24031341-002
3	A215	WT	G				10	2	3	1	3	1						X						24031341-003
4	APW02	WT	G				4	2		2							X				X	X		24031341-004
5	APW03	WT	G				4	2		2							X				X	X		24031341-005
6	APW04	WT	G				4	2		2							X				X	X		24031341-006
7	APW05	WT	G				3	1		2							X					X	X	24031341-007
8	APW05S	WT	G				2	1		1							X				X			24031341-008
9	APW06	WT	G				2	1		1							X				X			24031341-009
10	APW07	WT	G				3	1		2							X					X	X	24031341-010
11	APW08	WT	G				3	1		2							X					X	X	24031341-011
12	APW09	WT	G				3	1		2							X					X	X	24031341-012
13	APW10	WT	G				2	1		1							X					X		24031341-013
14	APW11	WT	G				2	1		1							X					X		24031341-014
15	APW12	WT	G				2	1		1							X					X		24031341-015
16	APW13	WT	G				2	1		1							X					X		24031341-016

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
NEW-24Q2 Rev 0	Daniel Crump	4-3-24	5:39	Paul Gilley	4/3/24	17:39	-1.6	Y	N	
								X		

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brett Gillikan

SIGNATURE of SAMPLER: Brett Gillikan DATE Signed (MM/DD/YY): 4-3-24

Added H_2SO_4(94915)/NaOH(95443) to Samples.
pH 96SI/ 89660
HS OK PS 4/4/24

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

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Page: 2 of 5

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone	(217) 753-8911 Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager	
Profile #	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOLID/SOUD	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000					Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW14	WT	G				2	1		1							X			X								24031341-017
2	APW15	WT	G				2	1		1							X			X								24031341-018
3	APW16	WT	G				2	1		1							X			X								24031341-019
4	APW17	WT	G				3	1		2							X			X								24031341-020
5	APW18	WT	G	TB 4/3/24			2	1		1							X			X								24031341-021
6	G104	WT	G	~~4-3-24~~	~~1509~~		10	2	3	1	3	1							X									24031341-022
7	G105	WT	G	4-3-24	1231		10	2	3	1	3	1							X									24031341-023
8	G106	WT	G	4-3-24	~~1231~~ 1509		10	2	3	1	3	1							X									24031341-024
9	G116	WT	G				10	2	3	1	3	1							X		X							24031341-025
10	G125	WT	G	4-3-24	1400		10	2	3	1	3	1							X									24031341-026
11	G128	WT	G				10	2	3	1	3	1							X									24031341-027
12	G130	WT	G				10	2	3	1	3	1							X									24031341-028
13	G133	WT	G				10	2	3	1	3	1							X									24031341-029
14	G136	WT	G				10	2	3	1	3	1							X									24031341-030
15	G139	WT	G				10	2	3	1	3	1							X									24031341-031
16	G141	WT	G				10	2	3	1	3	1							X									24031341-032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
NEW-24Q2 Rev 0	Daniel Crump	4-3-24	5:37	Paul Beckerty	4/3/24	17:39	-1.6	Y	Y	
								Y		

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brett Gillman

SIGNATURE of SAMPLER: Brett Gillman DATE Signed (MM/DD/YY): 4-3-24

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Terry Hanratty
Address:	6725 N 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448		Sam Davies - samantha.davies@vistracorp.com	Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:	2285	Profile #:	

REGULATORY AGENCY		
NPDES	GROUND WATER	DRINKING WATER
UST	RCRA	OTHER
Site Location STATE:	IL	

Valid Matrix Codes: Drinking Water (DW), Water (WT), Waste Water (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Other (OT), Tissue (TS)

ITEM #	SAMPLE ID (A-Z, 0-9 / , -) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G208	WT	G				0											X						24031341-033
2	G217S	WT	G				10	2	3	1	3	1						X						24031341-034
3	G218	WT	G				0											X						24031341-035
4	G220	WT	G				0											X						24031341-036
5	G221	WT	G	4-3-24	1038		10	2	3	1	3	1						X						24031341-037
6	G222	WT	G				0											X						24031341-038
7	G223	WT	G				0											X						24031341-039
8	G224	WT	G				0											X						24031341-040
9	G225	WT	G				10	2	3	1	3	1						X						24031341-041
10	G230	WT	G				10	2	3	1	3	1						X						24031341-042
11	G231	WT	G				10	2	3	1	3	1						X						24031341-043
12	G232	WT	G				10	2	3	1	3	1						X						24031341-044
13	G233	WT	G				10	2	3	1	3	1						X						24031341-045
14	G234	WT	G	4-3-24	0958		10	2	3	1	3	1						X						24031341-046
15	L1R	WT	G				7	2	3	2									X					24031341-047
16	L201	WT	G				0												X					24031341-048

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
NEW-24Q2 Rev 0	Daniel Crump	4-3-24	5:39	Paul Schatz	4/3/24	17:39	-1.6	Y	N	
								X		

SAMPLER NAME AND SIGNATURE		
PRINT Name of SAMPLER:	Justin Culp	
SIGNATURE of SAMPLER:	Justin Culp	DATE Signed (MM/DD/YY): 4-3-24

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp-Newton	Report To: Brian Voelker	Attention: Terry Hanratty
Address: 6725 N 500th St	Copy To: Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name: Vistra Corp
Newton, IL 62448	Sam Davies - samantha.davies@vistracorp.com	Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY: NPDES GROUND WATER DRINKING WATER UST RCRA OTHER

Site Location STATE: IL

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	L202	WT	G				0												X					24031341-049
2	L203	WT	G				0												X					24031341-050
3	L204	WT	G				0												X					24031341-051
4	L205	WT	G				0												X					24031341-052
5	L301	WT	G				20	12	3	1	3	1						X						24031341-053
6	LREP	WT	G				8	4		1	3							X						24031341-054
7	R217D	WT	G				10	2	3	1	3	1						X						24031341-055
8	R219	WT	G				10	2	3	1	3	1						X						24031341-056
9	S101	WT	G				7	2	3	2									X					24031341-057
10	S102	WT	G				7	2	3	2									X					24031341-058
11	SG02	WT	G				0													X				24031341-059
12	T101	WT	G				7	2	3	2									X					24031341-060
13	T102	WT	G				7	2	3	2									X					24031341-061
14	XPW01	WT	G				2	1		1										X				24031341-062
15	XPW02	WT	G				2	1		1										X				24031341-063
16	XPW03	WT	G				2	1		1										X				24031341-064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
NEW-24Q2 Rev 0	Daniel Crump	4-3-24	5:34	Paul Gilbert	4/3/24	17:39	-1.6	Y	N	
								X		

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brett Gillihan

SIGNATURE of SAMPLER: Brett Gillihan

DATE Signed (MM/DD/YY): 4-3-24

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	XPW04	WT	G				2	1		1										X				24031341-065
2	XSG01	WT	G				0										X			X				24031341-066
3	Field Blank	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-067
4	A213 Duplicate	WT	G				10	2	3	1	3	1						X						24031341-068
5	APW02 Duplicate	WT	G				4	2		2							X			X	X			24031341-069
6	G104 Duplicate	WT	G				10	2	3	1	3	1							X					24031341-070
7	Equipment Blank 1	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-071
8	Equipment Blank 2	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-072
9	Equipment Blank 3	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-073
10																								
11																								
12																								
13																								
14																								
15																								
16																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q2 Rev 0	Daniel Crump	4-3-24	5:39	Paul Slattery	4/3/24	17:39

SAMPLE CONDITIONS			
Temp in °C	Received on ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
-1.6	Y	N	
	X		

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brett Gilchrist

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 4-3-24

Confidential

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Terry Hanratty
Address:	6725 N 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448		Sam Davies - samantha.davies@vistracorp.com	Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:	2285	Profile #	

REGULATORY AGENCY: NPDES | GROUND WATER | DRINKING WATER | UST | RCRA | OTHER

Site Location STATE: IL

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analysis Test: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000						Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A213	WT	G				10	2	3	1	3	1						X											24031341-001
2	A214	WT	G				10	2	3	1	3	1						X											24031341-002
3	A215	WT	G				10	2	3	1	3	1						X											24031341-003
4	APW02	WT	G				4	2		2							X				X	X							24031341-004
5	APW03	WT	G				4	2		2							X				X	X							24031341-005
6	APW04	WT	G				4	2		2							X				X	X							24031341-006
7	APW05	WT	G	4-4-24	1441		3	1		2							X					X	X						24031341-007
8	APW05S	WT	G				2	1		1							X				X								24031341-008
9	APW06	WT	G				2	1		1							X				X								24031341-009
10	APW07	WT	G				3	1		2							X					X	X						24031341-010
11	APW08	WT	G				3	1		2							X					X	X						24031341-011
12	APW09	WT	G				3	1		2							X					X	X						24031341-012
13	APW10	WT	G				2	1		1							X					X							24031341-013
14	APW11	WT	G	4-4-24	1400		2	1		1							X					X							24031341-014
15	APW12	WT	G	4-4-24	1254		2	1		1							X					X							24031341-015
16	APW13	WT	G				2	1		1							X					X							24031341-016

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q2 Rev 0	Daniel Crump	4-5-24	11:04	Whitney Quinn	4/5/24	1104	5 ✓ ✓ N ✓ 6

LTGHM

Added HNO_3 (916669) to Samples APW05, APW11, APW12, APW14, APW15, APW16, APW17, APW18, XPW01, XPW03, & XPW04 per 916651 NR 4/5

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brett Gillican

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 4/4/24

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Rec'd - Whitney Quinn

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW14	WT	G	4/4/24	1427		2	1		1								X			X				24031341-017
2	APW15	WT	G	4/4/24	1048		2	1		1								X			X				24031341-018
3	APW16	WT	G	4/4/24	1143		2	1		1								X			X				24031341-019
4	APW17	WT	G	4/4/24	1238		3	1		2								X			X				24031341-020
5	APW18	WT	G	4/4/24	1335		2	1		1								X			X				24031341-021
6	G104	WT	G				10	2	3	1	3	1								X					24031341-022
7	G105	WT	G				10	2	3	1	3	1								X					24031341-023
8	G106	WT	G				10	2	3	1	3	1								X					24031341-024
9	G116	WT	G				10	2	3	1	3	1								X		X			24031341-025
10	G125	WT	G				10	2	3	1	3	1								X					24031341-026
11	G128	WT	G				10	2	3	1	3	1								X					24031341-027
12	G130	WT	G				10	2	3	1	3	1								X					24031341-028
13	G133	WT	G				10	2	3	1	3	1								X					24031341-029
14	G136	WT	G				10	2	3	1	3	1								X					24031341-030
15	G139	WT	G				10	2	3	1	3	1								X					24031341-031
16	G141	WT	G				10	2	3	1	3	1								X					24031341-032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
NEW-24Q2 Rev 0	Daniel Crump	4-5-24	11:04	Whitney Quinn	4/5/24	1104		Y	Y	
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tracy Conrad

SIGNATURE of SAMPLER: Tracy Conrad DATE Signed (MM/DD/YY): 4/4/24

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

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Section A Required Client Information:

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Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	L202	WT	G				0												X					24031341-049
2	L203	WT	G				0												X					24031341-050
3	L204	WT	G				0												X					24031341-051
4	L205	WT	G				0												X					24031341-052
5	L301	WT	G				20	12	3	1	3	1						X						24031341-053
6	LREP	WT	G				8	4		1	3							X						24031341-054
7	R217D	WT	G				10	2	3	1	3	1						X						24031341-055
8	R219	WT	G				10	2	3	1	3	1						X						24031341-056
9	S101	WT	G				7	2	3	2									X					24031341-057
10	S102	WT	G				7	2	3	2									X					24031341-058
11	SG02	WT	G				0													X				24031341-059
12	T101	WT	G				7	2	3	2									X					24031341-060
13	T102	WT	G				7	2	3	2									X					24031341-061
14	XPW01	WT	G	4-4-24	1031		2	1		1										X				24031341-062
15	XPW02	WT	G	〃	1107		2	1		1										X				24031341-063
16	XPW03	WT	G	〃	1220		2	1		1										X				24031341-064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q2 Rev 0	Daniel Crump	4-5-24	11:04	Whitney Quinn	4/5/24	1104

SAMPLE CONDITIONS

	Y	N	
Temp in °C			
Received on ice (Y/N)			
Custody Sealed Cooler (Y/N)			
Samples Intact (Y/N)			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brett Gilliham

SIGNATURE of SAMPLER: Brett Gilliham

DATE Signed (MM/DD/YY): 4/4/24

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

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Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	XPW04	WT	G	4-4-24	1139		2	1		1										X				24031341-065
2	XSG01	WT	G				0										X			X				24031341-066
3	Field Blank	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-067
4	A213 Duplicate	WT	G				10	2	3	1	3	1						X						24031341-068
5	APW02 Duplicate	WT	G				4	2		2							X			X	X			24031341-069
6	G104 Duplicate	WT	G				10	2	3	1	3	1							X					24031341-070
7	Equipment Blank 1	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-071
8	Equipment Blank 2	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-072
9	Equipment Blank 3	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-073
10																								
11																								
12																								
13																								
14																								
15																								
16																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q2 Rev 0	Daniel Crump	4-5-24	11:04	Whitney Oberle	4/5/24	1104

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Y	N	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bret A Gillihan

SIGNATURE of SAMPLER: Bret A Gillihan

DATE Signed (MM/DD/YY): 4/4/24

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

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Page: 1 of 5

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Terry Hanratty
Address:	6725 N 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448		Sam Davies - samantha.davies@vistracorp.com	Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:	2285	Profile #:	

REGULATORY AGENCY: NPDES, GROUND WATER, DRINKING WATER, UST, RCRA, OTHER

Site Location STATE: IL

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A213	WT	G				10	2	3	1	3	1						X						24031341-001
2	A214	WT	G				10	2	3	1	3	1						X						24031341-002
3	A215	WT	G				10	2	3	1	3	1						X						24031341-003
4	APW02	WT	G				4	2		2							X			X	X			24031341-004
5	APW03	WT	G				4	2		2							X			X	X			24031341-005
6	APW04	WT	G				4	2		2							X			X	X			24031341-006
7	APW05	WT	G				3	1		2							X				X	X		24031341-007
8	APW05S	WT	G				2	1		1							X			X				24031341-008
9	APW06	WT	G				2	1		1							X			X				24031341-009
10	APW07	WT	G				3	1		2							X				X	X		24031341-010
11	APW08	WT	G	4/8/24	1407		3	1		2							X				X	X		24031341-011
12	APW09	WT	G				3	1		2							X				X	X		24031341-012
13	APW10	WT	G	4/8/24	1222		2	1		1							X				X			24031341-013
14	APW11	WT	G				2	1		1							X				X			24031341-014
15	APW12	WT	G				2	1		1							X				X			24031341-015
16	APW13	WT	G	4/8/24	1329		2	1		1							X				X			24031341-016

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
NEW-24Q2 Rev 0	J. Colp	4-8	1725	Paul Schultz	4/8	1725	4.8°C	Y	N	
							4.6°C			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 4-8-24

PHS pH 9.05/8.96

Added H_2SO_4 (84915), HNO_3 (16969), NaOH (85993)

Filtered samples 01R, 5101, 5102 in lab.

PS 4/9/24

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

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Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
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Email To:	Brian.Voelker@VistraCorp.com
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Report To:	Brian Voelker
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	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference	
Project Manager	
Profile #	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
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OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW14	WT	G				2	1		1							X			X				24031341-017
2	APW15	WT	G				2	1		1							X			X				24031341-018
3	APW16	WT	G				2	1		1							X			X				24031341-019
4	APW17	WT	G				3	1		2							X			X				24031341-020
5	APW18	WT	G				2	1		1							X			X				24031341-021
6	G104	WT	G	4-8-24	1306		10	2	3	1	3	1							X					24031341-022
7	G105	WT	G				10	2	3	1	3	1							X					24031341-023
8	G106	WT	G				10	2	3	1	3	1							X					24031341-024
9	G116	WT	G				10	2	3	1	3	1							X		X			24031341-025
10	G125	WT	G				10	2	3	1	3	1							X					24031341-026
11	G128	WT	G				10	2	3	1	3	1							X					24031341-027
12	G130	WT	G				10	2	3	1	3	1							X					24031341-028
13	G133	WT	G				10	2	3	1	3	1							X					24031341-029
14	G136	WT	G				10	2	3	1	3	1							X					24031341-030
15	G139	WT	G				10	2	3	1	3	1							X					24031341-031
16	G141	WT	G				10	2	3	1	3	1							X					24031341-032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
NEW-24Q2 Rev 0	J. Colp	4-8	1725	Paul DeBroy	4/8	1725		Y	Y	
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: Justin Colp DATE Signed (MM/DD/YY): 4-8-24

Confidential

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

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Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
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Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

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Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G208	WT	G				0											X						24031341-033
2	G217S	WT	G				10	2	3	1	3	1						X						24031341-034
3	G218	WT	G				0											X						24031341-035
4	G220	WT	G				0											X						24031341-036
5	G221	WT	G				10	2	3	1	3	1						X						24031341-037
6	G222	WT	G				0											X						24031341-038
7	G223	WT	G				0											X						24031341-039
8	G224	WT	G				0											X						24031341-040
9	G225	WT	G				10	2	3	1	3	1						X						24031341-041
10	G230	WT	G				10	2	3	1	3	1						X						24031341-042
11	G231	WT	G				10	2	3	1	3	1						X						24031341-043
12	G232	WT	G				10	2	3	1	3	1						X						24031341-044
13	G233	WT	G				10	2	3	1	3	1						X						24031341-045
14	G234	WT	G				10	2	3	1	3	1						X						24031341-046
15	L1R Filter in lab	WT	G	4-8-24	1554		7	2	3	2									X					24031341-047
16	L201	WT	G				0												X					24031341-048

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q2 Rev 0	J. Colp	4-8	1725	Paul Hackett	4/8	1725

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Y	N	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: Justin Colp

DATE Signed (MM/DD/YY): 4-8-24

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	L202	WT	G				0												X					24031341-049
2	L203	WT	G				0												X					24031341-050
3	L204	WT	G				0												X					24031341-051
4	L205	WT	G				0												X					24031341-052
5	L301 inoperable	WT	G	4-8-24	N/A		20	12	3	1	3	1						X						24031341-053
6	LREP	WT	G				8	4		1	3							X						24031341-054
7	R217D	WT	G	4-8-24	1153		10	2	3	1	3	1						X						24031341-055
8	R219	WT	G				10	2	3	1	3	1						X						24031341-056
9	S101 Filter in lab	WT	G	4-8-24	1215		7	2	3	2									X					24031341-057
10	S102 Filter in lab	WT	G	4-8-24	1227		7	2	3	2									X					24031341-058
11	SG02	WT	G				0													X				24031341-059
12	T101	WT	G				7	2	3	2									X					24031341-060
13	T102	WT	G				7	2	3	2									X					24031341-061
14	XPW01	WT	G				2	1		1										X				24031341-062
15	XPW02	WT	G				2	1		1										X				24031341-063
16	XPW03	WT	G				2	1		1										X				24031341-064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q2 Rev 0	J. Colp	4-8	1725	Rand Dr Dusty IV	4/8	1725	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: Justin Colp

DATE Signed (MM/DD/YY): 4-8-24

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Y	N	

CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 5 of 5

Section A Required Client Information:

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Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	XPW04	WT	G				2	1		1										X				24031341-065
2	XSG01	WT	G				0										X			X				24031341-066
3	Field Blank	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-067
4	A213 Duplicate	WT	G				10	2	3	1	3	1						X						24031341-068
5	APW02 Duplicate	WT	G				4	2		2							X			X	X			24031341-069
6	G104 Duplicate	WT	G	4-8-24	1306		10	2	3	1	3	1							X					24031341-070
7	Equipment Blank 1	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-071
8	Equipment Blank 2	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-072
9	Equipment Blank 3	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-073
10																								
11																								
12																								
13																								
14																								
15																								
16																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q2 Rev 0	J. Colp	4-8	1725	Paul Eckhoff	4/8	1725	

SAMPLER NAME AND SIGNATURE						
PRINT Name of SAMPLER:	Justin Colp			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
SIGNATURE of SAMPLER:	Justin Colp	DATE Signed (MM/DD/YY):	4-8-24		Y	N	

CHAIN-OF-CUSTODY / Analytical Request Document

2403134 1

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Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A213	WT	G	4-9-24	1128		10	2	3	1	3	1						X						24031341-001
2	A214	WT	G	4-9-24	1044		10	2	3	1	3	1						X						24031341-002
3	A215	WT	G	4-9-24	0952		10	2	3	1	3	1						X						24031341-003
4	APW02	WT	G	4/9/24	1156		4	2		2							X			X	X			24031341-004
5	APW03	WT	G	4/9/24	1055		4	2		2							X			X	X			24031341-005
6	APW04	WT	G	4/9/24	954		4	2		2							X			X	X			24031341-006
7	APW05	WT	G				3	1		2							X				X	X		24031341-007
8	APW05S	WT	G				2	1		1							X			X				24031341-008
9	APW06	WT	G	4-9-24	1744		2	1		1							X			X				24031341-009
10	APW07	WT	G	4-9-24	1220		3	1		2							X				X	X		24031341-010
11	APW08	WT	G				3	1		2							X				X	X		24031341-011
12	APW09	WT	G	4-9-24	1312		3	1		2							X				X	X		24031341-012
13	APW10	WT	G				2	1		1							X				X			24031341-013
14	APW11	WT	G				2	1		1							X				X			24031341-014
15	APW12	WT	G				2	1		1							X				X			24031341-015
16	APW13	WT	G				2	1		1							X				X			24031341-016

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q2 Rev 0	Daniel Crisp	4-9	6:18	Paul Schultz	4/9/24	1818	0.2 Y N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: Justin Colp

DATE Signed (MM/DD/YY): 4-9-24

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Added HNO_3 (pH<2), H_2SO_4 (pH<2), NaOH (pH>9)
pH 96651/89660

OK HS 8S 4/10/24

HNO_3 added to A215, APW02DUP, APW09
H_2SO_4 added to A215, A214, A213, A213DUP, R219, G2175, G141
NaOH added to A215, A214, A213

Confidential

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

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Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager	
Profile #	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW14	WT	G				2	1		1							X			X				24031341-017
2	APW15	WT	G				2	1		1							X			X				24031341-018
3	APW16	WT	G				2	1		1							X			X				24031341-019
4	APW17	WT	G				3	1		2							X			X				24031341-020
5	APW18	WT	G				2	1		1							X			X				24031341-021
6	G104	WT	G				10	2	3	1	3	1							X					24031341-022
7	G105	WT	G				10	2	3	1	3	1							X					24031341-023
8	G106	WT	G				10	2	3	1	3	1							X					24031341-024
9	G116	WT	G				10	2	3	1	3	1							X		X			24031341-025
10	G125	WT	G				10	2	3	1	3	1							X					24031341-026
11	G128	WT	G				10	2	3	1	3	1							X					24031341-027
12	G130	WT	G	4/9/24	1406		10	2	3	1	3	1							X					24031341-028
13	G133	WT	G	4/9/24	1518		10	2	3	1	3	1							X					24031341-029
14	G136	WT	G				10	2	3	1	3	1							X					24031341-030
15	G139	WT	G	4/9/24	1321		10	2	3	1	3	1							X					24031341-031
16	G141	WT	G	4-9-24	1439		10	2	3	1	3	1							X					24031341-032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q2 Rev 0	Daniel Crump	4-9	6:18	Paul Ecklatty	4/9/24	1818	02 (Y) Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: Justin Colp DATE Signed (MM/DD/YY): 4-9-24

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

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Section A Required Client Information:

Company:	Vistra Corp-Newton
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Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
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Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference	
Project Manager	
Profile #	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
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AIR	AR
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Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G208	WT	G				0											X						24031341-033
2	G217S	WT	G	4-9-24	1341		10	2	3	1	3	1						X						24031341-034
3	G218	WT	G				0											X						24031341-035
4	G220	WT	G				0											X						24031341-036
5	G221	WT	G				10	2	3	1	3	1						X						24031341-037
6	G222	WT	G				0											X						24031341-038
7	G223	WT	G				0											X						24031341-039
8	G224	WT	G				0											X						24031341-040
9	G225	WT	G				10	2	3	1	3	1						X						24031341-041
10	G230	WT	G				10	2	3	1	3	1						X						24031341-042
11	G231	WT	G				10	2	3	1	3	1						X						24031341-043
12	G232	WT	G				10	2	3	1	3	1						X						24031341-044
13	G233	WT	G				10	2	3	1	3	1						X						24031341-045
14	G234	WT	G				10	2	3	1	3	1						X						24031341-046
15	L1R	WT	G				7	2	3	2									X					24031341-047
16	L201	WT	G				0												X					24031341-048

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q2 Rev 0	Daniel Crupp	4-9	6:18	Paul Gilbert	4/9/24	1818	0.2 (Y) N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: Justin Colp

DATE Signed (MM/DD/YY): 4-9-24

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 4 of 5

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Project Name:	
Project Number:	2285

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Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	L202	WT	G				0												X					24031341-049
2	L203	WT	G				0												X					24031341-050
3	L204	WT	G				0												X					24031341-051
4	L205	WT	G				0												X					24031341-052
5	L301	WT	G				20	12	3	1	3	1						X						24031341-053
6	LREP	WT	G				8	4		1	3							X						24031341-054
7	R217D	WT	G				10	2	3	1	3	1						X						24031341-055
8	R219	WT	G	4-9-24	1407		10	2	3	1	3	1						X						24031341-056
9	S101	WT	G				7	2	3	2									X					24031341-057
10	S102	WT	G				7	2	3	2									X					24031341-058
11	SG02	WT	G				0													X				24031341-059
12	T101	WT	G				7	2	3	2									X					24031341-060
13	T102	WT	G				7	2	3	2									X					24031341-061
14	XPW01	WT	G				2	1		1										X				24031341-062
15	XPW02	WT	G				2	1		1										X				24031341-063
16	XPW03	WT	G				2	1		1										X				24031341-064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
NEW-24Q2 Rev 0	Daniel Crump	4-9	6:18	Bart Eckley	4/9/24	1818	0.2	Y	N	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 4-9-24

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N: Analysis Test	NEW-257-501	NEW-811-502	NEW-811-503	NEW-846-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	XPW04	WT	G				2	1		1										X				24031341-065
2	XSG01	WT	G				0										X			X				24031341-066
3	Field Blank	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-067
4	A213 Duplicate	WT	G	4-9-24	1128		10	2	3	1	3	1						X						24031341-068
5	APW02 Duplicate	WT	G	4/9/24	1156		4	2		2							X			X	X			24031341-069
6	G104 Duplicate	WT	G				10	2	3	1	3	1							X					24031341-070
7	Equipment Blank 1	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-071
8	Equipment Blank 2	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-072
9	Equipment Blank 3	WT	G				22	14	3	1	3	1					X	X	X	X	X	X		24031341-073
10																								
11																								
12																								
13																								
14																								
15																								
16																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
NEW-24Q2 Rev 0	Daniel Crump	4-9	6:18		4/9/24	1818	0.2	Y	N	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 4-9-24

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

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	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW14	WT	G				2	1		1							X			X				24031341-017
2	APW15	WT	G				2	1		1							X			X				24031341-018
3	APW16	WT	G				2	1		1							X			X				24031341-019
4	APW17	WT	G				3	1		2							X			X				24031341-020
5	APW18	WT	G				2	1		1							X			X				24031341-021
6	G104	WT	G				10	2	3	1	3	1							X					24031341-022
7	G105	WT	G				10	2	3	1	3	1							X					24031341-023
8	G106	WT	G				10	2	3	1	3	1							X					24031341-024
9	G116	WT	G	4-10-24	1051		10	2	3	1	3	1							X		X			24031341-025
10	G125	WT	G				10	2	3	1	3	1							X					24031341-026
11	G128	WT	G	4-10-24	0956		10	2	3	1	3	1							X					24031341-027
12	G130	WT	G				10	2	3	1	3	1							X					24031341-028
13	G133	WT	G				10	2	3	1	3	1							X					24031341-029
14	G136	WT	G	4-10-24	1048		10	2	3	1	3	1							X					24031341-030
15	G139	WT	G				10	2	3	1	3	1							X					24031341-031
16	G141	WT	G				10	2	3	1	3	1							X					24031341-032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q2 Rev 0	Daniel Crump	4-10	3:16	[signature]	4/10/24	1516	

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
10.5	Y	Y	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 4-10-24

Filtered FB + EQ Blank 1 in lab

Added H_2SO_4 (99915) to FB + EQ Blank 1

Added HNO_3 (91869) to FB + EQ Blank 1

pH ✓ 91691/89160 BHS

UTG7

CHAIN-OF-CUSTODY / Analytical Request Document

24031341

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Company:	Vistra Corp-Newton
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Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference	
Project Manager	
Profile #	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	XPW04	WT	G				2	1		1											X				24031341-065
2	XSG01	WT	G				0											X			X				24031341-066
3	Field Blank	WT	G	4-10-24	1045		22	14	3	1	3	1						X	X	X	X	X	X		24031341-067
4	A213 Duplicate	WT	G				10	2	3	1	3	1							X						24031341-068
5	APW02 Duplicate	WT	G				4	2		2								X			X	X			24031341-069
6	G104 Duplicate	WT	G				10	2	3	1	3	1								X					24031341-070
7	Equipment Blank 1	WT	G	4-10-24	3:16		22	14	3	1	3	1						X	X	X	X	X	X		24031341-071
8	Equipment Blank 2	WT	G				22	14	3	1	3	1						X	X	X	X	X	X		24031341-072
9	Equipment Blank 3	WT	G				22	14	3	1	3	1						X	X	X	X	X	X		24031341-073
10																									
11																									
12																									
13																									
14																									
15																									
16																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q2 Rev 0	Daniel Crump	4-10	3:16	[signature]	4/10/24	1516

SAMPLE CONDITIONS

	Y	N	
Temp in °C			
Received on Ice (Y/N)			
Custody Sealed Cooler (Y/N)			
Samples Intact (Y/N)			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 4-10-24

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Summary
Newton- 2Q 2024

			Weather				Well Condition				
WO Sample	Well ID	Program/ Sample Type	Temp (°F)	Precipitation	Wind Direction	Sky	Well Pad	Casing	Protective Cover	Reference Mark/ ID	Well Locked
001	A213	Groundwater Sample	64.0	None	W	Cloudy	Good	Good	Good	Yes	Yes
002	A214	Groundwater Sample	57.0	None	W	Cloudy	Good	Good	Good	Yes	Yes
003	A215	Groundwater Sample	57.0	None	W	Cloudy	Good	Good	Good	Yes	Yes
004	APW02	Groundwater Sample	65.0	None	W	Partly cloudy	Good	Good	Good	Yes	Yes
005	APW03	Groundwater Sample	65.0	None	W	Partly cloudy	Good	Good	Good	Yes	Yes
006	APW04	Groundwater Sample	59.0	None	W	Cloudy	Good	Good	Good	Yes	Yes
007	APW05	Groundwater Sample	44.0	None	N	Cloudy	Good	Good	Good	Yes	Yes
008	APW05S	Groundwater Sample	62.0	None	NW	Cloudy	Good	Good	Good	Yes	Yes
009	APW06	Groundwater Sample	64.0	None	W	Cloudy	Good	Good	Good	Yes	Yes
010	APW07	Groundwater Sample	64.0	None	W	Cloudy	Good	Good	Good	Yes	Yes
011	APW08	Groundwater Sample	72.0	None	W	Clear	Good	Good	Good	Yes	Yes
012	APW09	Groundwater Sample	69.0	None	W	Cloudy	Good	Good	Good	Yes	Yes
013	APW10	Groundwater Sample	70.0	None	W	Clear	Good	Good	Good	Yes	Yes
014	APW11	Groundwater Sample	43.0	None	NE	Cloudy	Good	Good	Good	Yes	Yes
015	APW12	Groundwater Sample	43.0	None	NE	Cloudy	Good	Good	Good	Yes	Yes
016	APW13	Groundwater Sample	70.0	None	W	Clear	Good	Good	Good	Yes	Yes
017	APW14	Groundwater Sample	36.0	None	E	Cloudy	Good	Good	Good	Yes	Yes
018	APW15	Groundwater Sample	37.0	None	E	Cloudy	Good	Good	Good	Yes	Yes
019	APW16	Groundwater Sample	38.0	None	E	Cloudy	Good	Good	Good	Yes	Yes
020	APW17	Groundwater Sample	37.0	None	E	Cloudy	Good	Good	Good	Yes	Yes
021	APW18	Groundwater Sample	36.0	None	E	Cloudy	Good	Good	Good	Yes	Yes
022	G104	Groundwater Sample	65.0	None	S	Partly cloudy	Good	Good	Good	Yes	Yes
023	G105	Groundwater Sample	43.0	Light	NE	Cloudy	Good	Good	Good	Yes	Yes
024	G106	Groundwater Sample	42.0	Light	NE	Cloudy	Good	Good	Good	Yes	Yes
025	G116	Groundwater Sample	60.0	Light	E	Cloudy	Good	Good	Good	Yes	Yes
026	G125	Groundwater Sample	44.0	Light	N	Partly cloudy	Good	Good	Good	Yes	Yes
027	G128	Groundwater Sample	60.0	None	W	Cloudy	Good	Good	Good	Yes	Yes
028	G130	Groundwater Sample	72.0	None	W	Clear	Good	Good	Good	Yes	Yes
029	G133	Groundwater Sample	73.0	None	W	Clear	Good	Good	Good	Yes	Yes
030	G136	Groundwater Sample	70.0	None	W	Clear	Good	Good	Good	Yes	Yes
031	G139	Groundwater Sample	72.0	None	W	Clear	Other (see note)	Good	Good	Yes	Yes
032	G141	Groundwater Sample	71.0	None	W	Cloudy	Good	Good	Good	Yes	Yes
033	G208	DTW Only	72.0	None	S	Clear	Good	Other (see note)	Good	Yes	No
034	G217S	Groundwater Sample	70.0	None	W	Cloudy	Good	Good	Good	Yes	Yes
035	G218	DTW Only	72.0	None	S	Clear	Good	Good	Good	Yes	Yes
036	G220	DTW Only	72.0	None	S	Clear	Good	Good	Good	Yes	Yes
037	G221	Groundwater Sample	42.0	None	NE	Partly cloudy	Good	Good	Good	Yes	Yes
038	G222	DTW Only	72.0	None	S	Clear	Good	Good	Good	Yes	Yes
039	G223	DTW Only	72.0	None	S	Clear	Good	Good	Good	Yes	Yes
040	G224	DTW Only	72.0	None	S	Clear	Good	Good	Good	Yes	Yes
041	G225	Groundwater Sample	62.0	Light	NW	Cloudy	Good	Good	Good	Yes	Yes
042	G230	Groundwater Sample	64.0	Heavy	S	Cloudy	Good	Good	Good	Yes	Yes

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Summary
Newton- 2Q 2024

			Weather				Well Condition				
WO Sample	**Well ID**	**Program/ Sample Type**	**Temp (°F)**	**Precipitation**	**Wind Direction**	**Sky**	**Well Pad**	**Casing**	**Protective Cover**	**Reference Mark/ ID**	**Well Locked**
043	G231	Groundwater Sample	67.0	Light	S	Cloudy	Good	Good	Good	Yes	Yes
044	G232	Groundwater Sample	67.0	Light	S	Cloudy	Good	Good	Good	Yes	Yes
045	G233	Groundwater Sample	69.0	None	S	Partly cloudy	Good	Good	Good	Yes	Yes
046	G234	Groundwater Sample	41.0	None	W	Cloudy	Good	Good	Good	Yes	Yes
047	L1R	Leachate Sample	73.0	None	S	Partly cloudy	Good	Good	Good	Yes	Yes
048	L201	DTW Only	72.0	None	S	Clear	Good	Good	Good	Yes	Yes
049	L202	DTW Only	72.0	None	S	Clear	Good	Good	Good	Yes	Yes
050	L203	DTW Only	72.0	None	S	Clear	Good	Good	Good	Yes	Yes
051	L204	DTW Only	72.0	None	S	Clear	Good	Good	Good	Yes	Yes
052	L205	DTW Only	72.0	None	S	Clear	Good	Good	Good	Yes	Yes
053	L301	Leachate Sample									
054	LREP	Leachate Sample									
055	R217D	Groundwater Sample	65.0	None	S	Partly cloudy	Good	Good	Good	Yes	Yes
056	R219	Groundwater Sample	70.0	None	W	Cloudy	Good	Good	Good	Yes	Yes
057	S101	Groundwater Sample	65.0	None	S	Partly cloudy					
058	S102	Groundwater Sample	65.0	None	S	Partly cloudy					
059	SG02	DTW Only	72.0	None	S	Clear					
060	T101	Groundwater Sample	61.0	Light	NW	Cloudy	Good	Good	Good	Yes	Yes
061	T102	Groundwater Sample	61.0	Light	NW	Cloudy	Good	Good	Good	Yes	Yes
062	XPW01	Groundwater Sample	37.0	None	NW	Cloudy	Good	Good	Good	Yes	Yes
063	XPW02	Groundwater Sample	39.0	None	NW	Cloudy	Good	Good	Good	Yes	Yes
064	XPW03	Groundwater Sample	40.0	None	NW	Cloudy	Good	Good	Good	Yes	Yes
065	XPW04	Groundwater Sample	40.0	None	NW	Cloudy	Good	Good	Good	Yes	Yes
066	XSG01	DTW Only	72.0	None	S	Clear					
067	Field Blank	QA/QC Sample	60.0	Light	E	Cloudy					
068	A213 Duplicate	QA/QC Sample	64.0	None	W	Cloudy	Good	Good	Good	Yes	Yes
069	APW02 Duplicate	QA/QC Sample	65.0	None	W	Partly cloudy	Good	Good	Good	Yes	Yes
070	G104 Duplicate	QA/QC Sample	65.0	None	S	Partly cloudy	Good	Good	Good	Yes	Yes
071	Equipment Blank 1	QA/QC Sample	70.0	None	W	Clear					

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Summary
Newton- 2Q 2024

		GW Level Measurement				Purge Activities							
WO Sample	Well ID	Sampler Initials	Date/Time	DTW (ft)	DTB (ft)	Sampler Initials	Purge Date	Purge Start Time	Purge End Time	Purging Device	Well Diameter (in)	Actual Volume Purged (L)	Purge Rate (mL/min)
001	A213	JC	4/9/24 10:57	18.34	60.99	JC	4/9/2024	10:57	11:28	Bladder Pump	2"	6.0	193.5
002	A214	JC	4/9/24 10:14	41.07	75.52	JC	4/9/2024	10:11	10:44	Submersible Pump	2"	19.0	**575.8**
003	A215	JC	4/9/24 9:00	44.17	78.10	JC	4/9/2024	09:05	09:52	Submersible Pump	2"	25.0	**531.9**
004	APW02	TAC	4/9/24 11:31	3.93	23.70	PY	4/9/2024	11:35	11:56	Peristaltic Pump	2"	4.5	214.3
005	APW03	TAC	4/9/24 10:35	5.96	24.00	PY	4/9/2024	10:35	10:55	Peristaltic Pump	2"	4.0	200.0
006	APW04	PY	4/9/24 9:09	4.92	21.60	PY	4/9/2024	09:10	09:54	Peristaltic Pump	2"	6.5	147.7
007	APW05	BG	4/4/24 14:22	14.98	70.80	BG	4/4/2024	14:22	14:41	Bladder Pump	2"	5.0	263.2
008	APW05S	TAC	4/2/24 13:18	9.79	22.90	BG	4/2/2024	13:18	13:52	Peristaltic Pump	2"	3.0	88.2
009	APW06	JC	4/9/24 12:29	19.18	76.10	JC	4/9/2024	12:30	12:44	Submersible Pump	2"	3.0	214.3
010	APW07	JC	4/9/24 11:56	46.90	85.80	JC	4/9/2024	12:00	12:20	Submersible Pump	2"	4.0	200.0
011	APW08	TAC	4/8/24 13:48	37.78	84.20	PY	4/8/2024	13:48	14:07	Bladder Pump	2"	4.5	236.8
012	APW09	JC	4/9/24 12:59	26.46	65.00	JC	4/9/2024	13:00	13:12	Submersible Pump	2"	3.5	291.7
013	APW10	PY	4/8/24 11:30	17.95	48.70	TAC	4/8/2024	11:30	12:22	Bladder Pump	2"	14.0	269.2
014	APW11	BG	4/4/24 13:10	24.35	67.60	BG	4/4/2024	13:10	14:00	Bladder Pump	2"	11.0	220.0
015	APW12	BG	4/4/24 12:39	14.75	33.00	BG	4/4/2024	12:40	12:54	Bladder Pump	2"	4.0	285.7
016	APW13	TAC	4/8/24 12:44	32.24	66.30	TAC	4/8/2024	12:45	13:19	Bladder Pump	2"	6.5	191.2
017	APW14	TAC	4/4/24 14:01	20.70	57.40	TAC	4/4/2024	14:01	14:27	Bladder Pump	2"	4.5	173.1
018	APW15	TAC	4/4/24 9:58	20.96	105.60	TAC	4/4/2024	09:58	10:48	Bladder Pump	2"	10.0	200.0
019	APW16	TAC	4/4/24 11:19	40.14	87.50	TAC	4/4/2024	11:19	11:43	Bladder Pump	2"	7.0	291.7
020	APW17	TAC	4/4/24 12:19	41.25	94.70	TAC	4/4/2024	12:19	12:38	Bladder Pump	2"	5.0	263.2
021	APW18	TAC	4/4/24 13:08	51.81	82.70	TAC	4/4/2024	13:08	13:35	Bladder Pump	2"	9.0	333.3
022	G104	JC	4/8/24 12:38	4.45	42.96	JC	4/8/2024	12:39	13:06	Bladder Pump	2"	5.0	185.2
023	G105	BG	4/3/24 14:24	8.41	25.80	BG	4/3/2024	14:24	15:08	Submersible Pump	2"	4.0	90.9
024	G106	BG	4/3/24 11:19	24.00	35.70	BG	4/3/2024	11:19	12:31	Bladder Pump	2"	6.0	83.3
025	G116	JC	4/10/24 10:33	6.43	21.80	JC	4/10/2024	10:39	10:51	Submersible Pump	2"	5.0	**416.7**
026	G125	BG	4/3/24 13:10	3.86	22.80	BG	4/3/2024	13:10	14:00	Submersible Pump	2"	5.0	100.0
027	G128	TAC	4/10/24 9:34	4.40	30.20	PY	4/10/2024	09:34	09:56	Peristaltic Pump	2"	5.0	227.3
028	G130	TAC	4/9/24 13:45	4.63	21.90	PY	4/9/2024	13:45	14:06	Peristaltic Pump	2"	6.0	285.7
029	G133	PY	4/9/24 14:38	9.12	27.90	PY	4/9/2024	14:38	15:18	Peristaltic Pump	2"	5.5	137.5
030	G136	TAC	4/10/24 10:24	7.37	22.30	PY	4/10/2024	10:25	10:48	Peristaltic Pump	2"	5.5	239.1
031	G139	PY	4/9/24 12:57	6.01	22.90	PY	4/9/2024	12:58	13:21	Peristaltic Pump	2"	5.0	217.4
032	G141	JC	4/9/24 14:18	11.39	25.32	JC	4/9/2024	14:20	14:39	Submersible Pump	2"	6.0	315.8
033	G208	JC	4/1/24 15:18	N/A	96.60								
034	G217S	JC	4/9/24 13:27	6.23	21.40	JC	4/9/2024	13:27	13:41	Submersible Pump	2"	3.5	250.0
035	G218	JC	4/1/24 14:12	19.33	90.60								
036	G220	JC	4/1/24 14:09	18.14	88.40								
037	G221	BG	4/3/24 9:48	24.50	86.90	BG	4/3/2024	09:48	10:38	Bladder Pump	2"	5.0	100.0
038	G222	JC	4/1/24 13:53	17.23	81.30								
039	G223	JC	4/1/24 14:18	32.81	91.00								
040	G224	JC	4/1/24 14:40	42.40	75.50								
041	G225	TAC	4/2/24 12:07	7.45	24.70	BG	4/2/2024	12:08	12:52	Peristaltic Pump	2"	5.5	125.0
042	G230	JC	4/2/24 9:28	47.60	81.03	JC	4/2/2024	09:30	10:34	Bladder Pump	2"	10.0	156.3

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Summary
Newton- 2Q 2024

		GW Level Measurement				Purge Activities							
WO Sample	**Well ID**	**Sampler Initials**	**Date/Time**	**DTW (ft)**	**DTB (ft)**	**Sampler Initials**	**Purge Date**	**Purge Start Time**	**Purge End Time**	**Purging Device**	**Well Diameter (in)**	**Actual Volume Purged (L)**	**Purge Rate (mL/min)**
043	G231	JC	4/2/24 11:05	46.92	79.76	JC	4/2/2024	11:05	12:13	Bladder Pump	2"	7.0	102.9
044	G232	JC	4/2/24 12:29	45.35	77.66	JC	4/2/2024	12:30	13:34	Bladder Pump	2"	9.0	140.6
045	G233	JC	4/2/24 13:53	41.60	76.24	JC	4/2/2024	13:53	14:41	Bladder Pump	2"	10.0	208.3
046	G234	JC	4/3/24 8:47	43.20	73.81	JC	4/3/2024	08:47	09:58	Bladder Pump	2"	15.0	211.3
047	L1R	JC	4/8/24 13:52	54.72	60.11	JC	4/8/2024	13:54	13:54	Bailer	2"		
048	L201	JC	4/1/24 14:53	35.63	N/A								
049	L202	JC	4/1/24 14:50	37.45	N/A								
050	L203	JC	4/1/24 14:57	29.99	N/A								
051	L204	JC	4/1/24 14:45	48.03	N/A								
052	L205	JC	4/1/24 15:01	32.04	N/A								
053	L301				N/A								
054	LREP				-								
055	R217D	JC	4/8/24 11:36	18.09	67.80	JC	4/8/2024	11:30	11:53	Bladder Pump	2"	4.0	173.9
056	R219	JC	4/9/24 13:55	20.22	64.27	JC	4/9/2024	13:56	14:07	Submersible Pump	2"	3.0	272.7
057	S101					JC	4/8/2024	12:15	12:15	Direct Grab	2"		
058	S102					JC	4/8/2024	12:27	12:27	Direct Grab	2"		
059	SG02	JC	4/1/24 15:20	2.40									
060	T101	TAC	4/2/24 11:11	5.92	21.83	BG	4/2/2024	11:12	11:47	Peristaltic Pump	2"	6.0	171.4
061	T102	TAC	4/2/24 10:02	5.48	21.49	BG	4/2/2024	10:10	10:43	Peristaltic Pump	2"	6.0	181.8
062	XPW01	BG	4/4/24 9:34	9.03	20.10	BG	4/4/2024	09:34	10:31	Bladder Pump	2"	8.0	140.4
063	XPW02	BG	4/4/24 10:43	7.80	18.50	BG	4/4/2024	10:44	11:05	Bladder Pump	2"	6.0	285.7
064	XPW03	BG	4/4/24 11:55	9.78	22.80	BG	4/4/2024	11:56	12:20	Bladder Pump	2"	3.0	125.0
065	XPW04	BG	4/4/24 11:21	12.32	22.60	BG	4/4/2024	11:22	11:39	Bladder Pump	2"	5.0	294.1
066	XSG01	JC	4/1/24 14:03	6.06									
067	Field Blank												
068	A213 Duplicate	JC	4/9/24 10:57	18.34	60.99	JC	4/9/2024	10:57	11:28	Bladder Pump	2"	6.0	193.5
069	APW02 Duplicate	TAC	4/9/24 11:31	3.93	23.70	PY	4/9/2024	11:35	11:56	Peristaltic Pump	2"	4.5	214.3
070	G104 Duplicate	JC	4/8/24 12:38	4.45	42.96	JC	4/8/2024	12:39	13:06	Bladder Pump	2"	5.0	185.2
071	Equipment Blank 1												

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Summary
Newton- 2Q 2024

		Sampling Activities and Observations										
WO Sample	Well ID	Sampler Initials	Date	Time	Sampling Method	Instrument ID	Field Filtered	Appearance	Odor	Color	Post-Sample DTW (ft)	Drawdown (ft)
001	A213	JC	04/09/24	11:28	Low Flow	218083	Yes	Slightly cloudy	None	None	19.04	**0.7**
002	A214	JC	04/09/24	10:44	Low Flow	218083	Yes	Slightly cloudy	None	None	41.07	0
003	A215	JC	04/09/24	09:52	Low Flow	218083	Yes	Slightly cloudy	None	None	44.17	0
004	APW02	TAC	04/09/24	11:56	Low Flow	26599	Yes	Clear	None	None	5.99	**2.06**
005	APW03	TAC	04/09/24	10:55	Low Flow	26599	Yes	Clear	None	None	8.82	**2.86**
006	APW04	TAC	04/09/24	09:54	Low Flow	26599	Yes	Clear	None	None	10.55	**5.63**
007	APW05	BG	04/04/24	14:41	Low Flow	218083	Yes	Clear	None	None	14.03	-0.95
008	APW05S	TAC	04/02/24	13:52	Low Flow	26599	No	Clear	None	None	10.51	**0.72**
009	APW06	JC	04/09/24	12:44	Low Flow	218083	No	Clear	None	None	19.18	0
010	APW07	JC	04/09/24	12:20	Low Flow	218083	Yes	Clear	None	None	46.90	0
011	APW08	TAC	04/08/24	14:07	Low Flow	26599	Yes	Clear	None	none	37.80	0.02
012	APW09	JC	04/09/24	13:12	Low Flow	218083	Yes	Clear	None	None	26.46	0
013	APW10	TAC	04/08/24	12:22	Low Flow	26599	No	Clear	None	none	17.95	0
014	APW11	BG	04/04/24	14:00	Low Flow	218083	No	Clear	None	None	24.82	0.47
015	APW12	BG	04/04/24	12:54	Low Flow	218083	No	Clear	Slight	NONE	15.00	0.25
016	APW13	TAC	04/08/24	13:19	Low Flow	26599		Clear	None	none	32.61	0.37
017	APW14	TAC	04/04/24	14:27	Low Flow	26599	No	Clear	None	none	20.96	0.26
018	APW15	TAC	04/04/24	10:48	Low Flow	26599	No	Clear	None	none	22.25	**1.29**
019	APW16	TAC	04/04/24	11:43	Low Flow	26599	No	Clear	None	none	40.16	0.02
020	APW17	TAC	04/04/24	12:38	Low Flow	26599	No	Clear	None	none	41.25	0
021	APW18	TAC	04/04/24	13:35	Low Flow	26599	No	Clear	None	none	51.86	0.05
022	G104	JC	04/08/24	13:06	Low Flow	218083	Yes	Slightly cloudy	None	none	4.45	0
023	G105	BG	04/03/24	15:08	Low Flow	218083	Yes	Clear	None	CLEAR	9.32	**0.91**
024	G106	BG	04/03/24	12:31	Low Flow	218083	Yes	Clear	None	CLEAR	24.52	**0.52**
025	G116	JC	04/10/24	10:51	Low Flow	218083	Yes	Slightly cloudy	None	None	6.76	0.33
026	G125	BG	04/03/24	14:00	Low Flow	218083	Yes	Clear	None	CLEAR	4.52	**0.66**
027	G128	TAC	04/10/24	09:56	Low Flow	26599	Yes	Clear	None	None	10.21	**5.81**
028	G130	TAC	04/09/24	14:06	Low Flow	26599	Yes	Clear	None	None	5.91	**1.28**
029	G133	TAC	04/09/24	15:18	Low Flow	26599	Yes	Clear	None	None	11.19	**2.07**
030	G136	TAC	04/10/24	10:48	Low Flow	26599	Yes	Clear	None	None	8.19	**0.82**
031	G139	TAC	04/09/24	13:21	Low Flow	26599	Yes	Clear	None	None	8.63	**2.62**
032	G141	JC	04/09/24	14:39	Low Flow	218083	Yes	Clear	None	None	11.39	0
033	G208											
034	G217S	JC	04/09/24	13:41	Low Flow	218083	Yes	Clear	None	None	6.23	0
035	G218											
036	G220											
037	G221	BG	04/03/24	10:38	Low Flow	218083	Yes	Cloudy	None	CLEAR	31.08	**6.58**
038	G222											
039	G223											
040	G224											
041	G225	TAC	04/02/24	12:52	Low Flow	26599	Yes	Cloudy	None	cLEAR	10.78	**3.33**
042	G230	JC	04/02/24	10:34	Low Flow	218083	Yes	Slightly cloudy	Slight	none	47.95	0.35

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Summary
Newton- 2Q 2024

		Sampling Activities and Observations										
WO Sample	**Well ID**	**Sampler Initials**	**Date**	**Time**	**Sampling Method**	**Instrument ID**	**Field Filtered**	**Appearance**	**Odor**	**Color**	**Post-Sample DTW (ft)**	**Drawdown (ft)**
043	G231	JC	04/02/24	12:13	Low Flow	218083	Yes	Slightly cloudy	None	none	47.02	0.1
044	G232	JC	04/02/24	13:34	Low Flow	218083	No	Slightly cloudy	Slight	none	45.35	0
045	G233	JC	04/02/24	14:41	Low Flow	218083	Yes	Slightly cloudy	Slight	none	41.60	0
046	G234	JC	04/03/24	09:58	Low Flow	218083	Yes	Slightly cloudy	Slight	none	43.20	0
047	L1R	JC	04/08/24	13:54	No Purge	218083	No	Cloudy	Moderate	greyish	54.72	0
048	L201											
049	L202											
050	L203											
051	L204											
052	L205											
053	L301											
054	LREP											
055	R217D	JC	04/08/24	11:53	Low Flow	218083	Yes	Slightly cloudy	None	none	18.91	**0.82**
056	R219	JC	04/09/24	14:07	Low Flow	218083	Yes	Clear	None	None	20.22	0
057	S101	JC	04/08/24	12:15	No Purge	218083	No	Slightly cloudy	None	none		
058	S102	JC	04/08/24	12:27	No Purge	218083	No	Slightly cloudy	None	None		
059	SG02											
060	T101	TAC	04/02/24	11:47	Low Flow	26599	Yes	Clear	None	None	9.40	**3.48**
061	T102	TAC	04/02/24	10:43	Low Flow	26599	Yes	Clear	None	None	9.35	**3.87**
062	XPW01	BG	04/04/24	10:31	Low Flow	218083	Yes	Slightly cloudy	None	LT BROWN	10.91	**1.88**
063	XPW02	BG	04/04/24	11:05	Low Flow	218083	No	Clear	Slight	CLEAR	8.03	0.23
064	XPW03	BG	04/04/24	12:20	Low Flow	218083	No	Clear	Slight	clear	9.82	0.04
065	XPW04	BG	04/04/24	11:39	Low Flow	218083	No	Clear	None	CLEAR	12.05	-0.27
066	XSG01											
067	Field Blank	JC	04/10/24	10:45		218083						
068	A213 Duplicate	JC	04/09/24	11:28	Low Flow	218083	Yes	Slightly cloudy	None	None	19.04	**0.7**
069	APW02 Duplicate	TAC	04/09/24	11:56	Low Flow	26599	Yes	Clear	None	None	5.99	**2.06**
070	G104 Duplicate	JC	04/08/24	13:06	Low Flow	218083	Yes	Slightly cloudy	None	none	4.45	0
071	Equipment Blank 1	TAC	04/10/24	15:16		26599						

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Summary
Newton- 2Q 2024

WO Sample	Well ID	COMMENTS
001	A213	
002	A214	
003	A215	
004	APW02	
005	APW03	
006	APW04	
007	APW05	
008	APW05S	
009	APW06	
010	APW07	
011	APW08	
012	APW09	
013	APW10	
014	APW11	
015	APW12	
016	APW13	
017	APW14	
018	APW15	Turbity would not stabilize
019	APW16	
020	APW17	
021	APW18	
022	G104	
023	G105	
024	G106	
025	G116	
026	G125	
027	G128	
028	G130	
029	G133	
030	G136	
031	G139	Needs work. Wobbles when stepped on.
032	G141	No dedicated pump in well
033	G208	Unable to access to measure (undergoing well repair)
034	G217S	
035	G218	
036	G220	
037	G221	
038	G222	
039	G223	
040	G224	
041	G225	
042	G230	

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Summary
Newton- 2Q 2024

WO Sample	Well ID	COMMENTS
043	G231	
044	G232	filter in lab, wrote on coc. JC
045	G233	
046	G234	
047	L1R	filter in lab. Wrote on coc. JC
048	L201	
049	L202	
050	L203	
051	L204	
052	L205	
053	L301	Unable to collect
054	LREP	Unable to collect
055	R217D	
056	R219	
057	S101	filter in lab. Wrote on coc. JC
058	S102	filter in lab. Wrote on coc. JC
059	SG02	
060	T101	
061	T102	
062	XPW01	
063	XPW02	
064	XPW03	
065	XPW04	
066	XSG01	
067	Field Blank	
068	A213 Duplicate	
069	APW02 Duplicate	
070	G104 Duplicate	
071	Equipment Blank 1	

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Stabilized Field Parameters
Newton- 2Q 2024

Well ID	Date	Time	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	DTW (ft)	LIMS ID
A213	4/9/2024	11:28	12.1	53.8	6.67	2,255.9	1.82	33.55	131.9	18.34	24031341-001A
A214	4/9/2024	10:44	12.7	54.9	7.30	1,034.5	1.05	50.80	90.8	41.07	24031341-002A
A215	4/9/2024	9:52	15.8	60.4	7.03	1,314.2	0.63	36.87	-111.4	44.17	24031341-003A
APW02	4/9/2024	11:56	15.3	59.5	6.73	5,148.2	1.84	2.11	44.6	3.93	24031341-004A
APW03	4/9/2024	10:55	15.8	60.4	6.79	1,035.7	1.57	2.16	-3.3	5.96	24031341-005A
APW04	4/9/2024	9:54	14.1	57.4	6.72	2,221.8	1.71	6.61	-4.7	4.92	24031341-006A
APW05	4/4/2024	14:41	13.1	55.6	7.79	889.5	0.64	26.66	-154.4	14.98	24031341-007A
APW05S	4/2/2024	13:52	17.2	63.0	6.86	3,383.7	2.20	5.64	117.0	9.79	24031341-008A
APW06	4/9/2024	12:44	13.6	56.5	7.58	800.1	0.88	14.22	-8.0	19.18	24031341-009A
APW07	4/9/2024	12:20	12.1	53.8	6.87	795.8	2.21	11.02	112.8	46.90	24031341-010A
APW08	4/8/2024	14:07	14.4	57.9	7.20	1,125.9	0.24	6.39	-45.7	37.78	24031341-011A
APW09	4/9/2024	13:12	11.4	52.5	7.49	1,354.8	0.74	23.68	-57.3	26.46	24031341-012A
APW10	4/8/2024	12:22	15.0	59.0	7.14	1,508.4	0.15	40.95	-2.3	17.95	24031341-013A
APW11	4/4/2024	14:00	12.9	55.2	7.18	1,168.9	0.87	40.39	-48.2	24.35	24031341-014A
APW12	4/4/2024	12:54	12.1	53.8	6.52	1,995.4	0.90	2.09	21.0	14.75	24031341-015A
APW13	4/8/2024	13:19	15.0	59.0	7.07	1,414.8	0.31	19.45	-64.5	32.24	24031341-016A
APW14	4/4/2024	14:27	12.6	54.7	7.18	1,599.0	0.29	2.96	-78.2	20.70	24031341-017A
APW15	4/4/2024	10:48	12.5	54.5	6.99	2,105.3	0.10	180.63	-139.3	20.96	24031341-018A
APW16	4/4/2024	11:43	12.7	54.9	7.31	1,374.4	0.27	6.37	-128.5	40.14	24031341-019A
APW17	4/4/2024	12:38	12.9	55.2	7.30	1,246.8	0.34	19.79	-76.3	41.25	24031341-020A
APW18	4/4/2024	13:35	12.9	55.2	7.55	1,065.9	0.24	14.35	-144.3	51.81	24031341-021A
G104	4/8/2024	13:06	16.2	61.2	6.81	1,146.2	3.44	52.85	115.7	4.45	24031341-022A
G105	4/3/2024	15:08	9.8	49.6	6.90	1,817.4	1.33	38.35	6.6	8.41	24031341-023A
G106	4/3/2024	12:31	9.2	48.6	6.73	3,471.5	1.19	115.36	33.5	24.00	24031341-024A
G116	4/10/2024	10:51	12.0	53.6	6.74	752.4	3.25	12.96	134.5	6.43	24031341-025A
G125	4/3/2024	14:00	10.6	51.1	6.81	3,385.5	1.93	197.77	69.1	3.86	24031341-026A
G128	4/10/2024	9:56	13.9	57.0	6.69	17,259.7	2.25	18.96	107.5	4.40	24031341-027A
G130	4/9/2024	14:06	15.0	59.0	6.27	11,978.6	0.59	8.30	74.2	4.63	24031341-028A
G133	4/9/2024	15:18	19.3	66.7	6.88	5,589.3	6.87	23.05	64.5	9.12	24031341-029A
G136	4/10/2024	10:48	12.7	54.9	6.92	5,230.8	2.35	4.75	39.6	7.37	24031341-030A
G139	4/9/2024	13:21	15.2	59.4	6.74	4,734.5	0.94	3.78	46.3	6.01	24031341-031A
G141	4/9/2024	14:39	13.3	55.9	6.71	1,514.9	1.88	23.40	142.4	11.39	24031341-032A
G208	4/1/2024	15:18	Unable to sample/measure							N/A	24031341-033A
G217S	4/9/2024	13:41	12.8	55.0	6.45	1,499.3	1.30	8.41	173.2	6.23	24031341-034A
G218	4/1/2024	14:12	DTW Only							19.33	24031341-035A
G220	4/1/2024	14:09	DTW Only							18.14	24031341-036A
G221	4/3/2024	10:38	9.1	48.4	6.98	1,339.5	0.78	269.28	-94.9	24.50	24031341-037A
G222	4/1/2024	13:53	DTW Only							17.23	24031341-038A
G223	4/1/2024	14:18	DTW Only							32.81	24031341-039A
G224	4/1/2024	14:40	DTW Only							42.40	24031341-040A
G225	4/2/2024	12:52	15.3	59.5	7.23	1,264.9	4.36	22.26	22.4	7.45	24031341-041A
G230	4/2/2024	10:34	14.8	58.6	7.39	1,397.7	0.47	192.63	-114.7	47.60	24031341-042A
G231	4/2/2024	12:13	14.9	58.8	7.46	1,312.9	0.88	159.06	-89.4	46.92	24031341-043A

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Stabilized Field Parameters
Newton- 2Q 2024

Well ID	Date	Time	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	DTW (ft)	LIMS ID
G232	4/2/2024	13:34	15.5	59.9	7.40	1,188.0	0.48	43.46	-112.7	45.35	24031341-044A
G233	4/2/2024	14:41	14.5	58.1	7.35	1,317.2	0.38	42.98	-124.8	41.60	24031341-045A
G234	4/3/2024	9:58	13.1	55.6	7.42	1,173.9	0.32	44.32	-123.1	43.20	24031341-046A
L1R	4/8/2024	13:54	17.1	62.8	9.86	43,108.3	4.86	86.90	-44.1	54.72	24031341-047A
L201	4/1/2024	14:53	DTW Only							35.63	24031341-048A
L202	4/1/2024	14:50	DTW Only							37.45	24031341-049A
L203	4/1/2024	14:57	DTW Only							29.99	24031341-050A
L204	4/1/2024	14:45	DTW Only							48.03	24031341-051A
L205	4/1/2024	15:01	DTW Only							32.04	24031341-052A
L301	Unable to sample										24031341-053A
LREP	Unable to sample										24031341-054A
R217D	4/8/2024	11:53	18.4	65.1	6.46	3,212.1	2.03	28.20	5.7	18.09	24031341-055A
R219	4/9/2024	14:07	11.9	53.4	7.01	1,284.4	1.61	28.86	124.1	20.22	24031341-056A
S101	4/8/2024	12:15	21.4	70.5	7.62	423.8	10.11	15.58	65.7		24031341-057A
S102	4/8/2024	12:27	16.0	60.8	7.43	312.3	9.02	22.20	90.4		24031341-058A
SG02	4/1/2024	15:20	DTW Only							2.40	24031341-059A
T101	4/2/2024	11:47	14.0	57.2	6.82	375.4	3.99	26.45	194.6	5.92	24031341-060A
T102	4/2/2024	10:43	13.9	57.0	6.56	455.0	2.62	211.71	210.3	5.48	24031341-061A
XPW01	4/4/2024	10:31	13.7	56.7	12.70	9,693.0	0.54	8.23	-246.6	9.03	24031341-062A
XPW02	4/4/2024	11:05	14.0	57.2	10.05	532.6	0.64	2.05	-250.6	7.80	24031341-063A
XPW03	4/4/2024	12:20	15.8	60.4	11.96	1,395.7	0.65	3.23	-222.2	9.78	24031341-064A
XPW04	4/4/2024	11:39	15.2	59.4	11.74	8,016.0	0.57	7.58	-272.2	12.32	24031341-065A
XSG01	4/1/2024	14:03	DTW Only							6.06	24031341-066A
Field Blank	4/10/2024	10:45	QA/QC Sample								24031341-067A
A213 Duplicate	4/9/2024	11:28	12.1	53.8	6.67	2,255.9	1.82	33.55	131.9	18.34	24031341-068A
APW02 Duplicate	4/9/2024	11:56	15.3	59.5	6.73	5,148.2	1.84	2.11	44.6	3.93	24031341-069A
G104 Duplicate	4/8/2024	13:06	16.2	61.2	6.81	1,146.2	3.44	52.85	115.7	4.45	24031341-070A
Equipment Blank 1	4/10/2024	15:16	QA/QC Sample								24031341-071A

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW02	4/9/2024	11:44	3.93	15.7	60.3	6.57	5,423.6	1.81	4.53	47.4
APW02	4/9/2024	11:47	3.93	15.5	59.9	6.60	5,337.8	1.74	3.34	46.6
APW02	4/9/2024	11:50	3.93	15.1	59.2	6.68	5,196.8	1.83	2.89	45.9
APW02	4/9/2024	11:53	3.93	15.2	59.4	6.72	5,159.8	1.87	2.52	45.2
APW02	4/9/2024	11:56	3.93	15.3	59.5	6.73	5,148.2	1.84	2.11	44.6

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW03	4/9/2024	10:46	5.96	15.4	59.7	6.80	1,036.1	1.99	2.99	-0.5
APW03	4/9/2024	10:49	5.96	15.4	59.7	6.79	1,034.5	1.78	2.98	-1.4
APW03	4/9/2024	10:52	5.96	15.6	60.1	6.79	1,035.5	1.68	3.93	-2.5
APW03	4/9/2024	10:55	5.96	15.8	60.4	6.79	1,035.7	1.57	2.16	-3.3

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW04	4/9/2024	9:39	4.92	14.0	57.2	6.72	2,221.2	2.57	8.07	-5.6
APW04	4/9/2024	9:42	4.92	13.9	57.0	6.72	2,220.9	2.30	7.08	-5.2
APW04	4/9/2024	9:45	4.92	13.9	57.0	6.72	2,221.5	2.15	8.00	-5.0
APW04	4/9/2024	9:48	4.92	13.8	56.8	6.72	2,223.4	1.94	6.42	-4.8
APW04	4/9/2024	9:51	4.92	14.0	57.2	6.72	2,222.9	1.85	6.85	-4.7
APW04	4/9/2024	9:54	4.92	14.1	57.4	6.72	2,221.8	1.71	6.61	-4.7

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW05	4/4/2024	14:23	14.98	12.9	55.2	7.75	884.1	1.51	11.06	-107.3
APW05	4/4/2024	14:26	14.98	13.0	55.4	7.77	886.4	0.86	9.73	-138.4
APW05	4/4/2024	14:29	14.98	13.0	55.4	7.78	886.7	0.75	15.99	-145.3
APW05	4/4/2024	14:32	14.98	13.0	55.4	7.78	887.1	0.70	24.50	-148.6
APW05	4/4/2024	14:35	14.98	13.1	55.6	7.78	887.7	0.67	26.14	-151.2
APW05	4/4/2024	14:38	14.98	13.1	55.6	7.79	888.7	0.65	26.22	-153.2
APW05	4/4/2024	14:41	14.98	13.1	55.6	7.79	889.5	0.64	26.66	-154.4

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW05S	4/2/2024	13:40	9.79	15.4	59.7	6.85	3,344.9	2.19	4.95	131.6
APW05S	4/2/2024	13:43	9.79	16.6	61.9	6.85	3,354.6	2.25	5.18	127.5
APW05S	4/2/2024	13:46	9.79	17.0	62.6	6.85	3,381.1	2.25	5.43	120.9
APW05S	4/2/2024	13:49	9.79	17.2	63.0	6.86	3,379.3	2.21	5.30	119.6
APW05S	4/2/2024	13:52	9.79	17.2	63.0	6.86	3,383.7	2.20	5.64	117.0

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW06	4/9/2024	12:35	19.18	13.6	56.5	7.61	802.6	0.95	12.96	-4.5
APW06	4/9/2024	12:38	19.18	13.6	56.5	7.60	801.4	0.96	13.98	-5.6
APW06	4/9/2024	12:41	19.18	13.5	56.3	7.61	800.5	0.92	14.08	-6.8
APW06	4/9/2024	12:44	19.18	13.6	56.5	7.58	800.1	0.88	14.22	-8.0

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW07	4/9/2024	12:08	46.90	12.4	54.3	6.91	808.5	2.56	20.40	110.5
APW07	4/9/2024	12:11	46.90	12.3	54.1	6.90	801.6	2.48	15.54	111.0
APW07	4/9/2024	12:14	46.90	12.2	54.0	6.90	799.9	2.33	11.86	111.8
APW07	4/9/2024	12:17	46.90	12.2	54.0	6.88	796.6	2.28	12.56	112.3
APW07	4/9/2024	12:20	46.90	12.1	53.8	6.87	795.8	2.21	11.02	112.8

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW08	4/8/2024	13:58	37.78	14.6	58.3	7.19	1,125.7	0.60	8.88	-26.4
APW08	4/8/2024	14:01	37.78	14.5	58.1	7.19	1,128.1	0.37	5.57	-23.1
APW08	4/8/2024	14:04	37.78	14.4	57.9	7.19	1,127.0	0.29	5.47	-30.1
APW08	4/8/2024	14:07	37.78	14.4	57.9	7.20	1,125.9	0.24	6.39	-45.7

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW09	4/9/2024	13:03	26.46	11.5	52.7	7.49	1,356.4	0.86	24.11	-56.5
APW09	4/9/2024	13:06	26.46	11.5	52.7	7.49	1,355.8	0.81	23.56	-56.8
APW09	4/9/2024	13:09	26.46	11.5	52.7	7.49	1,355.1	0.77	22.58	-57.1
APW09	4/9/2024	13:12	26.46	11.4	52.5	7.49	1,354.8	0.74	23.68	-57.3

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW10	4/8/2024	12:10	17.95	15.1	59.2	7.13	1,510.2	0.36	64.42	10.3
APW10	4/8/2024	12:13	17.95	15.1	59.2	7.13	1,509.5	0.21	62.42	6.1
APW10	4/8/2024	12:16	17.95	15.1	59.2	7.13	1,508.8	0.18	49.04	2.7
APW10	4/8/2024	12:19	17.95	15.1	59.2	7.13	1,508.5	0.16	51.90	0.0
APW10	4/8/2024	12:22	17.95	15.0	59.0	7.14	1,508.4	0.15	40.95	-2.3

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW11	4/4/2024	13:15	24.35	12.8	55.0	7.19	1,178.4	2.14	188.83	-8.8
APW11	4/4/2024	13:18	24.35	12.8	55.0	7.18	1,178.5	1.53	113.04	-25.3
APW11	4/4/2024	13:21	24.35	12.8	55.0	7.18	1,174.6	1.22	103.39	-34.2
APW11	4/4/2024	13:24	24.35	12.8	55.0	7.18	1,173.2	1.04	83.79	-39.1
APW11	4/4/2024	13:27	24.35	12.9	55.2	7.17	1,171.9	1.23	78.66	-41.8
APW11	4/4/2024	13:30	24.35	12.8	55.0	7.17	1,172.8	1.13	67.06	-43.7
APW11	4/4/2024	13:33	24.35	12.9	55.2	7.17	1,170.3	1.07	67.97	-45.3
APW11	4/4/2024	13:36	24.35	12.9	55.2	7.18	1,169.3	0.88	75.14	-46.1
APW11	4/4/2024	13:39	24.35	12.8	55.0	7.18	1,169.9	1.15	52.76	-47.0
APW11	4/4/2024	13:42	24.35	12.9	55.2	7.18	1,169.1	0.89	53.70	-47.5
APW11	4/4/2024	13:45	24.35	12.8	55.0	7.18	1,170.6	1.01	51.50	-47.6
APW11	4/4/2024	13:48	24.35	12.9	55.2	7.18	1,169.0	0.85	47.34	-47.5
APW11	4/4/2024	13:51	24.35	12.9	55.2	7.18	1,169.4	0.93	41.79	-47.9
APW11	4/4/2024	13:54	24.35	13.0	55.4	7.18	1,169.1	0.86	40.27	-48.1
APW11	4/4/2024	13:57	24.35	12.9	55.2	7.18	1,168.3	0.94	41.35	-48.3
APW11	4/4/2024	14:00	24.35	12.9	55.2	7.18	1,168.9	0.87	40.39	-48.2

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW12	4/4/2024	12:45	14.75	12.1	53.8	6.52	1,909.3	1.09	2.29	6.7
APW12	4/4/2024	12:48	14.75	12.3	54.1	6.51	1,954.9	1.00	2.78	14.1
APW12	4/4/2024	12:51	14.75	12.2	54.0	6.52	1,982.9	0.94	2.67	18.4
APW12	4/4/2024	12:54	14.75	12.1	53.8	6.52	1,995.4	0.90	2.09	21.0

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW13	4/8/2024	12:58	32.24	15.5	59.9	7.06	1,418.1	1.76	6.05	4.3
APW13	4/8/2024	13:01	32.24	15.4	59.7	7.06	1,416.0	1.66	6.34	-10.1
APW13	4/8/2024	13:04	32.24	15.4	59.7	7.06	1,418.4	1.66	37.52	-24.5
APW13	4/8/2024	13:07	32.24	15.5	59.9	7.06	1,415.5	1.46	84.22	-39.8
APW13	4/8/2024	13:10	32.24	15.4	59.7	7.06	1,416.7	1.42	138.81	-50.2
APW13	4/8/2024	13:13	32.24	15.2	59.4	7.06	1,417.4	0.44	3.26	-57.0
APW13	4/8/2024	13:16	32.24	14.9	58.8	7.07	1,415.9	0.34	9.35	-61.2
APW13	4/8/2024	13:19	32.24	15.0	59.0	7.07	1,414.8	0.31	19.45	-64.5

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW14	4/4/2024	14:18	20.70	12.4	54.3	7.17	1,603.6	0.50	5.44	-52.3
APW14	4/4/2024	14:21	20.70	12.5	54.5	7.17	1,600.9	0.38	4.24	-62.9
APW14	4/4/2024	14:24	20.70	12.6	54.7	7.17	1,600.6	0.32	3.55	-71.5
APW14	4/4/2024	14:27	20.70	12.6	54.7	7.18	1,599.0	0.29	2.96	-78.2

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW15	4/4/2024	10:27	20.96	12.5	54.5	7.01	2,109.0	0.13	95.71	-136.0
APW15	4/4/2024	10:30	20.96	12.5	54.5	7.01	2,108.7	0.12	122.54	-137.1
APW15	4/4/2024	10:33	20.96	12.4	54.3	7.00	2,108.3	0.11	98.70	-137.8
APW15	4/4/2024	10:36	20.96	12.5	54.5	7.00	2,111.0	0.11	143.32	-138.2
APW15	4/4/2024	10:39	20.96	12.5	54.5	7.00	2,108.1	0.10	119.09	-138.8
APW15	4/4/2024	10:42	20.96	12.4	54.3	7.00	2,110.0	0.10	94.05	-139.0
APW15	4/4/2024	10:45	20.96	12.5	54.5	6.99	2,107.5	0.10	154.11	-139.3
APW15	4/4/2024	10:48	20.96	12.5	54.5	6.99	2,105.3	0.10	180.63	-139.3

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW16	4/4/2024	11:28	40.14	12.7	54.9	7.30	1,364.3	0.55	6.88	-91.4
APW16	4/4/2024	11:31	40.14	12.7	54.9	7.31	1,369.3	0.41	5.77	-108.0
APW16	4/4/2024	11:34	40.14	12.6	54.7	7.31	1,371.8	0.35	4.99	-116.4
APW16	4/4/2024	11:37	40.14	12.7	54.9	7.31	1,373.1	0.31	5.26	-122.0
APW16	4/4/2024	11:40	40.14	12.7	54.9	7.31	1,372.7	0.29	6.23	-125.7
APW16	4/4/2024	11:43	40.14	12.7	54.9	7.31	1,374.4	0.27	6.37	-128.5

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW17	4/4/2024	12:29	41.25	12.7	54.9	7.29	1,256.6	0.57	28.29	-25.7
APW17	4/4/2024	12:32	41.25	12.7	54.9	7.29	1,252.7	0.44	22.16	-45.1
APW17	4/4/2024	12:35	41.25	12.8	55.0	7.30	1,248.9	0.37	21.76	-62.9
APW17	4/4/2024	12:38	41.25	12.9	55.2	7.30	1,246.8	0.34	19.79	-76.3

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW18	4/4/2024	13:14	51.81	12.9	55.2	7.51	1,067.4	1.26	14.02	-58.2
APW18	4/4/2024	13:17	51.81	12.9	55.2	7.54	1,064.2	0.68	21.37	-99.7
APW18	4/4/2024	13:20	51.81	12.8	55.0	7.55	1,065.2	0.46	22.22	-118.9
APW18	4/4/2024	13:23	51.81	12.9	55.2	7.55	1,063.4	0.35	16.17	-127.9
APW18	4/4/2024	13:26	51.81	12.9	55.2	7.55	1,064.7	0.30	13.08	-133.9
APW18	4/4/2024	13:29	51.81	12.9	55.2	7.55	1,064.4	0.27	12.04	-138.7
APW18	4/4/2024	13:32	51.81	12.9	55.2	7.55	1,063.0	0.25	10.64	-141.9
APW18	4/4/2024	13:35	51.81	12.9	55.2	7.55	1,065.9	0.24	14.35	-144.3

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW02 Duplicate	4/9/2024	11:44	3.93	15.7	60.3	6.57	5,423.6	1.81	4.53	47.4
APW02 Duplicate	4/9/2024	11:47	3.93	15.5	59.9	6.60	5,337.8	1.74	3.34	46.6
APW02 Duplicate	4/9/2024	11:50	3.93	15.1	59.2	6.68	5,196.8	1.83	2.89	45.9
APW02 Duplicate	4/9/2024	11:53	3.93	15.2	59.4	6.72	5,159.8	1.87	2.52	45.2
APW02 Duplicate	4/9/2024	11:56	3.93	15.3	59.5	6.73	5,148.2	1.84	2.11	44.6

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
XPW01	4/4/2024	9:46	9.03	13.3	55.9	12.68	9,674.6	0.68	52.71	-212.7
XPW01	4/4/2024	9:49	9.03	13.4	56.1	12.69	9,675.5	0.65	38.91	-213.3
XPW01	4/4/2024	9:52	9.03	13.5	56.3	12.69	9,680.0	0.63	28.82	-216.3
XPW01	4/4/2024	9:55	9.03	13.5	56.3	12.69	9,690.9	0.61	20.79	-218.8
XPW01	4/4/2024	9:58	9.03	13.7	56.7	12.69	9,684.4	0.60	16.85	-220.9
XPW01	4/4/2024	10:01	9.03	13.7	56.7	12.69	9,705.4	0.59	13.93	-225.3
XPW01	4/4/2024	10:04	9.03	13.6	56.5	12.70	9,696.7	0.58	12.99	-228.1
XPW01	4/4/2024	10:07	9.03	13.5	56.3	12.70	9,694.8	0.58	11.96	-231.1
XPW01	4/4/2024	10:10	9.03	13.5	56.3	12.70	9,692.0	0.57	11.29	-233.3
XPW01	4/4/2024	10:13	9.03	13.4	56.1	12.71	9,711.1	0.57	9.97	-234.9
XPW01	4/4/2024	10:16	9.03	13.4	56.1	12.71	9,705.9	0.56	10.17	-237.0
XPW01	4/4/2024	10:19	9.03	13.4	56.1	12.71	9,703.5	0.56	11.59	-239.8
XPW01	4/4/2024	10:22	9.03	13.4	56.1	12.71	9,708.4	0.55	10.28	-241.3
XPW01	4/4/2024	10:25	9.03	13.4	56.1	12.71	9,698.3	0.55	9.75	-243.0
XPW01	4/4/2024	10:28	9.03	13.7	56.7	12.70	9,679.1	0.54	8.86	-245.0
XPW01	4/4/2024	10:31	9.03	13.7	56.7	12.70	9,693.0	0.54	8.23	-246.6

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
XPW02	4/4/2024	10:47	7.80	13.8	56.8	10.17	540.8	0.84	7.46	-237.6
XPW02	4/4/2024	10:50	7.80	13.9	57.0	10.13	537.2	0.76	6.05	-242.6
XPW02	4/4/2024	10:53	7.80	13.9	57.0	10.11	535.3	0.71	4.46	-246.0
XPW02	4/4/2024	10:56	7.80	14.0	57.2	10.09	534.5	0.69	4.09	-247.9
XPW02	4/4/2024	10:59	7.80	13.9	57.0	10.08	534.1	0.67	3.44	-249.5
XPW02	4/4/2024	11:02	7.80	14.0	57.2	10.06	533.0	0.65	2.42	-250.3
XPW02	4/4/2024	11:05	7.80	14.0	57.2	10.05	532.6	0.64	2.05	-250.6

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
XPW03	4/4/2024	11:56	9.78	15.9	60.6	11.93	1,437.9	1.13	15.14	-200.8
XPW03	4/4/2024	11:59	9.78	15.6	60.1	11.94	1,408.3	0.91	13.60	-208.6
XPW03	4/4/2024	12:02	9.78	15.7	60.3	11.94	1,390.5	0.81	8.61	-213.2
XPW03	4/4/2024	12:05	9.78	15.7	60.3	11.94	1,386.6	0.75	7.74	-217.1
XPW03	4/4/2024	12:08	9.78	15.8	60.4	11.95	1,388.0	0.71	5.98	-219.6
XPW03	4/4/2024	12:11	9.78	15.8	60.4	11.95	1,393.5	0.69	4.88	-220.7
XPW03	4/4/2024	12:14	9.78	15.8	60.4	11.95	1,395.4	0.67	3.93	-220.8
XPW03	4/4/2024	12:17	9.78	15.8	60.4	11.96	1,395.3	0.66	3.12	-221.6
XPW03	4/4/2024	12:20	9.78	15.8	60.4	11.96	1,395.7	0.65	3.23	-222.2

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 2Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
XPW04	4/4/2024	11:21	12.32	15.0	59.0	11.66	8,462.0	1.05	10.48	-252.1
XPW04	4/4/2024	11:24	12.32	15.0	59.0	11.71	8,417.5	0.77	9.29	-261.2
XPW04	4/4/2024	11:27	12.32	15.1	59.2	11.71	8,307.3	0.68	8.39	-265.5
XPW04	4/4/2024	11:30	12.32	15.1	59.2	11.72	8,180.9	0.64	5.92	-268.4
XPW04	4/4/2024	11:33	12.32	15.1	59.2	11.73	8,091.6	0.61	7.94	-270.5
XPW04	4/4/2024	11:36	12.32	15.1	59.2	11.73	8,039.6	0.59	8.68	-271.2
XPW04	4/4/2024	11:39	12.32	15.2	59.4	11.74	8,016.0	0.57	7.58	-272.2

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Field Calibration Log(s)
Newton- 2Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 218083 Technician(s): justin colp Date: 4/2/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830b	4.00	4/2/24 9:26
7.0 Buffer	wc240307f	7.01	4/2/24 9:24
10.0 Buffer	wc231027d	9.99	4/2/24 9:28
LCS/CCV (7.0 Buffer)	wc231207a		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1413	4/2/24 9:31

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.09	4/2/24 9:31
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-1	LCS	4/2/24 9:35	17.6	7.01	1,413	0.9		
CCV-M-1	CCV	4/2/24 12:33	18	7.02	1,415	0.5		
CCV-1	CCV	4/2/24 15:09	17.8	7.03	1,418	0.11		

Comments:

Field Meter ID: Pine 218083 Technician(s): justin colp Date: 4/3/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830b	4.00	4/3/24 8:34
7.0 Buffer	wc240307f	7.00	4/3/24 8:30
10.0 Buffer	wc231027d	9.98	4/3/24 8:39
LCS/CCV (7.0 Buffer)	wc231207a		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1413	4/3/24 8:46

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.08	4/3/24 8:46
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-2	LCS	4/3/24 8:49	12.1	7.01	1,413	0.93		
CCV-2	CCV	4/3/24 10:23	12.4	7.01	1,414	0.91		

Comments:

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Field Calibration Log(s)
Newton- 2Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 26599 Technician(s): Tracy Carroll Date: 4/4/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830b	4.01	4/4/24 9:25
7.0 Buffer	wc240307f	7.00	4/4/24 9:23
10.0 Buffer	wc231027d	10.00	4/4/24 9:32
LCS/CCV (7.0 Buffer)	wc23207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1412	4/4/24 9:35

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	1.42	4/4/24 9:32
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-3	LCS	4/4/24 9:42	15.4	6.99	1,412	1.42		
CCV-M-3	CCV	4/4/24 12:13	14.9	7.01	1,423	1.1		
CCV-3	CCV	4/4/24 15:04	14.5	7.05	1,458	1.77		

Comments:

Field Meter ID: Pine 26599 Technician(s): Tracy Carroll Date: 4/8/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830b	4.00	4/8/24 10:12
7.0 Buffer	wc240307f	7.00	4/8/24 10:11
10.0 Buffer	wc231027d	10.00	4/8/24 10:26
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1412	4/8/24 10:50

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1		
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-4	LCS	4/8/24 10:54	17.5	7.05	1,412	1.45		
CCV-4	CCV	4/8/24 14:42	21.9	7.04	1,281	1.66		

Comments:

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Field Calibration Log(s)
Newton- 2Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 26599 Technician(s): Tracy Carroll/Payton Yoch Date: 4/9/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830b	4.02	4/9/24 8:40
7.0 Buffer	wc240307f	7.03	4/9/24 8:39
10.0 Buffer	wc231027d	10.01	4/9/24 8:43
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1412	4/9/24 8:50

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	o.25	4/9/24 8:55
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-5	LCS	4/9/24 8:58	17.9	7.02	1,413	0.25		
CCV-M-5	CCV	4/9/24 12:04	21.2	7.01	1,423	0.3		
CCV-5	CCV	4/9/24 15:32	23.3	7.01	1,440	0.33		

Comments:

Field Meter ID: Pine 26599 Technician(s): Tracy Carroll/Payton Yoch Date: 4/10/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830b	4.00	4/10/24 9:09
7.0 Buffer	wc240307f	7.02	4/10/24 9:07
10.0 Buffer	wc231027d	10.00	4/10/24 9:12
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1412	4/10/24 9:19

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	1.1	4/10/24 9:20
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-6	LCS	4/10/24 9:22	16.7	7.07	1,412	1.1		
CCV-6	CCV	4/10/24 11:08	16.6	7.03	1,429	1.87	s	

Comments:

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Field Calibration Log(s)
Newton- 2Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 26599 Technician(s): Tracy Carroll/ Brett Gillihan Date: 4/2/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830B	3.95	4/2/24 9:33
7.0 Buffer	wc240307F	7.04	4/2/24 9:31
10.0 Buffer	WC231007D	10.00	4/2/24 9:35
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1412	4/2/24 9:41

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.12	4/2/24 9:49
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-7	LCS	4/2/24 9:48	16.1	7.08	1,412	0.15		
CCV-M-7	CCV	4/2/24 12:34	17.1	7.06	1,412	0.11		
CCV-7	CCV	4/2/24 15:01	17.7	7.02	1,413	0.14		

Comments:

Field Meter ID: Pine 26599 Technician(s): Brett Gillihan Date: 4/3/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830B	4.00	4/3/24 8:42
7.0 Buffer	wc240307F	7.03	4/3/24 8:39
10.0 Buffer	WC231007D	10.03	4/3/24 8:46
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1413	4/3/24 8:47

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.13	4/3/24 8:49
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-8	LCS	4/3/24 9:02	12.4	7.02	1,410	0.14		
CCV-8	CCV	4/3/24 15:13	13.5	7.03	1,412	0.15		

Comments:

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Field Calibration Log(s)
Newton- 2Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 218083 Technician(s): Brett Gillihan Date: 4/4/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC230830B	4.01	4/4/24 9:22
7.0 Buffer	WC240307F	7.03	4/4/24 9:11
10.0 Buffer	WC231007D	10.04	4/4/24 9:25
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1415	4/4/24 9:26

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.1	4/4/24 9:27
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-9	LCS	4/4/24 9:32	13.53	7.01	1,408	0.14		
CCV-9	CCV	4/4/24 14:48	14.65	7.03	1,410	0.14		

Comments:

Field Meter ID: Pine 218083 Technician(s): justin colp Date: 4/8/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830B	4.01	4/8/24 10:43
7.0 Buffer	wc240307F	7.01	4/8/24 10:42
10.0 Buffer	WC231007D	10.00	4/8/24 10:46
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1409	4/8/24 10:48

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.13	4/8/24 10:49
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-10	LCS	4/8/24 10:49	17.6	7.01	1,411	0.13		
CCV-10	CCV	4/8/24 14:40	20.8	7.04	1,389	0.19		

Comments:

Site Samping Event: Newton- 2Q24
LIMS Workorder: 24031341
Technician(s): DC, JC, TC, BG

Field Calibration Log(s)
Newton- 2Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 218083 Technician(s): justin colp Date: 4/9/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830B	4.01	4/9/24 9:03
7.0 Buffer	wc240307F	7.00	4/9/24 8:43
10.0 Buffer	WC231007D	9.98	4/9/24 9:03
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1405	4/9/24 9:03

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.17	4/9/24 9:03
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-11	LCS	4/9/24 9:04	17.3	7.01	1,405	0.17		
CCV-M-11	CCV	4/9/24 12:22	18.4	7.03	1,416	0.16		
CCV-11	CCV	4/9/24 14:55	19.8	7.04	1,410	0.17		

Comments:

Field Meter ID: Pine 218083 Technician(s): justin colp Date: 4/10/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830B	3.98	4/10/24 9:29
7.0 Buffer	wc240307F	7.01	4/10/24 9:22
10.0 Buffer	WC231007D	9.99	4/10/24 9:38
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1406	4/10/24 9:45

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.23	4/10/24 9:45
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-12	LCS	4/10/24 9:49	15.8	7.01	1,409	0.23		
CCV-12	CCV	4/10/24 11:11	16.7	7.03	1,411	0.27		

Comments:

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC
11669 Lilburn Park Rd.
St. Louis, MO 63146
Office: 314.344.1079

Pine Environmental Services, Inc.

Instrument ID 26599
Description YSI ProDSS
Calibrated 3/25/2024 12:25:29PM

Group # 5
Group Name Disolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
100.0 / 100.0	%	100.0	%	96.9	99.3	-0.70%	Pass

Test Instruments Used During the Calibration (As Of Cal Entry Date)

Test Standard ID	Description	Manufacturer	Model Number	Serial Number / Lot Number	Last Cal Date/ Opened Date	Next Cal Date / Expiration Date
STL 126 NTU L#23E24002133	STL 126 NTU L#23E24002133	YSI	126 NTU	23E24002133		5/20/2024
STL 1413 COND L#4GB0749	STL 1413 COND L#4GB0749	AquaPhoenix Scientific	31986	4GB0749		2/25/2025
STL AUTOCAL L#24009059	Auto Cal Solution 0 NTU/PH 4	GFS	8483	24009059		3/20/2025
STL ORP SOLUTION 240MV L#3GJ0994	STL ORP SOLUTION 240MV L#3GJ0994	AquaPhoenix Scientific	ORP Solution	3GJ0994		7/25/2024
STL PH10 #3GK0004	STL PH10 #3GK0004	AquaPhoenix Scientific	PH 10	3GK0004		11/25/2025
STL PH4 L#3GH0675	STL pH4 L#3GH0675	AquaPhoenix Scientific	pH 4	3GH0675		8/25/2025
STL PH7 L#3GK1332	STL PH7 L#3GK1332	AquaPhoenix Scientific	PH7	3GK1332		11/25/2025

Notes about this calibration

Calibration Result Calibration Successful
Who Calibrated Chris Harkins

All instruments are calibrated by Pine Environmental Services LLC according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

Notify Pine Environmental Services LLC of any defect within 24 hours of receipt of equipment
Please call 800-301-9663 for Technical Assistance

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC
11669 Lilburn Park Rd.
St. Louis, MO 63146
Office: 314.344.1079

Pine Environmental Services, Inc.

Instrument ID 26599
Description YSI ProDSS
Calibrated 3/25/2024 12:25:29PM

Manufacturer YSI
Model Number ProDSS
Serial Number/ Lot Number 15H101893
Location St. Louis
Department

State Certified
Status Pass
Temp °C 22.2
Humidity % 43

Calibration Specifications

Group # 1
Group Name PH
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
7.00 / 7.00	PH	7.00	PH	7.25	7.02	0.29%	Pass
4.00 / 4.00	PH	4.00	PH	4.31	4.00	0.00%	Pass
10.00 / 10.00	PH	10.00	PH	10.15	10.05	0.50%	Pass

Group # 2
Group Name Turbidity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
0.00 / 0.00	NTU	0.00	NTU	0.36	0.00	0.00%	Pass
124.00 / 124.00	NTU	124.00	NTU	118.31	124.00	0.00%	Pass

Group # 3
Group Name Conductivity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.000

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
1.413 / 1.413	ms/cm	1.413	ms/cm	1.469	1.413	0.00%	Pass

Group # 4
Group Name Redox (ORP)
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
240.0 / 240.0	mv	240.0	mv	224.4	240.0	0.00%	Pass

Group # 5
Group Name Disolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC

11669 Lilburn Park Rd.
St. Louis, MO 63146
Office: 314.344.1079

Pine Environmental Services, Inc.

Instrument ID 218083
Description YSI Pro DSS Sonde
Calibrated 3/27/2024 5:59:58PM

Group # 5
Group Name Dissolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
100.00 / 100.00	%	100.00	%	97.30	100.00	0.00%	Pass

Test Instruments Used During the Calibration (As Of Cal Entry Date)

Test Standard ID	Description	Manufacturer	Model Number	Serial Number / Lot Number	Last Cal Date/ Opened Date	Next Cal Date / Expiration Date
STL 126 NTU L#23E24002133	STL 126 NTU L#23E24002133	YSI	126 NTU	23E24002133		5/20/2024
STL 1413 COND L#4GB0749	STL 1413 COND L#4GB0749	AquaPhoenix Scientific	31986	4GB0749		2/25/2025
STL AUTOCAL L#24009059	Auto Cal Solution 0 NTU/PH 4	GFS	8483	24009059		3/20/2025
STL ORP SOLUTION 240MV L#3GJ0994	STL ORP SOLUTION 240MV L#3GJ0994	AquaPhoenix Scientific	ORP Solution	3GJ0994		7/25/2024
STL PH10 #3GK0004	STL PH10 #3GK0004	AquaPhoenix Scientific	PH 10	3GK0004		11/25/2025
STL PH4 L#3GH0675	STL pH4 L#3GH0675	AquaPhoenix Scientific	pH 4	3GH0675		8/25/2025
STL PH7 L#3GK1332	STL PH7 L#3GK1332	AquaPhoenix Scientific	PH7	3GK1332		11/25/2025

Notes about this calibration

Calibration Result Calibration Successful
Who Calibrated Chris Harkins

All instruments are calibrated by Pine Environmental Services LLC according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

Notify Pine Environmental Services LLC of any defect within 24 hours of receipt of equipment
Please call 800-301-9663 for Technical Assistance

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC

11669 Lilburn Park Rd.
St. Louis, MO 63146
Office: 314.344.1079

Pine Environmental Services, Inc.

Instrument ID 218083
Description YSI Pro DSS Sonde
Calibrated 3/27/2024 5:59:58PM

Manufacturer YSI
Model Number Pro DSS
Serial Number/ Lot Number 23F102674
Location St. Louis
Department

State Certified
Status Pass
Temp °C 22.2
Humidity % 43

Calibration Specifications

Group # 1
Group Name PH
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
7.00 / 7.00	PH	7.00	PH	7.30	7.02	0.29%	Pass
4.00 / 4.00	PH	4.00	PH	4.31	4.00	0.00%	Pass
10.00 / 10.00	PH	10.00	PH	10.24	10.05	0.50%	Pass

Group # 2
Group Name Turbidity (NTU)
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
0.00 / 0.00	FNU	0.00	FNU	0.59	0.00	0.00%	Pass
124.00 / 124.00	FNU	124.00	FNU	118.44	124.00	0.00%	Pass

Group # 3
Group Name Conductivity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.000

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
1.413 / 1.413	ms/cm	1.413	ms/cm	1.474	1.413	0.00%	Pass

Group # 4
Group Name Redox (ORP)
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
240.00 / 240.00	mv	240.00	mv	228.50	240.00	0.00%	Pass

Group # 5
Group Name Dissolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Summary
Newton- 3Q 2024

			Weather				Well Condition				
WO Sample	Well ID	**Program/ Sample Type**	**Temp (°F)**	**Precipitation**	**Wind Direction**	**Sky**	**Well Pad**	**Casing**	**Protective Cover**	**Reference Mark/ ID**	**Well Locked**
001	A213	Groundwater Sample	71.0	None	NW	Partly cloudy	Good	Good	Good	Yes	Yes
002	A214	Groundwater Sample	72.0	None	N	Clear	Good	Good	Good	Yes	Yes
003	A215	Groundwater Sample	72.0	None	N	Clear	Good	Good	Good	Yes	Yes
005	APW03	Groundwater Sample	85.0	None	N	Clear	Good	Good	Good	Yes	Yes
006	APW04	Groundwater Sample	84.0	None	N	Clear	Good	Good	Good	Yes	Yes
007	APW05	Groundwater Sample	76.0	None	NW	Clear	Good	Good	Good	Yes	Yes
009	APW06	Groundwater Sample	82.0	None	N	Clear	Good	Good	Good	Yes	Yes
010	APW07	Groundwater Sample	83.0	None	N	Clear	Good	Good	Good	Yes	Yes
011	APW08	Groundwater Sample	72.0	Heavy	SW	Cloudy	Good	Good	Good	Yes	Yes
012	APW09	Groundwater Sample	86.0	None	N	Clear	Good	Good	Good	Yes	Yes
013	APW10	Groundwater Sample	85.0	None	NW	Clear	Good	Good	Good	Yes	Yes
014	APW11	Groundwater Sample	76.0	None	NW	Clear	Good	Good	Good	Yes	Yes
015	APW12	Groundwater Sample	78.0	None	NW	Clear	Good	Good	Good	Yes	Yes
016	APW13	Groundwater Sample	88.0	None	NW	Clear	Good	Good	Good	Yes	Yes
019	APW16	Groundwater Sample	70.0	None	E	Clear	Good	Good	Good	Yes	Yes
020	APW17	Groundwater Sample	72.0	Heavy	SW	Cloudy	Good	Good	Good	Yes	Yes
021	APW18	Groundwater Sample	72.0	Light	SW	Cloudy	Good	Good	Good	Yes	Yes
022	G06D	Groundwater Sample	73.0	None	SW	Clear	Good	Good	Good	Yes	Yes
023	G104	Groundwater Sample	81.0	None	NE	Partly cloudy	Good	Good	Good	Yes	Yes
024	G104D	DTW Only	85.0	None	SW	Clear	Good	Good	Good	Yes	Yes
025	G104S	DTW Only	85.0	None	SW	Clear	Good	Good	Good	Yes	Yes
026	G105	Groundwater Sample	72.0	Light	SW	Cloudy	Good	Good	Good	Yes	Yes
027	G106	Groundwater Sample	71.0	Heavy	S	Cloudy	Good	Good	Good	Yes	Yes
028	G109	DTW Only	85.0	None	SW	Clear	Good	Good	Good	Yes	Yes
029	G111	DTW Only	85.0	None	SW	Clear	Good	Good	Good	Yes	Yes
030	G112	DTW Only	85.0	None	SW	Clear	Good	Good	Good	Yes	Yes
031	G113	DTW Only	85.0	None	SW	Clear	Good	Good	Good	Yes	Yes
032	G114	DTW Only	85.0	None	SW	Clear	Good	Good	Good	Yes	Yes
033	G115	DTW Only	85.0	None	SW	Clear	Good	Good	Good	Yes	Yes
034	G116	Groundwater Sample	74.0	None	NE	Clear	Good	Good	Good	Yes	Yes
035	G117	DTW Only	85.0	None	SW	Clear	Good	Good	Good	Yes	Yes
036	G118	DTW Only	85.0	None	SW	Clear	Good	Good	Good	Yes	Yes
037	G119	DTW Only	85.0	None	SW	Clear	Good	Good	Good	Yes	Yes
038	G120	DTW Only	85.0	None	SW	Clear	Good	Good	Good	Yes	Yes
039	G125	Groundwater Sample	71.0	None	E	Clear	Good	Good	Good	Yes	Yes
040	G128	Groundwater Sample	79.0	None	SE	Partly cloudy	Good	Good	Good	Yes	Yes

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Summary
Newton- 3Q 2024

			Weather				Well Condition				
WO Sample	Well ID	**Program/ Sample Type**	**Temp (°F)**	**Precipitation**	**Wind Direction**	**Sky**	**Well Pad**	**Casing**	**Protective Cover**	**Reference Mark/ ID**	**Well Locked**
041	G130	Groundwater Sample	77.0	None	NE	Clear	Good	Good	Good	Yes	Yes
042	G133	Groundwater Sample	75.0	None	E	Clear	Good	Good	Good	Yes	Yes
043	G136	Groundwater Sample	79.0	None	SE	Clear	Good	Good	Good	Yes	Yes
044	G139	Groundwater Sample	80.0	None	SE	Clear	Good	Good	Good	Yes	Yes
045	G141	Groundwater Sample	72.0	None	NE	Cloudy	Good	Good	Good	Yes	Yes
046	G201	Groundwater Sample	78.0	None	SE	Partly cloudy	Good	Good	Good	Yes	Yes
047	G202	Groundwater Sample	74.0	Light	SW	Cloudy	Good	**Other (see note)**	Good	Yes	Yes
048	G203	Groundwater Sample	75.0	Light	SW	Cloudy	Good	Good	Good	Yes	Yes
049	G208	Groundwater Sample					Good	**Other (see note)**	Good	Yes	Yes
050	G217S	Groundwater Sample	81.0	None	N	Clear	Good	Good	Good	Yes	Yes
051	G218	DTW Only	86.0	None	SW	Clear	Good	Good	Good	Yes	Yes
052	G220	Groundwater Sample	74.0	None	NW	Cloudy	Good	Good	Good	Yes	Yes
053	G221	Groundwater Sample	82.0	None	N	Clear	Good	Good	Good	Yes	Yes
055	G223	Groundwater Sample	74.0	None	SW	Clear	Good	Good	Good	Yes	Yes
057	G225	Groundwater Sample	69.0	Light	N	Cloudy	Good	Good	Good	Yes	Yes
058	G230	Groundwater Sample	84.0	None	N	Clear	Good	Good	Good	Yes	Yes
059	G231	Groundwater Sample	74.0	None	SW	Clear	Good	Good	Good	Yes	Yes
060	G232	Groundwater Sample	74.0	None	SW	Cloudy	Good	Good	Good	Yes	Yes
061	G233	Groundwater Sample	72.0	Light	SW	Cloudy	Good	Good	Good	Yes	Yes
062	G234	Groundwater Sample	88.0	None	NW	Clear	Good	Good	Good	Yes	Yes
063	G48MG	Groundwater Sample	72.0	None	E	Clear	Good	Good	Good	Yes	Yes
064	L1R	Groundwater Sample	78.0	None	N	Clear	Good	Good	Good	Yes	**No**
065	L201	DTW Only	88.0	None	S	Clear					
066	L202	DTW Only	88.0	None	S	Clear					
067	L203	DTW Only	88.0	None	S	Clear					
068	L204	DTW Only	88.0	None	S	Clear					
069	L205	DTW Only	88.0	None	S	Clear					
070	L301	Leachate Sample	77.0	None	NE	Clear				Yes	**No**
071	R217D	Groundwater Sample	75.0	None	NW	Partly cloudy	Good	Good	**Other (see note)**	Yes	**No**
072	R219	Groundwater Sample	81.0	None	SE	Partly cloudy	Good	Good	Good	Yes	Yes
073	SG02	DTW Only	86.0	None	SW	Clear					
074	XPW01	Groundwater Sample	83.0	None	S	Clear	Good	Good	Good	Yes	Yes
075	XPW02	Groundwater Sample	75.0	None	E	Partly cloudy	Good	Good	Good	Yes	Yes
076	XPW03	Groundwater Sample	76.0	None	S	Clear	Good	Good	**Other (see note)**	Yes	**No**
077	XPW04	Groundwater Sample	76.0	None	S	Clear	Good	Good	Good	Yes	Yes
078	XSG01	DTW Only	88.0	None	S	Clear					

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Summary
Newton- 3Q 2024

			Weather				Well Condition				
WO Sample	Well ID	**Program/ Sample Type**	**Temp (°F)**	**Precipitation**	**Wind Direction**	**Sky**	**Well Pad**	**Casing**	**Protective Cover**	**Reference Mark/ ID**	**Well Locked**
079	Field Blank	QA/QC Sample									
080	A213 Duplicate	QA/QC Sample	71.0	None	NW	Partly cloudy	Good	Good	Good	Yes	Yes
082	G104 Duplicate	QA/QC Sample	81.0	None	NE	Partly cloudy	Good	Good	Good	Yes	Yes
083	Equipment Blank 1	QA/QC Sample									
084	Equipment Blank 2	QA/QC Sample									
085	Equipment Blank 3	QA/QC Sample									
086	LREP	Leachate Sample									
087	R217D	Groundwater Sample	75.0	None	NW	Partly cloudy	Good	Good	Good	Yes	No
088	G230	Groundwater Sample	89.0	None	N	Clear	Good	Good	Good	Yes	Yes
089	G221	Groundwater Sample	88.0	None	N	Clear	Good	Good	Good	Yes	Yes
090	APW02	Groundwater Sample	75.0	None	S	Cloudy	Good	Good	Good	Yes	Yes
091	APW05S	Groundwater Sample	70.0	None	SE	Partly cloudy	Good	Good	Good	Yes	Yes
092	APW14	Groundwater Sample	74.0	None	S	Cloudy	Good	Good	Good	Yes	Yes
093	APW15	Groundwater Sample	74.0	None	S	Cloudy	Good	Good	Good	Yes	Yes
094	APW19S	Groundwater Sample	71.0	None	SE	Cloudy	Good	Good	Good	Yes	Yes
095	APW20S	Groundwater Sample	73.0	None	SE	Cloudy	Good	Good	Good	Yes	Yes
096	APW21S	Groundwater Sample	70.0	None	SE	Cloudy	Good	Good	Good	Yes	Yes
097	APW22S	Groundwater Sample	70.0	None	S	Clear	Good	Good	Good	Yes	Yes
098	APW23S	Groundwater Sample	73.0	None	S	Clear	Good	Good	Good	Yes	Yes
099	APW23	Groundwater Sample	74.0	None	S	Clear	Good	Good	Good	Yes	Yes
100	G222	Groundwater Sample	71.0	None	S	Cloudy	Good	Good	Good	Yes	Yes
101	G224	Groundwater Sample	71.0	None	S	Cloudy	Good	Good	Good	Yes	Yes
102	Field Blank 2	QA/QC Sample									
103	APW02 Duplicate	QA/QC Sample	75.0	None	S	Cloudy	Good	Good	Good	Yes	Yes
104	APW19S Duplicate	QA/QC Sample	71.0	None	SE	Cloudy	Good	Good	Good	Yes	Yes
105	Equipment Blank 2	QA/QC Sample									
106	Equipment Blank 3	QA/QC Sample									

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Summary
Newton- 3Q 2024

		GW Level Measurement				Purge Activities							
WO Sample	Well ID	**Sampler Initials**	**Date/Time**	**DTW (ft)**	**DTB (ft)**	**Sampler Initials**	**Purge Date**	**Purge Start Time**	**Purge End Time**	**Purging/Sampling Device**	**Well Diameter (in)**	**Actual Volume Purged (L)**	**Purge Rate (mL/min)**
001	A213	JC	7/2/24 9:12	19.20	61.00	JC	7/2/2024	09:15	09:43	Bladder Pump	2"	3.0	107.1
002	A214	BG	7/2/24 9:46	41.24	75.50	BG	7/2/2024	09:46	10:29	Submersible Pump	2"	8.0	186.0
003	A215	BG	7/2/24 10:46	44.36	78.10	BG	7/2/2024	10:46	11:17	Submersible Pump	2"	7.5	241.9
005	APW03	BG	7/8/24 11:39	7.75	24.00	BG	7/8/2024	11:39	12:11	Submersible Pump	2"	9.0	281.3
006	APW04	BG	7/8/24 10:51	5.14	21.60	BG	7/8/2024	10:55	11:25	Submersible Pump	2"	11.0	366.7
007	APW05	TAC	7/2/24 9:55	14.26	70.80	TAC	7/2/2024	09:55	10:13	Bladder Pump	2"	5.0	277.8
009	APW06	BG	7/2/24 11:43	19.36	76.10	BG	7/2/2024	11:43	12:26	Submersible Pump	2"	9.0	209.3
010	APW07	BG	7/2/24 12:48	47.11	85.80	BG	7/2/2024	12:48	13:27	Submersible Pump	2"	11.0	282.1
011	APW08	JC	7/9/24 12:55	37.85	84.20	JC	7/9/2024	12:56	13:15	Bladder Pump	2"	4.0	210.5
012	APW09	BG	7/2/24 13:48	27.29	65.00	BG	7/2/2024	13:48	14:19	Submersible Pump	2"	11.0	354.8
013	APW10	TAC	7/2/24 12:43	18.56	48.70	TAC	7/2/2024	12:44	13:04	Bladder Pump	2"	5.5	275.0
014	APW11	TAC	7/2/24 10:39	25.00	67.60	TAC	7/2/2024	10:39	11:03	Bladder Pump	2"	5.5	229.2
015	APW12	TAC	7/2/24 11:36	16.00	33.00	TAC	7/2/2024	11:36	11:57	Bladder Pump	2"	7.0	333.3
016	APW13	TAC	7/2/24 13:39	32.97	66.30	TAC	7/2/2024	13:39	14:11	Bladder Pump	2"	9.0	281.3
019	APW16	JC	7/10/24 8:41	40.31	87.50	JC	7/10/2024	08:43	09:03	Bladder Pump	2"	4.0	200.0
020	APW17	JC	7/9/24 12:00	41.50	94.70	JC	7/9/2024	12:03	12:38	Bladder Pump	2"	5.5	157.1
021	APW18	JC	7/9/24 10:13	52.02	82.70	JC	7/9/2024	10:14	11:02	Bladder Pump	2"	9.0	187.5
022	G06D	TAC	7/10/24 9:13	28.83	96.60	TAC	7/10/2024	09:26	10:04	Bladder Pump	2"	4.0	105.3
023	G104	JC	7/8/24 11:01	7.82	42.96	JC	7/8/2024	10:55	11:46	Bladder Pump	2"	5.0	98.0
024	G104D	JC	7/1/24 10:50	8.74	88.80								
025	G104S	JC	7/1/24 10:55	8.64	25.20								
026	G105	BG	7/9/24 10:02	10.68	25.80	BG	7/9/2024	10:02	10:22	Peristaltic Pump	2"	4.5	225.0
027	G106	JC	7/9/24 8:53	24.32	35.70	JC	7/9/2024	09:04	09:50	Bladder Pump	2"	6.0	130.4
028	G109	JC	7/1/24 14:35	9.88	24.10								
029	G111	JC	7/1/24 14:22	9.56	21.90								
030	G112	JC	7/1/24 14:13	9.53	23.60								
031	G113	JC	7/1/24 13:34	22.51	34.20								
032	G114	JC	7/1/24 14:51	18.29	44.68								
033	G115	JC	7/1/24 11:50	8.18	19.60								
034	G116	BG	7/11/24 8:58	5.89	21.80	BG	7/11/2024	08:59	09:24	Peristaltic Pump	2"	3.5	140.0
035	G117	JC	7/1/24 15:03	14.64	21.80								
036	G118	TAC	7/1/24 12:00	14.02	22.70								
037	G119	TAC	7/1/24 14:41	9.85	22.80								
038	G120	JC	7/1/24 14:27	10.79	23.70								
039	G125	BG	7/10/24 9:10	3.02	22.80	BG	7/10/2024	09:10	09:40	Peristaltic Pump	2"	6.0	200.0
040	G128	JC	7/10/24 12:21	2.03	30.20	JC	7/10/2024	12:24	12:36	Peristaltic Pump	2"	2.0	166.7

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Summary
Newton- 3Q 2024

		GW Level Measurement				Purge Activities							
WO Sample	Well ID	**Sampler Initials**	**Date/Time**	**DTW (ft)**	**DTB (ft)**	**Sampler Initials**	**Purge Date**	**Purge Start Time**	**Purge End Time**	**Purging/Sampling Device**	**Well Diameter (in)**	**Actual Volume Purged (L)**	**Purge Rate (mL/min)**
041	G130	BG	7/10/24 11:10	6.25	21.90	BG	7/10/2024	11:10	11:26	Peristaltic Pump	2"	5.0	312.5
042	G133	BG	7/10/24 10:10	12.33	27.90	BG	7/10/2024	10:20	10:52	Submersible Pump	2"	4.0	125.0
043	G136	BG	7/10/24 11:45	7.45	22.30	BG	7/10/2024	11:45	12:06	Peristaltic Pump	2"	5.0	238.1
044	G139	BG	7/10/24 12:17	7.25	22.90	BG	7/10/2024	12:17	12:37	Peristaltic Pump	2"	6.0	300.0
045	G141	BG	7/9/24 10:41	15.49	25.32	BG	7/9/2024	10:41	11:18	Peristaltic Pump	2"	6.0	162.2
046	G201	JC	7/10/24 11:38	17.18	69.50	JC	7/10/2024	11:41	11:55	Bladder Pump	2"	2.0	142.9
047	G202	TAC	7/9/24 12:12	47.98	76.80	TAC	7/9/2024	12:12	12:56	Bladder Pump	2"	8.0	181.8
048	G203	TAC	7/9/24 13:10	41.48	74.90	TAC	7/9/2024	13:10	13:31	Bladder Pump	2"	8.0	381.0
049	G208	-	-	-	96.60								
050	G217S	BG	7/10/24 13:19	7.37	21.40	BG	7/10/2024	13:19	13:40	Peristaltic Pump	2"	4.0	190.5
051	G218	BG	7/1/24 12:45	19.14	90.60								
052	G220	TAC	7/10/24 10:34	17.00	88.40	TAC	7/10/2024	10:34	10:59	Bladder Pump	2"	2.0	80.0
053	G221	JC	7/2/24 12:00	23.48	86.90	JC	7/2/2024	12:05	12:48	Bladder Pump	2"	4.0	93.0
055	G223	TAC	7/10/24 11:38	32.84	91.00	TAC	7/10/2024	11:38	11:58	Bladder Pump	2"	4.0	200.0
057	G225	bg	7/9/24 8:55	9.99	24.70	BG	7/9/2024	08:55	09:28	Peristaltic Pump	2"	4.0	121.2
058	G230	JC	7/2/24 13:12	48.31	81.03	JC	7/2/2024	13:13	13:41	Bladder Pump	2"	4.0	142.9
059	G231	JC	7/10/24 10:46	47.55	79.76	JC	7/10/2024	10:49	11:19	Bladder Pump	2"	5.5	183.3
060	G232	TAC	7/9/24 10:56	45.92	77.66	TAC	7/9/2024	10:56	11:27	Bladder Pump	2"	9.0	290.3
061	G233	TAC	7/9/24 9:11	42.86	76.24	TAC	7/9/2024	09:12	09:41	Bladder Pump	2"	4.5	155.2
062	G234	TAC	7/8/24 11:11	43.44	73.81	TAC	7/8/2024	11:11	12:01	Bladder Pump	2"	14.5	290.0
063	G48MG	JC	7/11/24 8:30	18.94	79.90	JC	7/11/2024	08:37	08:52	Submersible Pump	2"	6.0	400.0
064	L1R	BG	7/11/24 10:16	53.69	60.11	BG	7/10/2024	10:17	10:20	Direct Grab	2"		
065	L201	TAC	7/1/24 12:47	36.62	-								
066	L202	TAC	7/1/24 12:56	39.64	-								
067	L203	TAC	7/1/24 14:00	31.95	-								
068	L204	TAC	7/1/24 14:12	48.73	-								
069	L205	TAC	7/1/24 14:05	32.73	-								
070	L301	BG	-	-	-	BG	7/11/2024	09:55	10:02	Bladder Pump		1.5	214.3
071	R217D	JC	7/2/24 10:46	19.25	67.80	JC	7/2/2024	10:47	11:34	Bladder Pump	2"	5.0	106.4
072	R219	JC	7/10/24 13:07	20.65	64.27	JC	7/10/2024	13:11	13:41	Submersible Pump	2"	7.0	233.3
073	SG02	BG	7/1/24 14:33	2.91	-								
074	XPW01	TAC	7/10/24 13:14	10.66	20.10	TAC	7/10/2024	13:14	13:44	Bladder Pump	2"	7.0	233.3
075	XPW02	JC	7/11/24 9:13	7.62	18.50	JC	7/11/2024	09:13	09:25	Bladder Pump	2"	3.0	250.0
076	XPW03	TAC	7/11/24 9:46	9.74	22.80	TAC	7/11/2024	09:46	10:04	Bladder Pump	2"	4.0	222.2
077	XPW04	TAC	7/11/24 8:46	12.01	22.60	TAC	7/11/2024	08:47	09:22	Bladder Pump	2"	8.0	228.6
078	XSG01	BG	7/1/24 12:21	6.73									

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Summary
Newton- 3Q 2024

		GW Level Measurement				Purge Activities							
WO Sample	Well ID	**Sampler Initials**	**Date/Time**	**DTW (ft)**	**DTB (ft)**	**Sampler Initials**	**Purge Date**	**Purge Start Time**	**Purge End Time**	**Purging/Sampling Device**	**Well Diameter (in)**	**Actual Volume Purged (L)**	**Purge Rate (mL/min)**
079	Field Blank												
080	A213 Duplicate	JC	7/2/24 9:12	19.20	61.00	JC	7/2/2024	09:15	09:43	Bladder Pump	2"	3.0	107.1
082	G104 Duplicate	JC	7/8/24 11:01	7.82	42.96	JC	7/8/2024	10:55	11:46	Bladder Pump	2"	5.0	98.0
083	Equipment Blank 1									Direct Grab			
084	Equipment Blank 2												
085	Equipment Blank 3												
086	LREP												
087	R217D	JC	7/10/24 9:21	20.63	67.80	JC	7/10/2024	09:23	09:32	Bladder Pump	2"	3.5	388.9
088	G230	JC	7/10/24 9:45	49.12	81.03	JC	7/10/2024	09:49	10:02	Bladder Pump	2"	2.5	192.3
089	G221	JC	7/10/24 10:03	26.88	86.90	JC	7/10/2024	10:05	10:25	Bladder Pump	2"	3.0	150.0
090	APW02	JC	8/7/24 13:00	5.14	23.70	JC	8/7/2024	13:01	13:31	Peristaltic Pump	2"	6.0	200.0
091	APW05S	BG	8/7/24 9:39	10.55	22.90	BG	8/7/2024	09:39	10:08	Peristaltic Pump	2"	3.5	120.7
092	APW14	JC	8/7/24 12:14	20.95	57.40	JC	8/7/2024	12:15	12:38	Bladder Pump	2"	4.0	173.9
093	APW15	JC	8/7/24 11:37	21.21	105.60	JC	8/7/2024	11:37	11:55	Bladder Pump	2"	3.5	194.4
094	APW19S	BG	8/7/24 11:04	5.99	20.34	BG	8/7/2024	11:04	11:25	Peristaltic Pump	2"	4.0	190.5
095	APW20S	BG	8/7/24 11:45	20.59	27.40	BG	8/7/2024	11:45	12:29	Peristaltic Pump	2"	4.5	102.3
096	APW21S	BG	8/7/24 10:20	11.51	22.70	BG	8/7/2024	10:20	10:48	Peristaltic Pump	2"	5.0	178.6
097	APW22S	JC	8/8/24 8:48	8.92	26.25	JC	8/8/2024	08:49	09:20	Peristaltic Pump	2"	5.5	177.4
098	APW23S	JC	8/8/24 9:37	7.71	22.40	JC	8/8/2024	09:39	10:25	Peristaltic Pump	2"	8.5	184.8
099	APW23	JC	8/8/24 10:28	14.40	46.02	JC	8/8/2024	10:35	10:55	Peristaltic Pump	2"	4.0	200.0
100	G222	JC	8/7/24 11:00	16.30	81.30	JC	8/7/2024	11:02	11:18	Bladder Pump	2"	3.0	187.5
101	G224	JC	8/7/24 10:22	42.55	75.50	JC	8/7/2024	10:24	10:51	Bladder Pump	2"	5.0	185.2
102	Field Blank 2				-					Direct Grab			
103	APW02 Duplicate	JC	8/7/24 13:00	5.14	23.70	JC	8/7/2024	13:01	13:31	Peristaltic Pump	2"	6.0	200.0
104	APW19S Duplicate	BG	8/7/24 11:04	5.99	20.34	BG	8/7/2024	11:04	11:25	Peristaltic Pump	2"	4.0	190.5
105	Equipment Blank 2				-					Direct Grab			
106	Equipment Blank 3				-					Direct Grab			

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Summary
Newton- 3Q 2024

WO Sample	Well ID	Sampling Activities and Observations										
		Sampler Initials	Date	Time	Sampling Method	Instrument ID	Field Filtered	Appearance	Odor	Color	Post-Sample DTW (ft)	Drawdown (ft)
001	A213	JC	07/02/24	09:43	Low Flow	44387	Yes	Clear	None	none	25.87	6.67
002	A214	BG	07/02/24	10:29	Low Flow	45720	Yes	Slightly cloudy	None	LT GRAY	40.49	-0.75
003	A215	BG	07/02/24	11:17	Low Flow	45720	Yes	Slightly cloudy	None	Cloudy/clear	43.76	-0.6
005	APW03	BG	07/08/24	12:11	Low Flow	45720	Yes	Clear	None	CLEAR	6.63	-1.12
006	APW04	BG	07/08/24	11:25	Low Flow	45720	Yes	Clear	None	CLEAR	6.23	1.09
007	APW05	TAC	07/02/24	10:13	Low Flow	218083	Yes	Clear	None	Clear	14.37	0.11
009	APW06	BG	07/02/24	12:26	Low Flow	45720	Yes	Clear	None	CLEAR	17.98	-1.38
010	APW07	BG	07/02/24	13:27	Low Flow	45720	Yes	Cloudy	None	LT GRAY	45.79	-1.32
011	APW08	JC	07/09/24	13:15	Low Flow	51294	Yes	Clear	Slight	none	37.85	0
012	APW09	BG	07/02/24	14:19	Low Flow	45720	Yes	Clear	None	CLEAR	26.19	-1.1
013	APW10	TAC	07/02/24	13:04	Low Flow	218083	No	Clear	None	Clear	18.78	0.22
014	APW11	TAC	07/02/24	11:03	Low Flow	218083	No	Clear	None	Clear	25.19	0.19
015	APW12	TAC	07/02/24	11:57	Low Flow	218083	No	Clear	None	Clear	16.08	0.08
016	APW13	TAC	07/02/24	14:11	Low Flow	218083	No	Clear	None	Clear	34.36	1.39
019	APW16	JC	07/10/24	09:03	Low Flow	51294	No	Clear	Moderate	none	40.31	0
020	APW17	JC	07/09/24	12:38	Low Flow	51294	Yes	Clear	Slight	none	41.50	0
021	APW18	JC	07/09/24	11:02	Low Flow	51294	No	Clear	Strong	none	52.02	0
022	G06D	TAC	07/10/24	10:04	Low Flow	218083	No	Clear	None	Clear	35.72	6.89
023	G104	JC	07/08/24	11:46	Low Flow	51294	Yes	Slightly cloudy	None	lt brown	10.90	3.08
024	G104D											
025	G104S											
026	G105	BG	07/09/24	10:22	Low Flow	45720	Yes	Clear	Strong	CLEAR	10.89	0.21
027	G106	JC	07/09/24	09:50	Low Flow	51294	Yes	Slightly cloudy	None	none	24.89	0.57
028	G109											
029	G111											
030	G112											
031	G113											
032	G114											
033	G115											
034	G116	BG	07/11/24	09:24	Low Flow	45720	Yes	Clear	None	CLEAR	6.08	0.19
035	G117											
036	G118											
037	G119											
038	G120											
039	G125	bg	07/10/24	09:40	Low Flow	45720	Yes	Clear	None	CLEAR	3.78	0.76
040	G128	JC	07/10/24	12:36	Low Flow	51294	Yes	Clear	None	none	8.94	6.91

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Summary
Newton- 3Q 2024

WO Sample	Well ID	Sampling Activities and Observations										
		Sampler Initials	Date	Time	Sampling Method	Instrument ID	Field Filtered	Appearance	Odor	Color	Post-Sample DTW (ft)	Drawdown (ft)
041	G130	BG	07/10/24	11:26	Low Flow	45720	Yes	Clear	Slight	CLEAR	6.77	**0.52**
042	G133	BG	07/10/24	10:52	Low Flow	45720	Yes	Clear	None	Clear	12.56	0.23
043	G136	BG	07/10/24	12:06	Low Flow	45720	Yes	Clear	Slight	CLEAR	8.12	**0.67**
044	G139	BG	07/10/24	12:37	Low Flow	45720	Yes	Clear	None	CLEAR	7.46	0.21
045	G141	BG	07/09/24	11:18	Low Flow	45720	No	Clear	Slight	CLEAR	16.21	**0.72**
046	G201	JC	07/10/24	11:55	Low Flow	51294	No	Slightly cloudy	Slight	none	17.18	0
047	G202	TAC	07/09/24	12:56	Low Flow	218083	No	Clear	None	None	48.02	0.04
048	G203	TAC	07/09/24	13:31	Low Flow	218083	No	Clear	None	None	41.55	0.07
049	G208											
050	G217S	BG	07/10/24	13:40	Low Flow	45720	Yes	Clear	None	CLEAR	7.73	0.36
051	G218											
052	G220	TAC	07/10/24	10:59	Low Flow	218083	No	Cloudy	None	None	21.33	**4.33**
053	G221	JC	07/02/24	12:48	Low Flow	51294	Yes	Slightly cloudy	Slight	lt brown	29.09	**5.61**
055	G223	TAC	07/10/24	11:58	Low Flow	218083	No	Clear	None	None	36.08	**3.24**
057	G225	BG	07/08/24	09:28	Low Flow	45720	Yes	Clear	Slight	CLEAR	10.08	0.09
058	G230	JC	07/02/24	13:41	Low Flow	44387	Yes	Slightly cloudy	Slight	none	48.60	0.29
059	G231	JC	07/10/24	11:19	Low Flow	51294	Yes	Slightly cloudy	Slight	none	47.55	0
060	G232	TAC	07/09/24	11:27	Low Flow	218083	Yes	Clear	None	None	45.95	0.03
061	G233	TAC	07/09/24	09:41	Low Flow	218083	Yes	Clear	None	None	42.22	-0.64
062	G234	TAC	07/08/24	12:01	Low Flow	218083	Yes	Slightly cloudy	None	None	43.62	0.18
063	G48MG	JC	07/11/24	08:52	Low Flow	51294	No	Clear	None	none	19.04	0.1
064	L1R	BG	07/10/24	10:20	Direct Sample	#REF!	No	Cloudy	Moderate	DARK GRAY		
065	L201											
066	L202											
067	L203											
068	L204											
069	L205											
070	L301	BG	07/11/24	10:02	Low Flow	45720	No	Clear	Slight	CLEAR		
071	R217D	JC	07/02/24	11:34	Low Flow	44387	Yes	Cloudy	None	lt brown	20.24	**0.99**
072	R219	JC	07/10/24	13:41	Low Flow	51294	Yes	Slightly cloudy	None	lt brown	29.68	**9.03**
073	SG02											
074	XPW01	TAC	07/10/24	13:44	Low Flow	218083	No	Clear	None	Dark Brown	10.66	0
075	XPW02	JC	07/11/24	09:25	Low Flow	51294	No	Clear	Moderate	none	7.62	0
076	XPW03	TAC	07/11/24	10:04	Low Flow	218083	No	Clear	None	None	9.74	0
077	XPW04	TAC	07/11/24	09:22	Low Flow	218083	No	Clear	Slight	None	12.08	0.07
078	XSG01											

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Summary
Newton- 3Q 2024

WO Sample	Well ID	Sampling Activities and Observations										
		Sampler Initials	Date	Time	Sampling Method	Instrument ID	Field Filtered	Appearance	Odor	Color	Post-Sample DTW (ft)	Drawdown (ft)
079	Field Blank	JC	07/11/24	10:05	Direct Sample	-	No	Clear	None	None		
080	A213 Duplicate	JC	07/02/24	09:43	Low Flow	44387	Yes	Clear	None	none	25.87	**6.67**
082	G104 Duplicate	JC	07/08/24	11:46	Low Flow	51294	Yes	Slightly cloudy	None	lt brown	10.90	**3.08**
083	Equipment Blank 1	JC	07/11/24	10:15	Direct Sample	-	No	Clear	None	None	-	-
084	Equipment Blank 2											
085	Equipment Blank 3											
086	LREP											
087	R217D	JC	07/10/24	09:32	Low Flow	51294	Yes	Cloudy	None	lt brown	20.96	0.33
088	G230	JC	07/10/24	10:02	Low Flow	51294	Yes	Slightly cloudy	Slight	none	49.53	0.41
089	G221	JC	07/10/24	10:25	Low Flow	51294	Yes	Slightly cloudy	Slight	lt brown	30.22	**3.34**
090	APW02	JC	08/07/24	13:31	Low Flow	218074	Yes	Clear	None	none	5.28	0.14
091	APW05S	BG	08/07/24	10:08	Low Flow	45985	Yes	Clear	None	CLEAR	11.36	**0.81**
092	APW14	JC	08/07/24	12:38	Low Flow	218074	Yes	Clear	None	none	22.48	**1.53**
093	APW15	JC	08/07/24	11:55	Low Flow	218074	Yes	Slightly cloudy	Slight	lt brown	21.21	0
094	APW19S	BG	08/07/24	11:25	Low Flow	45985	Yes	Slightly cloudy	None	CLEAR	6.14	0.15
095	APW20S											
096	APW21S	BG	08/07/24	10:48	Low Flow	45985	Yes	Slightly cloudy	None	CLEAR	11.78	0.27
097	APW22S	JC	08/08/24	09:20	Low Flow	218074	Yes	Clear	None	none	11.13	**2.21**
098	APW23S	JC	08/08/24	10:25	Low Flow	218074	Yes	Clear	None	none	11.85	**4.14**
099	APW23	JC	08/08/24	10:55	Low Flow	218074	Yes	Clear	None	none	15.03	**0.63**
100	G222	JC	08/07/24	11:18	Low Flow	218074	No	Clear	None	none	17.98	**1.68**
101	G224	JC	08/07/24	10:51	Low Flow	218074	No	Clear	None	none	42.55	0
102	Field Blank 2	JC	08/08/24	11:05	Direct Sample	-	No					
103	APW02 Duplicate	JC	08/07/24	13:31	Low Flow	218074	Yes	Clear	None	none	5.28	0.14
104	APW19S Duplicate	BG	08/07/24	11:25	Low Flow	45985	Yes	Slightly cloudy	None	CLEAR	6.14	0.15
105	Equipment Blank 2	JC	08/08/24	11:13	Direct Sample	-	No					
106	Equipment Blank 3	JC	08/07/24	13:45	Direct Sample	-	No					

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Summary
Newton- 3Q 2024

WO Sample	Well ID	COMMENTS
001	A213	
002	A214	
003	A215	
005	APW03	
006	APW04	
007	APW05	
009	APW06	
010	APW07	
011	APW08	
012	APW09	
013	APW10	
014	APW11	
015	APW12	
016	APW13	
019	APW16	
020	APW17	
021	APW18	
022	G06D	
023	G104	
024	G104D	
025	G104S	
026	G105	
027	G106	
028	G109	
029	G111	
030	G112	
031	G113	
032	G114	
033	G115	
034	G116	
035	G117	
036	G118	
037	G119	
038	G120	
039	G125	
040	G128	

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Summary
Newton- 3Q 2024

WO Sample	Well ID	COMMENTS
041	G130	
042	G133	
043	G136	
044	G139	
045	G141	
046	G201	
047	G202	Obstruction in well at 40+ feet have to lift water level tape up and drop it to get past whatever it is to touch water level
048	G203	
049	G208	obstruction in well. Well opened upon arrival. JC
050	G217S	
051	G218	
052	G220	
053	G221	
055	G223	
057	G225	
058	G230	
059	G231	
060	G232	
061	G233	
062	G234	
063	G48MG	
064	L1R	
065	L201	Would not connect to the Vu Situ app
066	L202	
067	L203	
068	L204	
069	L205	
070	L301	
071	R217D	well lid cant close bc pump is too high. Glove is over top of pump. JC
072	R219	no pump in well. JC
073	SG02	
074	XPW01	
075	XPW02	
076	XPW03	Lid will not needs more PVC cut for Tranducer fitting for lid to close right
077	XPW04	
078	XSG01	

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Summary
Newton- 3Q 2024

WO Sample	Well ID	COMMENTS
079	Field Blank	
080	A213 Duplicate	
082	G104 Duplicate	
083	Equipment Blank 1	
084	Equipment Blank 2	Not required
085	Equipment Blank 3	Not required
086	LREP	Leachate tank not operable
087	R217D	*resample from 2Q
088	G230	*resample from 2Q
089	G221	*resample from 2Q
090	APW02	
091	APW05S	
092	APW14	
093	APW15	
094	APW19S	
095	APW20S	Well dry during stabilization; recheck on 8/8, no recharge; no sample
096	APW21S	
097	APW22S	
098	APW23S	
099	APW23	
100	G222	
101	G224	
102	Field Blank 2	
103	APW02 Duplicate	
104	APW19S Duplicate	
105	Equipment Blank 2	
106	Equipment Blank 3	

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Stabilizaed Field Parameters Summary
Newton- 3Q 2024

Well ID	Date	Time	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	DTW (ft)	LIMS ID
A213	7/2/2024	9:43	22.9	73.3	6.97	4,220.5	1.74	5.38	184.7	19.20	24061026-001A
A214	7/2/2024	10:29	17.1	62.7	7.42	1,238.4	1.22	440.07	-53.9	41.24	24061026-002A
A215	7/2/2024	11:17	18.2	64.7	7.17	3,149.3	1.10	238.44	-51.8	44.36	24061026-003A
APW03	7/8/2024	12:11	31.2	88.2	6.89	933.5	0.98	57.20	83.8	7.75	24061026-005A
APW04	7/8/2024	11:25	23.5	74.3	6.86	2,016.5	1.53	51.99	78.9	5.14	24061026-006A
APW05	7/2/2024	10:13	15.5	59.9	7.60	997.0	0.24	20.60	-153.3	14.26	24061026-007A
APW06	7/2/2024	12:26	15.3	59.5	7.73	819.9	0.98	159.61	-98.9	19.36	24061026-009A
APW07	7/2/2024	13:27	15.3	59.5	7.47	1,022.5	1.03	168.95	-86.4	47.11	24061026-010A
APW08	7/9/2024	13:15	15.2	59.4	7.33	1,085.1	0.15	8.71	-32.4	37.85	24061026-011A
APW09	7/2/2024	14:19	14.9	58.9	7.59	1,405.6	0.98	16.51	-94.9	27.29	24061026-012A
APW10	7/2/2024	13:04	16.2	61.2	7.14	1,582.5	0.27	20.00	9.1	18.56	24061026-013A
APW11	7/2/2024	11:03	17.1	62.8	7.01	1,310.1	0.35	63.87	-62.6	25.00	24061026-014A
APW12	7/2/2024	11:57	14.8	58.6	6.49	2,321.7	0.22	1.34	47.5	16.00	24061026-015A
APW13	7/2/2024	14:11	16.0	60.7	7.07	1,472.3	0.26	57.62	-110.5	32.97	24061026-016A
APW16	7/10/2024	9:03	15.0	59.1	7.46	1,261.5	0.33	8.01	-107.6	40.31	24061026-019A
APW17	7/9/2024	12:38	16.0	60.7	7.45	1,131.1	0.49	19.33	-98.0	41.50	24061026-020A
APW18	7/9/2024	11:02	15.4	59.6	7.68	987.2	0.12	4.90	-171.6	52.02	24061026-021A
G06D	7/10/2024	10:04	16.7	62.1	7.03	1,521.6	0.53	73.60	-130.2	28.83	24061026-022A
G104	7/8/2024	11:46	21.2	70.1	6.76	1,324.1	0.85	201.94	138.1	7.82	24061026-023A
G104D	7/1/2024	10:50	DTW Only							8.74	24061026-024A
G104S	7/1/2024	10:55	DTW Only							8.64	24061026-025A
G105	7/9/2024	10:22	17.1	62.8	6.89	1,981.8	2.05	8.43	-48.6	10.68	24061026-026A
G106	7/9/2024	9:50	17.0	62.5	6.66	3,671.8	0.65	83.14	21.0	24.32	24061026-027A
G109	7/1/2024	14:35	DTW Only							9.88	24061026-028A
G111	7/1/2024	14:22	DTW Only							9.56	24061026-029A
G112	7/1/2024	14:13	DTW Only							9.53	24061026-030A
G113	7/1/2024	13:34	DTW Only							22.51	24061026-031A
G114	7/1/2024	14:51	DTW Only							18.29	24061026-032A
G115	7/1/2024	11:50	DTW Only							8.18	24061026-033A
G116	7/11/2024	9:24	19.0	66.2	7.18	896.2	2.02	7.47	55.1	5.89	24061026-034A
G117	7/1/2024	15:03	DTW Only							14.64	24061026-035A
G118	7/1/2024	12:00	DTW Only							14.02	24061026-036A
G119	7/1/2024	14:41	DTW Only							9.85	24061026-037A
G120	7/1/2024	14:27	DTW Only							10.79	24061026-038A
G125	7/10/2024	9:40	20.0	68.0	6.76	3,592.7	2.22	37.33	86.0	3.02	24061026-039A
G128	7/10/2024	12:36	21.4	70.6	6.68	15,549.4	0.65	23.14	21.0	2.03	24061026-040A
G130	7/10/2024	11:26	18.7	65.6	6.49	10,928.4	1.46	23.01	114.1	6.25	24061026-041A
G133	7/10/2024	10:52	19.7	67.5	6.99	4,367.8	2.93	54.02	93.5	12.33	24061026-042A
G136	7/10/2024	12:06	18.1	64.6	7.03	4,198.8	3.18	9.74	104.7	7.45	24061026-043A
G139	7/10/2024	12:37	20.0	68.0	6.94	5,985.3	5.27	20.18	80.8	7.25	24061026-044A
G141	7/9/2024	11:18	19.3	66.7	7.13	1,970.1	2.37	6.71	51.0	15.49	24061026-045A
G201	7/10/2024	11:55	22.2	72.0	7.50	1,242.5	0.45	28.53	-103.2	17.18	24061026-046A
G202	7/9/2024	12:56	16.1	60.9	7.30	1,238.2	0.24	101.40	-139.3	47.98	24061026-047A

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Stabilizaed Field Parameters Summary
Newton- 3Q 2024

Well ID	Date	Time	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	DTW (ft)	LIMS ID
G203	7/9/2024	13:31	14.8	58.6	7.21	1,186.0	0.18	111.45	-129.7	41.48	24061026-048A
G208	*Well unable to be sampled*										24061026-049A
G217S	7/10/2024	13:40	24.8	76.6	7.05	6,336.3	7.20	7.41	126.7	7.37	24061026-050A
G218	7/1/2024	12:45	DTW Only							19.14	24061026-051A
G220	7/10/2024	10:59	21.2	70.1	6.89	1,264.0	0.24	13.60	-121.8	17.00	24061026-052A
G221	7/2/2024	12:48	37.6	99.7	6.76	2,748.2	0.51	35.50	-108.4	23.48	24061026-053A
G223	7/10/2024	11:58	19.0	66.2	6.85	3,655.5	0.19	95.09	-78.9	32.84	24061026-055A
G225	7/9/2024	9:28	17.6	63.7	7.24	1,186.9	3.20	4.09	76.1	9.99	24061026-057A
G230	7/2/2024	13:41	17.5	63.4	7.31	2,698.3	0.47	67.18	-104.8	48.31	24061026-058A
G231	7/10/2024	11:19	16.3	61.4	7.44	1,213.0	0.07	160.17	-119.8	47.55	24061026-059A
G232	7/9/2024	11:27	16.2	61.2	7.23	1,186.7	0.18	100.53	-147.3	45.92	24061026-060A
G233	7/9/2024	9:41	15.7	60.3	7.13	1,533.6	0.57	108.79	-131.2	42.86	24061026-061A
G234	7/8/2024	12:01	16.2	61.1	7.31	1,186.4	0.16	87.19	-161.7	43.44	24061026-062A
G48MG	7/11/2024	8:52	16.2	61.2	7.63	797.5	0.25	9.02	-70.1	18.94	24061026-063A
L1R	7/11/2024	10:20	23.4	74.1	10.76	48,689.6	2.40	718.97	-10.9	N/A	24061026-064A
L201	7/1/2024	12:47	DTW Only							36.62	24061026-065A
L202	7/1/2024	12:56	DTW Only							39.64	24061026-066A
L203	7/1/2024	14:00	DTW Only							31.95	24061026-067A
L204	7/1/2024	14:12	DTW Only							48.73	24061026-068A
L205	7/1/2024	14:05	DTW Only							32.73	24061026-069A
L301	7/11/2024	10:02	17.6	63.7	10.17	4,985.0	2.94	2.22	51.7	N/A	24061026-070A
R217D	7/2/2024	11:34	26.4	79.6	6.45	6,932.4	0.59	74.23	6.5	19.25	24061026-071A
R219	7/10/2024	13:41	22.6	72.6	7.36	1,729.6	0.26	38.99	-92.8	20.65	24061026-072A
SG02	7/1/2024	14:33	DTW Only							2.91	24061026-073A
XPW01	7/10/2024	13:44	17.1	62.7	12.30	9,791.7	0.07	8.17	-429.5	10.66	24061026-074A
XPW02	7/11/2024	9:25	16.6	61.8	10.12	539.9	0.10	4.00	-228.9	7.62	24061026-075A
XPW03	7/11/2024	10:04	16.4	61.6	11.52	1,420.2	0.19	8.42	-270.8	9.74	24061026-076A
XPW04	7/11/2024	9:22	17.1	62.8	11.08	7,003.7	0.09	44.84	-355.3	12.01	24061026-077A
XSG01	7/1/2024	12:21	DTW Only							6.73	24061026-078A
Field Blank	7/11/2024	10:05	QA/QC Sample								24061026-079A
A213 Duplicate	7/2/2024	9:43	22.9	73.3	6.97	4,220.5	1.74	5.38	184.7	19.20	24061026-080A
G104 Duplicate	7/8/2024	11:46	21.2	70.1	6.76	1,324.1	0.85	201.94	138.1	7.82	24061026-082A
Equipment Blank 1	7/11/2024	10:15	QA/QC Sample								24061026-083A
LREP	*Unable to collect sample; leachate tank inoperable*										24061026-086A
R217D	7/10/2024	9:32	18.9	66.0	6.55	3,711.1	0.40	72.18	24.1	20.63	24061026-087A
G230	7/10/2024	10:02	15.5	60.0	7.38	1,396.4	0.25	86.53	-88.3	49.12	24061026-088A
G221	7/10/2024	10:25	17.0	62.6	6.96	1,434.1	0.06	12.13	-77.5	26.88	24061026-089A
APW02	8/7/2024	13:31	18.2	64.8	6.72	4,924.1	1.64	22.89	43.8	5.14	24061026-090A
APW05S	8/7/2024	10:08	16.3	61.3	6.45	3,869.9	1.98	310.46	122.5	10.55	24061026-091A
APW14	8/7/2024	12:38	17.2	62.9	7.28	1,512.9	1.77	5.19	-89.9	20.95	24061026-092A
APW15	8/7/2024	11:55	16.7	62.1	7.11	1,997.6	0.79	336.69	-140.3	21.21	24061026-093A
APW19S	8/7/2024	11:25	19.7	67.4	6.31	3,971.9	3.08	10.14	49.3	5.99	24061026-094A
APW20S	8/7/2024	12:29	*Well went dry during stabilization; no sample*								24061026-095A

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Stabilizaed Field Parameters Summary
Newton- 3Q 2024

Well ID	Date	Time	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)	DTW (ft)	LIMS ID
APW21S	8/7/2024	10:48	19.0	66.3	6.73	1,272.3	3.34	9.24	102.2	11.51	24061026-096A
APW22S	8/8/2024	9:20	18.0	64.4	6.27	6,943.4	1.36	6.01	172.3	8.92	24061026-097A
APW23S	8/8/2024	10:25	20.9	69.7	7.06	2,661.1	1.75	7.56	34.1	7.71	24061026-098A
APW23	8/8/2024	10:55	19.9	67.8	7.42	1,441.5	4.32	163.96	-126.9	14.40	24061026-099A
G222	8/7/2024	11:18	16.3	61.4	7.33	1,751.1	0.82	12.34	-146.6	16.30	24061026-100A
G224	8/7/2024	10:51	16.9	62.4	7.38	1,179.3	0.86	236.21	-137.6	42.55	24061026-101A
Field Blank 2	8/8/2024	11:05	QA/QC Sample								24061026-102A
APW02 Duplicate	8/7/2024	13:31	18.2	64.8	6.72	4,924.1	1.64	22.89	43.8	5.14	24061026-103A
APW19S Duplicate	8/7/2024	11:25	19.7	67.4	6.31	3,971.9	3.08	10.14	49.3	5.99	24061026-104A
Equipment Blank 2	8/8/2024	11:13	QA/QC Sample								24061026-105A
Equipment Blank 3	8/7/2024	13:45	QA/QC Sample								24061026-106A

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
A213	7/2/2024	9:28	19.20	20.9	69.5	7.12	4,247.0	4.95	3.62	183.7
A213	7/2/2024	9:31	19.20	21.4	70.6	7.01	4,244.5	3.35	4.16	186.7
A213	7/2/2024	9:34	19.20	21.9	71.4	6.96	4,241.5	2.52	4.09	187.7
A213	7/2/2024	9:37	19.20	22.3	72.1	6.93	4,237.8	2.00	4.64	187.6
A213	7/2/2024	9:40	19.20	22.6	72.7	6.94	4,230.4	1.75	4.97	186.5
A213	7/2/2024	9:43	19.20	22.9	73.3	6.97	4,220.5	1.74	5.38	184.7

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
A214	7/2/2024	10:17	41.24	15.7	60.3	7.40	1,248.5	1.68	567.16	-36.2
A214	7/2/2024	10:20	41.24	16.6	61.9	7.40	1,237.7	1.50	535.77	-42.9
A214	7/2/2024	10:23	41.24	16.1	61.0	7.42	1,239.3	1.39	511.76	-47.5
A214	7/2/2024	10:26	41.24	16.8	62.2	7.42	1,233.2	1.29	468.82	-51.9
A214	7/2/2024	10:29	41.24	17.1	62.7	7.42	1,238.4	1.22	440.07	-53.9

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
A215	7/2/2024	11:08	44.36	17.7	63.9	7.16	3,399.6	1.32	293.56	-42.1
A215	7/2/2024	11:11	44.36	18.3	64.9	7.16	3,288.6	1.22	275.00	-46.3
A215	7/2/2024	11:14	44.36	18.4	65.0	7.17	3,215.0	1.15	281.04	-49.5
A215	7/2/2024	11:17	44.36	18.2	64.7	7.17	3,149.3	1.10	238.44	-51.8

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW03	7/8/2024	11:50	7.75	33.1	91.6	6.96	1,776.3	4.86	42.47	101.3
APW03	7/8/2024	11:53	7.75	33.7	92.6	6.95	1,623.0	5.04	43.57	103.1
APW03	7/8/2024	11:56	7.75	31.4	88.5	6.94	943.8	3.39	16.63	98.0
APW03	7/8/2024	11:59	7.75	27.8	82.0	6.95	934.0	1.70	18.01	91.2
APW03	7/8/2024	12:02	7.75	27.7	81.8	6.92	921.5	1.35	22.24	89.6
APW03	7/8/2024	12:05	7.75	29.6	85.2	6.89	917.3	1.17	33.51	88.1
APW03	7/8/2024	12:08	7.75	31.0	87.7	6.88	921.9	1.05	46.06	85.9
APW03	7/8/2024	12:11	7.75	31.2	88.2	6.89	933.5	0.98	57.20	83.8

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW04	7/8/2024	11:04	5.14	25.7	78.2	6.87	2,012.5	1.99	137.98	66.8
APW04	7/8/2024	11:07	5.14	27.0	80.6	6.84	2,021.5	1.68	67.81	70.0
APW04	7/8/2024	11:10	5.14	26.9	80.5	6.84	2,025.3	1.51	104.12	71.7
APW04	7/8/2024	11:13	5.14	27.2	80.9	6.83	2,029.0	1.43	94.76	73.0
APW04	7/8/2024	11:16	5.14	27.5	81.5	6.83	2,028.8	1.39	94.80	74.4
APW04	7/8/2024	11:19	5.14	26.4	79.5	6.83	2,032.9	1.32	22.18	75.6
APW04	7/8/2024	11:22	5.14	23.5	74.3	6.85	2,012.3	1.28	31.68	76.6
APW04	7/8/2024	11:25	5.14	23.5	74.3	6.86	2,016.5	1.53	51.99	78.9

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW05	7/2/2024	10:01	14.26	15.5	59.9	7.52	999.7	0.50	9.64	0.3
APW05	7/2/2024	10:04	14.26	15.6	60.1	7.58	996.9	0.36	9.60	-71.7
APW05	7/2/2024	10:07	14.26	15.5	59.9	7.60	996.9	0.29	11.14	-115.2
APW05	7/2/2024	10:10	14.26	14.4	57.9	7.60	996.0	0.26	14.73	-140.2
APW05	7/2/2024	10:13	14.26	15.5	59.9	7.60	997.0	0.24	20.60	-153.3

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW06	7/2/2024	12:05	19.36	15.2	59.4	7.76	831.4	1.46	88.46	-69.8
APW06	7/2/2024	12:08	19.36	15.3	59.5	7.76	829.7	1.34	110.86	-77.3
APW06	7/2/2024	12:11	19.36	15.3	59.5	7.75	827.2	1.25	121.88	-82.9
APW06	7/2/2024	12:14	19.36	15.3	59.6	7.75	825.2	1.18	179.21	-87.3
APW06	7/2/2024	12:17	19.36	15.4	59.6	7.74	823.4	1.12	208.65	-90.5
APW06	7/2/2024	12:20	19.36	15.3	59.5	7.74	822.9	1.07	123.19	-93.3
APW06	7/2/2024	12:23	19.36	15.3	59.5	7.74	820.3	1.03	136.16	-96.3
APW06	7/2/2024	12:26	19.36	15.3	59.5	7.73	819.9	0.98	159.61	-98.9

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW07	7/2/2024	13:12	47.11	15.3	59.6	7.49	1,022.8	1.69	523.30	-58.9
APW07	7/2/2024	13:15	47.11	15.5	59.8	7.49	1,023.0	1.39	364.12	-68.8
APW07	7/2/2024	13:18	47.11	15.8	60.4	7.48	1,023.0	1.24	281.87	-75.4
APW07	7/2/2024	13:21	47.11	15.5	60.0	7.48	1,023.8	1.15	271.24	-80.0
APW07	7/2/2024	13:24	47.11	15.3	59.6	7.48	1,023.3	1.09	228.88	-83.6
APW07	7/2/2024	13:27	47.11	15.3	59.5	7.47	1,022.5	1.03	168.95	-86.4

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW08	7/9/2024	13:03	37.85	15.5	59.9	7.33	1,078.2	1.25	11.26	-21.3
APW08	7/9/2024	13:06	37.85	15.4	59.7	7.32	1,083.4	0.47	5.05	-18.9
APW08	7/9/2024	13:09	37.85	15.3	59.5	7.32	1,086.1	0.29	5.54	-18.0
APW08	7/9/2024	13:12	37.85	15.2	59.4	7.32	1,085.3	0.20	6.17	-22.1
APW08	7/9/2024	13:15	37.85	15.2	59.4	7.33	1,085.1	0.15	8.71	-32.4

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW09	7/2/2024	14:10	27.29	15.0	59.0	7.59	1,404.0	1.21	29.46	-79.4
APW09	7/2/2024	14:13	27.29	14.9	58.8	7.58	1,405.4	1.11	23.46	-85.4
APW09	7/2/2024	14:16	27.29	14.9	58.8	7.59	1,405.8	1.03	18.13	-90.7
APW09	7/2/2024	14:19	27.29	14.9	58.9	7.59	1,405.6	0.98	16.51	-94.9

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW10	7/2/2024	12:52	18.56	16.3	61.4	7.15	1,582.6	0.40	108.41	41.2
APW10	7/2/2024	12:55	18.56	16.3	61.3	7.15	1,581.3	0.36	23.90	40.9
APW10	7/2/2024	12:58	18.56	16.4	61.5	7.14	1,580.3	0.35	21.35	31.4
APW10	7/2/2024	13:01	18.56	16.4	61.4	7.14	1,580.7	0.31	18.51	19.3
APW10	7/2/2024	13:04	18.56	16.2	61.2	7.14	1,582.5	0.27	20.00	9.1

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW11	7/2/2024	10:48	25.00	16.9	62.4	6.98	1,321.4	0.79	73.85	-27.2
APW11	7/2/2024	10:51	25.00	16.8	62.2	6.99	1,315.0	0.60	96.52	-43.4
APW11	7/2/2024	10:54	25.00	16.9	62.4	7.00	1,312.6	0.46	51.70	-51.7
APW11	7/2/2024	10:57	25.00	17.1	62.7	7.01	1,312.6	0.42	61.37	-57.2
APW11	7/2/2024	11:00	25.00	17.0	62.6	7.01	1,313.1	0.39	64.92	-59.9
APW11	7/2/2024	11:03	25.00	17.1	62.8	7.01	1,310.1	0.35	63.87	-62.6

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW12	7/2/2024	11:42	16.00	14.8	58.6	6.34	2,207.4	0.48	4.60	50.9
APW12	7/2/2024	11:45	16.00	14.8	58.6	6.40	2,260.9	0.36	3.28	49.2
APW12	7/2/2024	11:48	16.00	14.8	58.6	6.46	2,283.4	0.30	2.44	46.7
APW12	7/2/2024	11:51	16.00	14.8	58.6	6.47	2,300.4	0.26	1.80	46.3
APW12	7/2/2024	11:54	16.00	14.7	58.5	6.48	2,316.9	0.24	1.42	46.8
APW12	7/2/2024	11:57	16.00	14.8	58.6	6.49	2,321.7	0.22	1.34	47.5

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW13	7/2/2024	13:44	32.97	16.3	61.3	7.05	1,471.3	0.77	11.12	62.7
APW13	7/2/2024	13:47	32.97	16.1	60.9	7.05	1,468.1	0.46	26.83	11.5
APW13	7/2/2024	13:50	32.97	15.9	60.5	7.05	1,467.8	0.37	57.45	-41.5
APW13	7/2/2024	13:53	32.97	15.7	60.3	7.06	1,467.8	0.32	82.33	-75.7
APW13	7/2/2024	13:56	32.97	15.9	60.7	7.06	1,470.7	0.29	93.59	-93.8
APW13	7/2/2024	13:59	32.97	16.0	60.7	7.07	1,474.9	1.17	3.92	-88.8
APW13	7/2/2024	14:02	32.97	15.9	60.6	7.07	1,468.1	0.35	10.63	-99.9
APW13	7/2/2024	14:05	32.97	16.1	60.9	7.07	1,471.5	0.28	32.07	-104.3
APW13	7/2/2024	14:08	32.97	16.1	60.9	7.07	1,472.8	0.27	43.99	-107.9
APW13	7/2/2024	14:11	32.97	16.0	60.7	7.07	1,472.3	0.26	57.62	-110.5

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW16	7/10/2024	8:48	40.31	15.0	59.1	7.38	1,227.6	1.82	7.79	1.1
APW16	7/10/2024	8:51	40.31	15.2	59.3	7.40	1,238.4	1.11	5.46	-53.1
APW16	7/10/2024	8:54	40.31	15.1	59.2	7.43	1,248.3	0.72	5.19	-76.2
APW16	7/10/2024	8:57	40.31	15.1	59.2	7.44	1,253.4	0.51	5.08	-91.0
APW16	7/10/2024	9:00	40.31	15.1	59.1	7.45	1,258.2	0.41	5.24	-100.8
APW16	7/10/2024	9:03	40.31	15.0	59.1	7.46	1,261.5	0.33	8.01	-107.6

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW17	7/9/2024	12:11	41.50	16.3	61.3	7.43	1,145.3	1.26	40.77	17.9
APW17	7/9/2024	12:14	41.50	16.2	61.1	7.43	1,146.3	1.03	98.97	3.7
APW17	7/9/2024	12:17	41.50	16.1	61.0	7.44	1,145.2	0.88	70.37	-18.8
APW17	7/9/2024	12:20	41.50	16.0	60.9	7.45	1,143.3	0.83	51.68	-40.8
APW17	7/9/2024	12:23	41.50	16.0	60.7	7.45	1,141.5	0.79	44.36	-58.9
APW17	7/9/2024	12:26	41.50	16.0	60.7	7.45	1,136.6	0.51	34.93	-70.9
APW17	7/9/2024	12:29	41.50	16.0	60.7	7.45	1,134.5	0.56	35.68	-79.9
APW17	7/9/2024	12:32	41.50	16.1	60.9	7.45	1,133.0	0.36	30.53	-88.8
APW17	7/9/2024	12:35	41.50	15.9	60.7	7.45	1,133.5	0.45	16.86	-93.9
APW17	7/9/2024	12:38	41.50	16.0	60.7	7.45	1,131.1	0.49	19.33	-98.0

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW18	7/9/2024	10:17	52.02	16.9	62.4	7.65	980.5	7.79	7.99	29.1
APW18	7/9/2024	10:20	52.02	17.5	63.6	7.41	985.2	3.35	7.17	-19.9
APW18	7/9/2024	10:23	52.02	17.7	63.9	7.41	990.0	1.85	7.03	-63.7
APW18	7/9/2024	10:26	52.02	17.7	63.9	7.47	991.0	1.12	11.04	-81.8
APW18	7/9/2024	10:29	52.02	17.8	64.0	7.54	991.1	0.84	30.97	-95.5
APW18	7/9/2024	10:32	52.02	17.7	63.9	7.56	991.9	0.68	64.08	-105.1
APW18	7/9/2024	10:35	52.02	17.9	64.2	7.58	992.5	0.58	84.04	-114.3
APW18	7/9/2024	10:38	52.02	16.5	61.7	7.62	1,001.2	1.86	15.13	-101.3
APW18	7/9/2024	10:41	52.02	15.7	60.3	7.61	991.9	0.52	8.92	-124.3
APW18	7/9/2024	10:44	52.02	15.6	60.1	7.62	989.5	0.27	30.42	-138.4
APW18	7/9/2024	10:47	52.02	15.6	60.0	7.65	988.1	0.18	22.87	-149.6
APW18	7/9/2024	10:50	52.02	15.5	59.9	7.67	986.8	0.15	50.78	-157.5
APW18	7/9/2024	10:53	52.02	15.4	59.8	7.67	986.0	0.13	4.69	-163.1
APW18	7/9/2024	10:56	52.02	15.5	59.8	7.68	985.2	0.12	15.90	-166.9
APW18	7/9/2024	10:59	52.02	15.4	59.8	7.68	984.1	0.11	14.71	-169.7
APW18	7/9/2024	11:02	52.02	15.4	59.6	7.68	987.2	0.12	4.90	-171.6

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G06D	7/10/2024	9:43	28.83	16.0	60.8	6.94	1,538.0	0.68	51.97	-127.2
G06D	7/10/2024	9:46	28.83	16.1	61.0	6.98	1,534.0	0.63	100.03	-128.7
G06D	7/10/2024	9:49	28.83	16.2	61.2	7.00	1,530.6	0.59	76.66	-130.1
G06D	7/10/2024	9:52	28.83	16.2	61.2	7.01	1,526.2	0.57	65.06	-129.8
G06D	7/10/2024	9:55	28.83	16.3	61.3	7.02	1,523.8	0.54	89.42	-130.5
G06D	7/10/2024	9:58	28.83	16.4	61.5	7.02	1,520.1	0.54	49.75	-130.4
G06D	7/10/2024	10:01	28.83	16.6	61.8	7.03	1,519.5	0.53	43.07	-130.6
G06D	7/10/2024	10:04	28.83	16.7	62.1	7.03	1,521.6	0.53	73.60	-130.2

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G104	7/8/2024	11:34	7.82	21.0	69.9	6.75	1,326.2	1.13	201.25	139.6
G104	7/8/2024	11:37	7.82	21.2	70.2	6.75	1,324.3	1.04	169.97	139.3
G104	7/8/2024	11:40	7.82	21.3	70.4	6.76	1,325.7	0.97	186.42	138.9
G104	7/8/2024	11:43	7.82	21.3	70.3	6.76	1,326.4	0.90	186.78	138.6
G104	7/8/2024	11:46	7.82	21.2	70.1	6.76	1,324.1	0.85	201.94	138.1

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G104D	7/1/2024	10:50	8.74	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G104S	7/1/2024	10:55	8.64	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G105	7/9/2024	10:10	10.68	16.8	62.2	6.98	2,031.6	3.15	8.78	-65.3
G105	7/9/2024	10:13	10.68	16.8	62.2	6.94	2,011.6	2.67	9.47	-50.2
G105	7/9/2024	10:16	10.68	17.0	62.6	6.91	1,997.0	2.41	10.11	-43.8
G105	7/9/2024	10:19	10.68	17.1	62.7	6.90	1,991.0	2.21	8.56	-45.7
G105	7/9/2024	10:22	10.68	17.1	62.8	6.89	1,981.8	2.05	8.43	-48.6

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G106	7/9/2024	9:23	24.32	16.1	61.0	6.68	3,715.8	1.50	182.58	14.5
G106	7/9/2024	9:26	24.32	16.4	61.4	6.67	3,713.5	1.21	155.15	15.4
G106	7/9/2024	9:29	24.32	16.5	61.7	6.66	3,709.3	1.02	140.79	16.6
G106	7/9/2024	9:32	24.32	16.6	62.0	6.66	3,705.7	0.89	131.02	17.5
G106	7/9/2024	9:35	24.32	16.7	62.1	6.66	3,703.6	0.80	119.32	18.1
G106	7/9/2024	9:38	24.32	16.8	62.2	6.66	3,695.4	0.75	106.36	18.8
G106	7/9/2024	9:41	24.32	16.9	62.5	6.66	3,690.1	0.72	98.69	19.4
G106	7/9/2024	9:44	24.32	16.9	62.4	6.66	3,684.8	0.69	86.45	19.9
G106	7/9/2024	9:47	24.32	16.8	62.3	6.66	3,681.1	0.67	81.84	20.5
G106	7/9/2024	9:50	24.32	17.0	62.5	6.66	3,671.8	0.65	83.14	21.0

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G109	7/1/2024	14:35	9.88	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G111	7/1/2024	14:22	9.56	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G112	7/1/2024	14:13	9.53	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G113	7/1/2024	13:34	22.51	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G114	7/1/2024	14:51	18.29	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G115	7/1/2024	11:50	8.18	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G116	7/11/2024	9:15	5.89	18.6	65.6	7.33	900.9	2.61	6.85	47.6
G116	7/11/2024	9:18	5.89	18.8	65.9	7.26	899.7	2.36	5.99	50.6
G116	7/11/2024	9:21	5.89	18.9	66.0	7.22	899.6	2.17	6.45	53.0
G116	7/11/2024	9:24	5.89	19.0	66.2	7.18	896.2	2.02	7.47	55.1

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G117	7/1/2024	15:03	14.64	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G118	7/1/2024	12:00	14.02	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G119	7/1/2024	14:41	9.85	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G120	7/1/2024	14:27	10.79	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G125	7/10/2024	9:28	3.02	20.1	68.1	6.81	3,593.6	3.01	52.42	82.5
G125	7/10/2024	9:31	3.02	20.1	68.2	6.79	3,589.5	2.76	50.82	83.6
G125	7/10/2024	9:34	3.02	20.0	68.1	6.78	3,596.7	2.54	42.38	84.5
G125	7/10/2024	9:37	3.02	20.0	68.1	6.77	3,591.1	2.36	40.82	85.3
G125	7/10/2024	9:40	3.02	20.0	68.0	6.76	3,592.7	2.22	37.33	86.0

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G128	7/10/2024	12:27	2.03	20.8	69.4	6.68	15,494.7	1.60	11.01	45.1
G128	7/10/2024	12:30	2.03	22.7	72.9	6.67	15,492.1	0.59	21.35	31.5
G128	7/10/2024	12:33	2.03	22.0	71.6	6.68	15,455.3	0.62	28.50	25.1
G128	7/10/2024	12:36	2.03	21.4	70.6	6.68	15,549.4	0.65	23.14	21.0

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G130	7/10/2024	11:17	6.25	18.5	65.3	6.59	11,039.1	2.04	31.81	112.2
G130	7/10/2024	11:20	6.25	18.2	64.8	6.52	11,007.7	1.72	28.58	114.7
G130	7/10/2024	11:23	6.25	18.4	65.2	6.50	10,948.2	1.54	25.16	114.6
G130	7/10/2024	11:26	6.25	18.7	65.6	6.49	10,928.4	1.46	23.01	114.1

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G133	7/10/2024	10:43	12.33	17.2	62.9	7.20	4,334.5	2.89	47.22	80.4
G133	7/10/2024	10:46	12.33	18.2	64.7	7.11	4,241.6	2.89	45.89	85.4
G133	7/10/2024	10:49	12.33	18.8	65.8	7.05	4,293.8	2.90	49.89	89.5
G133	7/10/2024	10:52	12.33	19.7	67.5	6.99	4,367.8	2.93	54.02	93.5

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G136	7/10/2024	11:57	7.45	17.9	64.2	7.06	4,582.3	3.46	8.81	101.8
G136	7/10/2024	12:00	7.45	17.6	63.7	7.06	4,331.4	3.42	4.74	102.5
G136	7/10/2024	12:03	7.45	17.9	64.2	7.04	4,219.3	3.28	4.78	103.7
G136	7/10/2024	12:06	7.45	18.1	64.6	7.03	4,198.8	3.18	9.74	104.7

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G139	7/10/2024	12:25	7.25	20.6	69.0	6.98	5,958.7	5.09	20.35	82.1
G139	7/10/2024	12:28	7.25	20.3	68.5	6.96	5,971.3	5.12	19.38	75.4
G139	7/10/2024	12:31	7.25	20.4	68.7	6.95	5,981.7	5.13	18.82	74.4
G139	7/10/2024	12:34	7.25	20.2	68.4	6.94	5,981.6	5.19	19.32	77.2
G139	7/10/2024	12:37	7.25	20.0	68.0	6.94	5,985.3	5.27	20.18	80.8

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G141	7/9/2024	11:09	15.49	18.5	65.2	7.18	2,337.4	2.94	18.71	51.1
G141	7/9/2024	11:12	15.49	18.7	65.6	7.16	2,103.1	2.71	12.89	51.2
G141	7/9/2024	11:15	15.49	18.9	66.0	7.14	2,004.6	2.53	9.01	51.2
G141	7/9/2024	11:18	15.49	19.3	66.7	7.13	1,970.1	2.37	6.71	51.0

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G201	7/10/2024	11:46	17.18	18.8	65.9	7.54	1,226.2	1.09	34.27	-86.3
G201	7/10/2024	11:49	17.18	20.6	69.0	7.51	1,229.8	0.66	29.86	-96.0
G201	7/10/2024	11:52	17.18	21.5	70.7	7.50	1,237.9	0.52	27.60	-100.2
G201	7/10/2024	11:55	17.18	22.2	72.0	7.50	1,242.5	0.45	28.53	-103.2

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G202	7/9/2024	12:32	47.98	16.4	61.5	7.39	1,273.6	1.10	21.14	-128.7
G202	7/9/2024	12:35	47.98	16.3	61.4	7.36	1,284.6	0.76	30.86	-131.1
G202	7/9/2024	12:38	47.98	16.3	61.4	7.34	1,282.3	0.56	57.60	-133.1
G202	7/9/2024	12:41	47.98	16.3	61.3	7.33	1,276.2	0.44	31.63	-134.9
G202	7/9/2024	12:44	47.98	16.2	61.2	7.32	1,266.3	0.38	67.30	-136.2
G202	7/9/2024	12:47	47.98	16.2	61.1	7.32	1,256.6	0.32	97.27	-137.3
G202	7/9/2024	12:50	47.98	16.1	61.0	7.31	1,249.4	0.29	95.78	-137.8
G202	7/9/2024	12:53	47.98	16.1	60.9	7.30	1,244.1	0.26	63.34	-138.5
G202	7/9/2024	12:56	47.98	16.1	60.9	7.30	1,238.2	0.24	101.40	-139.3

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G203	7/9/2024	13:22	41.48	14.6	58.3	7.21	1,221.0	0.28	115.93	-122.5
G203	7/9/2024	13:25	41.48	14.7	58.5	7.21	1,206.2	0.23	133.25	-126.0
G203	7/9/2024	13:28	41.48	14.8	58.6	7.21	1,198.9	0.20	133.32	-128.1
G203	7/9/2024	13:31	41.48	14.8	58.6	7.21	1,186.0	0.18	111.45	-129.7

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G208	*Well unable to be sampled*									

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G217S	7/10/2024	13:25	7.37	21.6	70.9	6.85	6,316.2	5.63	9.65	122.9
G217S	7/10/2024	13:28	7.37	22.1	71.9	6.88	6,318.0	6.16	8.57	124.1
G217S	7/10/2024	13:31	7.37	22.9	73.2	6.92	6,320.5	6.51	8.19	125.1
G217S	7/10/2024	13:34	7.37	23.1	73.6	6.96	6,320.8	6.81	7.85	125.9
G217S	7/10/2024	13:37	7.37	23.8	74.8	7.00	6,328.9	7.06	7.53	126.5
G217S	7/10/2024	13:40	7.37	24.8	76.6	7.05	6,336.3	7.20	7.41	126.7

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G218	7/1/2024	12:45	19.14	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G220	7/10/2024	10:47	17.00	21.0	69.8	7.11	1,270.6	0.42	13.44	-102.9
G220	7/10/2024	10:50	17.00	20.9	69.6	7.04	1,268.5	0.34	12.53	-117.7
G220	7/10/2024	10:53	17.00	21.1	70.0	6.99	1,267.0	0.30	12.33	-121.6
G220	7/10/2024	10:56	17.00	21.1	69.9	6.92	1,266.8	0.26	13.81	-122.2
G220	7/10/2024	10:59	17.00	21.2	70.1	6.89	1,264.0	0.24	13.60	-121.8

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G221	7/2/2024	12:12	23.48	19.9	67.9	6.93	2,612.3	1.11	8.31	-36.6
G221	7/2/2024	12:15	23.48	22.3	72.2	6.92	2,647.6	0.84	11.99	-76.3
G221	7/2/2024	12:18	23.48	24.8	76.7	6.91	2,636.0	0.78	17.05	-90.9
G221	7/2/2024	12:21	23.48	26.8	80.2	6.88	2,677.4	0.76	23.82	-98.6
G221	7/2/2024	12:24	23.48	29.2	84.5	6.86	2,705.3	0.76	32.44	-102.7
G221	7/2/2024	12:27	23.48	31.5	88.7	6.83	2,705.2	0.71	41.30	-104.2
G221	7/2/2024	12:30	23.48	32.7	90.8	6.82	2,711.4	0.69	31.14	-103.9
G221	7/2/2024	12:33	23.48	34.1	93.3	6.80	2,726.2	0.67	35.66	-104.4
G221	7/2/2024	12:36	23.48	34.9	94.9	6.80	2,729.7	0.64	42.24	-104.3
G221	7/2/2024	12:39	23.48	36.0	96.9	6.79	2,735.4	0.61	57.90	-104.4
G221	7/2/2024	12:42	23.48	36.5	97.8	6.77	2,744.9	0.63	34.02	-105.3
G221	7/2/2024	12:45	23.48	37.1	98.7	6.77	2,750.0	0.55	34.81	-107.1
G221	7/2/2024	12:48	23.48	37.6	99.7	6.76	2,748.2	0.51	35.50	-108.4

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G223	7/10/2024	11:43	32.84	17.8	64.1	6.78	3,553.1	0.41	8.52	-84.1
G223	7/10/2024	11:46	32.84	19.0	66.2	6.80	3,545.0	0.93	16.49	-95.0
G223	7/10/2024	11:49	32.84	18.9	66.1	6.83	3,588.7	0.40	58.46	-95.3
G223	7/10/2024	11:52	32.84	18.3	64.9	6.85	3,617.8	0.26	95.64	-86.6
G223	7/10/2024	11:55	32.84	18.9	66.1	6.85	3,633.9	0.21	99.06	-81.3
G223	7/10/2024	11:58	32.84	19.0	66.2	6.85	3,655.5	0.19	95.09	-78.9

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G225	7/9/2024	9:13	9.99	17.8	64.0	7.47	1,172.1	4.24	14.15	58.3
G225	7/9/2024	9:16	9.99	17.8	64.0	7.39	1,166.0	4.01	11.84	64.6
G225	7/9/2024	9:19	9.99	17.9	64.1	7.34	1,165.5	3.80	8.41	68.8
G225	7/9/2024	9:22	9.99	17.7	63.9	7.30	1,171.7	3.58	6.10	71.9
G225	7/9/2024	9:25	9.99	17.5	63.5	7.27	1,181.4	3.39	5.87	74.3
G225	7/9/2024	9:28	9.99	17.6	63.7	7.24	1,186.9	3.20	4.09	76.1

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G230	7/2/2024	13:23	48.31	18.0	64.5	7.31	2,825.5	1.02	35.67	59.5
G230	7/2/2024	13:26	48.31	18.2	64.7	7.30	2,841.5	0.79	38.23	-13.4
G230	7/2/2024	13:29	48.31	18.1	64.7	7.30	2,833.7	0.66	37.85	-58.9
G230	7/2/2024	13:32	48.31	18.0	64.4	7.30	2,803.7	0.58	46.48	-79.0
G230	7/2/2024	13:35	48.31	17.9	64.2	7.31	2,772.6	0.53	54.10	-90.8
G230	7/2/2024	13:38	48.31	17.7	63.9	7.31	2,732.2	0.49	60.06	-99.0
G230	7/2/2024	13:41	48.31	17.5	63.4	7.31	2,698.3	0.47	67.18	-104.8

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G231	7/10/2024	11:01	47.55	16.7	62.0	7.47	1,341.0	0.18	314.71	-92.3
G231	7/10/2024	11:04	47.55	16.6	61.8	7.46	1,302.5	0.14	254.49	-101.5
G231	7/10/2024	11:07	47.55	16.4	61.6	7.46	1,273.6	0.11	215.19	-107.2
G231	7/10/2024	11:10	47.55	16.3	61.4	7.45	1,254.4	0.10	193.86	-111.8
G231	7/10/2024	11:13	47.55	16.4	61.5	7.45	1,241.1	0.08	167.23	-115.0
G231	7/10/2024	11:16	47.55	16.4	61.4	7.44	1,225.0	0.08	178.98	-117.6
G231	7/10/2024	11:19	47.55	16.3	61.4	7.44	1,213.0	0.07	160.17	-119.8

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G232	7/9/2024	11:03	45.92	15.9	60.6	7.21	1,567.3	0.38	148.03	-138.6
G232	7/9/2024	11:06	45.92	15.9	60.7	7.22	1,427.3	0.30	109.31	-142.5
G232	7/9/2024	11:09	45.92	16.1	60.9	7.23	1,326.3	0.25	97.05	-143.9
G232	7/9/2024	11:12	45.92	16.1	61.0	7.23	1,279.9	0.23	132.34	-145.1
G232	7/9/2024	11:15	45.92	16.2	61.1	7.23	1,255.3	0.21	139.66	-145.7
G232	7/9/2024	11:18	45.92	16.3	61.4	7.23	1,227.3	0.19	85.95	-146.6
G232	7/9/2024	11:21	45.92	16.3	61.3	7.23	1,215.1	0.19	113.41	-147.1
G232	7/9/2024	11:24	45.92	16.2	61.2	7.23	1,196.2	0.18	162.26	-147.2
G232	7/9/2024	11:27	45.92	16.2	61.2	7.23	1,186.7	0.18	100.53	-147.3

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G233	7/9/2024	9:26	42.86	15.2	59.3	7.05	1,758.9	0.73	92.97	-129.1
G233	7/9/2024	9:29	42.86	15.2	59.3	7.07	1,679.6	0.64	121.98	-130.3
G233	7/9/2024	9:32	42.86	15.2	59.3	7.09	1,602.0	0.59	91.17	-131.2
G233	7/9/2024	9:35	42.86	15.1	59.2	7.11	1,542.4	0.58	105.57	-131.3
G233	7/9/2024	9:38	42.86	15.4	59.7	7.11	1,536.3	0.58	109.37	-131.1
G233	7/9/2024	9:41	42.86	15.7	60.3	7.13	1,533.6	0.57	108.79	-131.2

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G234	7/8/2024	11:25	43.44	16.5	61.7	7.27	1,375.8	0.27	70.24	-168.5
G234	7/8/2024	11:28	43.44	16.5	61.8	7.29	1,339.0	0.24	82.73	-169.6
G234	7/8/2024	11:31	43.44	16.5	61.8	7.29	1,314.5	0.22	88.36	-168.8
G234	7/8/2024	11:34	43.44	16.5	61.6	7.30	1,292.2	0.21	147.51	-168.0
G234	7/8/2024	11:37	43.44	16.5	61.7	7.30	1,268.5	0.20	178.65	-167.2
G234	7/8/2024	11:40	43.44	16.4	61.6	7.30	1,257.9	0.19	219.80	-166.8
G234	7/8/2024	11:43	43.44	16.4	61.5	7.30	1,241.4	0.19	45.56	-166.2
G234	7/8/2024	11:46	43.44	16.5	61.8	7.31	1,230.3	0.18	79.99	-165.6
G234	7/8/2024	11:49	43.44	16.3	61.4	7.31	1,215.8	0.18	1184.56	-164.6
G234	7/8/2024	11:52	43.44	16.3	61.4	7.31	1,211.1	0.17	76.91	-163.1
G234	7/8/2024	11:55	43.44	16.5	61.7	7.31	1,200.7	0.17	117.02	-162.5
G234	7/8/2024	11:58	43.44	16.5	61.7	7.31	1,195.4	0.17	187.01	-162.5
G234	7/8/2024	12:01	43.44	16.2	61.1	7.31	1,186.4	0.16	87.19	-161.7

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G48MG	7/11/2024	8:40	18.94	17.2	62.9	7.69	802.7	1.44	32.51	-26.3
G48MG	7/11/2024	8:43	18.94	16.1	61.0	7.66	799.4	0.67	20.83	-46.5
G48MG	7/11/2024	8:46	18.94	16.1	61.1	7.63	797.9	0.44	9.87	-52.5
G48MG	7/11/2024	8:49	18.94	16.1	61.0	7.62	797.9	0.32	7.20	-62.9
G48MG	7/11/2024	8:52	18.94	16.2	61.2	7.63	797.5	0.25	9.02	-70.1

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
L1R	7/11/2024	10:17	53.69	22.5	72.5	10.74	48,667.6	3.28	946.20	9.2
L1R	7/11/2024	10:20	53.69	23.4	74.1	10.76	48,689.6	2.40	718.97	-10.9

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
L201	7/1/2024	12:47	36.62	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
L202	7/1/2024	12:56	39.64	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
L203	7/1/2024	14:00	31.95	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
L204	7/1/2024	14:12	48.73	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
L205	7/1/2024	14:05	32.73	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
L301	7/11/2024	9:56	N/A	18.3	64.9	9.45	4,999.3	7.64	3.84	82.5
L301	7/11/2024	9:59	N/A	17.6	63.7	10.05	4,984.9	3.65	3.16	61.8
L301	7/11/2024	10:02	N/A	17.6	63.7	10.17	4,985.0	2.94	2.22	51.7

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
R217D	7/2/2024	10:55	19.25	22.9	73.3	6.69	6,709.8	4.96	26.87	145.0
R217D	7/2/2024	10:58	19.25	23.8	74.9	6.54	6,752.3	3.10	17.59	151.4
R217D	7/2/2024	11:01	19.25	24.7	76.4	6.48	6,774.4	1.98	14.38	153.6
R217D	7/2/2024	11:04	19.25	25.0	77.0	6.47	6,804.5	1.41	15.92	143.0
R217D	7/2/2024	11:07	19.25	24.9	76.8	6.54	6,832.4	1.36	17.38	120.9
R217D	7/2/2024	11:10	19.25	24.9	76.8	6.60	6,848.5	1.53	45.52	108.7
R217D	7/2/2024	11:13	19.25	25.1	77.1	6.59	6,859.3	1.64	85.07	95.4
R217D	7/2/2024	11:16	19.25	25.3	77.5	6.55	6,875.8	1.50	119.48	72.8
R217D	7/2/2024	11:19	19.25	25.2	77.4	6.49	6,905.7	1.16	107.87	50.4
R217D	7/2/2024	11:22	19.25	25.5	77.9	6.47	6,901.2	0.90	105.06	35.7
R217D	7/2/2024	11:25	19.25	26.0	78.8	6.46	6,890.0	0.75	98.88	25.6
R217D	7/2/2024	11:28	19.25	26.6	79.9	6.45	6,899.1	0.67	88.10	17.5
R217D	7/2/2024	11:31	19.25	26.8	80.2	6.45	6,924.6	0.62	82.99	11.3
R217D	7/2/2024	11:34	19.25	26.4	79.6	6.45	6,932.4	0.59	74.23	6.5

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
R219	7/10/2024	13:14	20.65	20.0	68.1	7.42	1,723.9	1.10	56.64	15.9
R219	7/10/2024	13:17	20.65	21.0	69.9	7.41	1,715.7	0.73	61.15	31.7
R219	7/10/2024	13:20	20.65	20.0	67.9	7.40	1,708.5	0.53	64.84	39.8
R219	7/10/2024	13:23	20.65	20.4	68.7	7.38	1,707.2	0.43	63.81	36.1
R219	7/10/2024	13:26	20.65	20.1	68.1	7.37	1,712.4	0.37	80.39	12.6
R219	7/10/2024	13:29	20.65	19.2	66.5	7.38	1,707.3	0.32	50.85	-19.2
R219	7/10/2024	13:32	20.65	20.7	69.3	7.37	1,707.9	0.30	53.64	-46.7
R219	7/10/2024	13:35	20.65	20.9	69.7	7.37	1,715.6	0.27	38.52	-69.8
R219	7/10/2024	13:38	20.65	21.6	70.8	7.36	1,713.8	0.26	37.05	-83.0
R219	7/10/2024	13:41	20.65	22.6	72.6	7.36	1,729.6	0.26	38.99	-92.8

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
SG02	7/1/2024	14:33	2.91	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
XPW01	7/10/2024	13:23	10.66	17.6	63.7	12.22	9,617.8	0.17	26.92	-422.1
XPW01	7/10/2024	13:26	10.66	17.4	63.2	12.27	9,743.7	0.14	21.82	-419.5
XPW01	7/10/2024	13:29	10.66	17.2	62.9	12.29	9,767.7	0.11	16.21	-420.5
XPW01	7/10/2024	13:32	10.66	17.0	62.7	12.30	9,790.0	0.10	13.55	-422.4
XPW01	7/10/2024	13:35	10.66	17.1	62.8	12.30	9,768.6	0.09	11.86	-413.8
XPW01	7/10/2024	13:38	10.66	17.3	63.1	12.30	9,786.9	0.08	10.23	-424.0
XPW01	7/10/2024	13:41	10.66	17.2	63.0	12.30	9,790.3	0.07	9.17	-428.2
XPW01	7/10/2024	13:44	10.66	17.1	62.7	12.30	9,791.7	0.07	8.17	-429.5

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
XPW02	7/11/2024	9:16	7.62	16.7	62.1	10.36	548.7	0.49	9.64	-160.3
XPW02	7/11/2024	9:19	7.62	16.6	61.9	10.20	542.0	0.23	6.37	-200.9
XPW02	7/11/2024	9:22	7.62	16.6	61.9	10.14	540.4	0.14	4.73	-217.7
XPW02	7/11/2024	9:25	7.62	16.6	61.8	10.12	539.9	0.10	4.00	-228.9

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
XPW03	7/11/2024	9:52	9.74	16.6	61.9	11.59	1,401.4	0.56	21.09	-254.9
XPW03	7/11/2024	9:55	9.74	16.6	61.8	11.59	1,409.6	0.33	16.87	-265.7
XPW03	7/11/2024	9:58	9.74	16.6	61.8	11.57	1,414.7	0.25	13.25	-270.2
XPW03	7/11/2024	10:01	9.74	16.5	61.8	11.55	1,417.5	0.22	10.62	-270.9
XPW03	7/11/2024	10:04	9.74	16.4	61.6	11.52	1,420.2	0.19	8.42	-270.8

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
XPW04	7/11/2024	9:01	12.01	16.9	62.5	10.82	6,721.5	0.20	56.39	-339.6
XPW04	7/11/2024	9:04	12.01	17.0	62.6	10.87	6,717.0	0.16	54.31	-342.5
XPW04	7/11/2024	9:07	12.01	16.9	62.4	10.92	6,705.4	0.14	67.66	-348.4
XPW04	7/11/2024	9:10	12.01	16.9	62.5	10.95	6,715.2	0.13	84.82	-348.0
XPW04	7/11/2024	9:13	12.01	17.1	62.8	10.98	6,772.6	0.12	64.87	-352.9
XPW04	7/11/2024	9:16	12.01	17.2	62.9	11.02	6,843.4	0.11	48.51	-353.3
XPW04	7/11/2024	9:19	12.01	17.1	62.8	11.05	6,921.7	0.10	50.45	-353.9
XPW04	7/11/2024	9:22	12.01	17.1	62.8	11.08	7,003.7	0.09	44.84	-355.3

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
XSG01	7/1/2024	12:21	6.73	DTW Only						

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
Field Blank	7/11/2024	10:05	QA/QC Sample							

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
A213 Duplicate	7/2/2024	9:28	19.20	20.9	69.5	7.12	4,247.0	4.95	3.62	183.7
A213 Duplicate	7/2/2024	9:31	19.20	21.4	70.6	7.01	4,244.5	3.35	4.16	186.7
A213 Duplicate	7/2/2024	9:34	19.20	21.9	71.4	6.96	4,241.5	2.52	4.09	187.7
A213 Duplicate	7/2/2024	9:37	19.20	22.3	72.1	6.93	4,237.8	2.00	4.64	187.6
A213 Duplicate	7/2/2024	9:40	19.20	22.6	72.7	6.94	4,230.4	1.75	4.97	186.5
A213 Duplicate	7/2/2024	9:43	19.20	22.9	73.3	6.97	4,220.5	1.74	5.38	184.7

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G104 Duplicate	7/8/2024	11:34	7.82	21.0	69.9	6.75	1,326.2	1.13	201.25	139.6
G104 Duplicate	7/8/2024	11:37	7.82	21.2	70.2	6.75	1,324.3	1.04	169.97	139.3
G104 Duplicate	7/8/2024	11:40	7.82	21.3	70.4	6.76	1,325.7	0.97	186.42	138.9
G104 Duplicate	7/8/2024	11:43	7.82	21.3	70.3	6.76	1,326.4	0.90	186.78	138.6
G104 Duplicate	7/8/2024	11:46	7.82	21.2	70.1	6.76	1,324.1	0.85	201.94	138.1

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
Equipment Blank 1	7/11/2024	10:15	QA/QC Sample							

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
LREP	*Unable to collect sample; leachate tank inoperable*									

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
R217D	7/10/2024	9:26	20.63	18.0	64.5	6.58	3,694.5	0.87	89.00	24.0
R217D	7/10/2024	9:29	20.63	18.5	65.3	6.55	3,700.3	0.48	77.82	29.0
R217D	7/10/2024	9:32	20.63	18.9	66.0	6.55	3,711.1	0.40	72.18	24.1

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G230	7/10/2024	9:53	49.12	15.6	60.1	7.37	1,532.7	0.69	21.65	-30.5
G230	7/10/2024	9:56	49.12	15.6	60.1	7.37	1,487.1	0.32	77.19	-61.8
G230	7/10/2024	9:59	49.12	15.6	60.0	7.38	1,438.8	0.23	77.92	-77.8
G230	7/10/2024	10:02	49.12	15.5	60.0	7.38	1,396.4	0.25	86.53	-88.3

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (°C)	Temp (°F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G221	7/10/2024	10:16	26.88	23.1	73.6	7.14	1,432.5	0.91	7.35	0.7
G221	7/10/2024	10:19	26.88	18.6	65.6	7.03	1,407.3	0.20	5.59	14.1
G221	7/10/2024	10:22	26.88	17.1	62.9	7.01	1,428.3	0.10	7.30	-43.9
G221	7/10/2024	10:25	26.88	17.0	62.6	6.96	1,434.1	0.06	12.13	-77.5

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW02	8/7/2024	13:07	5.14	18.4	65.1	6.65	5,216.4	3.26	49.98	5.6
APW02	8/7/2024	13:10	5.14	18.3	65.0	6.64	5,177.8	2.96	46.80	23.2
APW02	8/7/2024	13:13	5.14	18.3	64.9	6.65	5,158.7	2.67	46.00	32.6
APW02	8/7/2024	13:16	5.14	18.3	64.9	6.65	5,140.5	2.39	43.62	34.6
APW02	8/7/2024	13:19	5.14	18.3	64.9	6.67	5,099.4	2.17	38.46	38.6
APW02	8/7/2024	13:22	5.14	18.2	64.7	6.68	5,040.2	2.00	34.11	42.2
APW02	8/7/2024	13:25	5.14	18.2	64.8	6.70	4,975.6	1.84	30.70	44.0
APW02	8/7/2024	13:28	5.14	18.2	64.8	6.71	4,939.3	1.72	27.02	44.0
APW02	8/7/2024	13:31	5.14	18.2	64.8	6.72	4,924.1	1.64	22.89	43.8

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW05S	8/7/2024	9:50	10.55	17.1	62.8	6.48	4,036.5	2.87	22.39	120.2
APW05S	8/7/2024	9:53	10.55	17.4	63.4	6.47	4,029.2	2.81	21.23	121.7
APW05S	8/7/2024	9:56	10.55	17.7	63.8	6.49	4,030.5	2.79	21.29	125.6
APW05S	8/7/2024	9:59	10.55	17.9	64.2	6.48	4,030.2	2.78	36.27	127.4
APW05S	8/7/2024	10:02	10.55	18.6	65.4	6.46	3,988.3	2.77	34.91	124.8
APW05S	8/7/2024	10:05	10.55	16.7	62.0	6.45	3,951.6	2.31	65.59	123.0
APW05S	8/7/2024	10:08	10.55	16.3	61.3	6.45	3,869.9	1.98	310.46	122.5

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW14	8/7/2024	12:20	20.95	16.9	62.4	7.28	1,498.6	4.78	7.75	11.6
APW14	8/7/2024	12:23	20.95	17.8	64.1	7.27	1,515.9	3.11	15.93	-3.9
APW14	8/7/2024	12:26	20.95	17.6	63.7	7.27	1,519.7	2.37	7.18	-29.7
APW14	8/7/2024	12:29	20.95	17.6	63.7	7.28	1,517.7	2.15	5.66	-61.0
APW14	8/7/2024	12:32	20.95	17.6	63.6	7.28	1,517.4	1.99	5.04	-76.4
APW14	8/7/2024	12:35	20.95	17.3	63.1	7.28	1,516.6	1.85	5.20	-85.0
APW14	8/7/2024	12:38	20.95	17.2	62.9	7.28	1,512.9	1.77	5.19	-89.9

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW15	8/7/2024	11:40	21.21	16.6	61.9	7.26	2,004.3	2.74	23.92	-106.2
APW15	8/7/2024	11:43	21.21	16.0	60.9	7.13	1,997.5	1.33	89.59	-120.8
APW15	8/7/2024	11:46	21.21	16.0	60.9	7.14	1,994.2	1.09	254.44	-130.2
APW15	8/7/2024	11:49	21.21	16.1	60.9	7.13	1,995.6	0.94	274.87	-134.8
APW15	8/7/2024	11:52	21.21	16.3	61.3	7.12	1,993.4	0.84	181.72	-138.1
APW15	8/7/2024	11:55	21.21	16.7	62.1	7.11	1,997.6	0.79	336.69	-140.3

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW19S	8/7/2024	11:16	5.99	19.5	67.0	6.31	3,970.1	3.81	16.13	41.2
APW19S	8/7/2024	11:19	5.99	19.5	67.2	6.31	3,969.4	3.52	13.71	41.1
APW19S	8/7/2024	11:22	5.99	19.6	67.2	6.31	3,967.8	3.27	11.75	44.1
APW19S	8/7/2024	11:25	5.99	19.7	67.4	6.31	3,971.9	3.08	10.14	49.3

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW20S	8/7/2024	12:08	20.59	18.4	65.2	6.52	2,935.1	2.74	436.22	-45.1
APW20S	8/7/2024	12:11	20.59	18.7	65.6	6.51	2,965.0	2.60	439.81	-39.5
APW20S	8/7/2024	12:14	20.59	18.5	65.4	6.51	2,979.7	2.43	470.37	-37.9
APW20S	8/7/2024	12:17	20.59	18.7	65.6	6.50	2,981.4	2.31	488.70	-38.7
APW20S	8/7/2024	12:20	20.59	22.4	72.4	7.26	435.2	8.26	29.86	-45.2
APW20S	8/7/2024	12:23	20.59	21.1	70.0	6.72	1,681.1	6.51	212.25	-0.5
APW20S	8/7/2024	12:26	20.59	20.8	69.4	6.59	2,438.2	6.31	296.80	-2.0
APW20S	8/7/2024	12:29	20.59	20.5	68.9	6.54	2,832.2	5.77	375.29	-1.2
Well went dry after prior read; rechecked DTW on 8/8, no recharge; no sample collected										

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW21S	8/7/2024	10:39	11.51	18.8	65.8	6.75	1,276.2	3.84	22.42	102.6
APW21S	8/7/2024	10:42	11.51	18.9	66.0	6.74	1,274.9	3.68	14.67	102.4
APW21S	8/7/2024	10:45	11.51	18.9	66.0	6.73	1,274.0	3.51	10.61	102.4
APW21S	8/7/2024	10:48	11.51	19.0	66.3	6.73	1,272.3	3.34	9.24	102.2

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW22S	8/8/2024	8:56	8.92	18.1	64.5	6.29	6,958.3	2.77	24.65	204.7
APW22S	8/8/2024	8:59	8.92	18.1	64.7	6.27	6,985.6	2.39	18.90	196.6
APW22S	8/8/2024	9:02	8.92	18.2	64.8	6.26	6,994.0	2.13	16.32	190.7
APW22S	8/8/2024	9:05	8.92	18.1	64.6	6.26	7,003.5	1.92	13.69	186.2
APW22S	8/8/2024	9:08	8.92	18.0	64.4	6.26	6,996.3	1.72	12.61	182.4
APW22S	8/8/2024	9:11	8.92	18.0	64.3	6.26	6,994.8	1.60	10.11	179.1
APW22S	8/8/2024	9:14	8.92	18.0	64.4	6.26	6,981.8	1.49	8.56	176.3
APW22S	8/8/2024	9:17	8.92	18.0	64.4	6.27	6,957.8	1.42	7.33	174.1
APW22S	8/8/2024	9:20	8.92	18.0	64.4	6.27	6,943.4	1.36	6.01	172.3

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW23S	8/8/2024	9:46	7.71	20.1	68.3	7.23	2,872.8	5.09	29.80	120.9
APW23S	8/8/2024	9:49	7.71	20.2	68.4	7.22	2,857.7	5.45	34.37	121.8
APW23S	8/8/2024	9:52	7.71	20.6	69.1	7.20	2,854.3	5.18	98.55	121.3
APW23S	8/8/2024	9:55	7.71	20.7	69.2	7.18	2,819.9	5.12	44.36	121.0
APW23S	8/8/2024	9:58	7.71	20.7	69.2	7.16	2,759.2	4.88	30.87	120.5
APW23S	8/8/2024	10:01	7.71	20.6	69.0	7.13	2,653.3	4.18	24.64	117.8
APW23S	8/8/2024	10:04	7.71	20.8	69.4	7.10	2,569.0	3.41	20.40	107.0
APW23S	8/8/2024	10:07	7.71	20.8	69.4	7.08	2,553.8	2.89	16.95	83.7
APW23S	8/8/2024	10:10	7.71	20.9	69.7	7.07	2,567.9	2.56	13.48	62.5
APW23S	8/8/2024	10:13	7.71	20.9	69.6	7.07	2,583.1	2.33	12.42	49.9
APW23S	8/8/2024	10:16	7.71	21.0	69.8	7.07	2,600.8	2.16	8.46	42.3
APW23S	8/8/2024	10:19	7.71	21.0	69.7	7.07	2,627.2	1.98	7.34	37.8
APW23S	8/8/2024	10:22	7.71	20.9	69.5	7.06	2,644.9	1.86	7.40	35.5
APW23S	8/8/2024	10:25	7.71	20.9	69.7	7.06	2,661.1	1.75	7.56	34.1

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW23	8/8/2024	10:46	14.4	19.8	67.7	7.42	1,462.7	4.70	135.01	-122.1
APW23	8/8/2024	10:49	14.4	20.0	68.0	7.42	1,451.3	4.50	148.37	-125.5
APW23	8/8/2024	10:52	14.4	19.8	67.6	7.42	1,465.7	4.41	162.81	-126.2
APW23	8/8/2024	10:55	14.4	19.9	67.8	7.42	1,441.5	4.32	163.96	-126.9

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G222	8/7/2024	11:06	16.3	16.8	62.2	7.67	1,728.5	2.22	10.89	-140.8
G222	8/7/2024	11:09	16.3	16.4	61.4	7.51	1,737.0	1.09	8.54	-159.0
G222	8/7/2024	11:12	16.3	16.3	61.4	7.38	1,741.5	0.94	12.15	-149.0
G222	8/7/2024	11:15	16.3	16.3	61.4	7.35	1,747.7	0.86	13.70	-146.7
G222	8/7/2024	11:18	16.3	16.3	61.4	7.33	1,751.1	0.82	12.34	-146.6

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
G224	8/7/2024	10:33	42.55	17.0	62.6	7.30	1,166.0	7.58	14.91	157.5
G224	8/7/2024	10:36	42.55	17.0	62.5	7.35	1,177.6	3.49	22.00	-67.2
G224	8/7/2024	10:39	42.55	16.9	62.5	7.37	1,179.4	1.80	48.75	-102.6
G224	8/7/2024	10:42	42.55	16.9	62.3	7.37	1,178.7	1.24	129.41	-116.6
G224	8/7/2024	10:45	42.55	16.9	62.3	7.38	1,177.3	1.01	215.15	-129.0
G224	8/7/2024	10:48	42.55	16.9	62.4	7.38	1,177.6	0.91	224.88	-134.7
G224	8/7/2024	10:51	42.55	16.9	62.4	7.38	1,179.3	0.86	236.21	-137.6

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
Field Blank 2	8/8/2024	11:05	QA/QC Sample							

Site Samping Event: NEW- 3Q24 **Groundwater Sampling Field Forms- Groundwater Quality Parameters**
LIMS Workorder: 24061026 **Newton- 3Q 2024**
Technician(s): JC, BG, PY

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW02 Duplicate	8/7/2024	13:07	5.14	18.4	65.1	6.65	5,216.4	3.26	49.98	5.6
APW02 Duplicate	8/7/2024	13:10	5.14	18.3	65.0	6.64	5,177.8	2.96	46.80	23.2
APW02 Duplicate	8/7/2024	13:13	5.14	18.3	64.9	6.65	5,158.7	2.67	46.00	32.6
APW02 Duplicate	8/7/2024	13:16	5.14	18.3	64.9	6.65	5,140.5	2.39	43.62	34.6
APW02 Duplicate	8/7/2024	13:19	5.14	18.3	64.9	6.67	5,099.4	2.17	38.46	38.6
APW02 Duplicate	8/7/2024	13:22	5.14	18.2	64.7	6.68	5,040.2	2.00	34.11	42.2
APW02 Duplicate	8/7/2024	13:25	5.14	18.2	64.8	6.70	4,975.6	1.84	30.70	44.0
APW02 Duplicate	8/7/2024	13:28	5.14	18.2	64.8	6.71	4,939.3	1.72	27.02	44.0
APW02 Duplicate	8/7/2024	13:31	5.14	18.2	64.8	6.72	4,924.1	1.64	22.89	43.8

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
APW19S Duplicate	8/7/2024	11:16	5.99	19.5	67.0	6.31	3,970.1	3.81	16.13	41.2
APW19S Duplicate	8/7/2024	11:19	5.99	19.5	67.2	6.31	3,969.4	3.52	13.71	41.1
APW19S Duplicate	8/7/2024	11:22	5.99	19.6	67.2	6.31	3,967.8	3.27	11.75	44.1
APW19S Duplicate	8/7/2024	11:25	5.99	19.7	67.4	6.31	3,971.9	3.08	10.14	49.3

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
Equipment Blank 2	8/8/2024	11:13	QA/QC Sample							

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Groundwater Sampling Field Forms- Groundwater Quality Parameters
Newton- 3Q 2024

Well ID	Date	Time	DTW	Temp (deg C)	Temp (deg F)	pH (SU)	Sp Cond (µS/cm)	ODO (mg/L)	Turbidity (NTU)	ORP (mV)
Equipment Blank 3	8/7/2024	13:45	QA/QC Sample							

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Field Calibration Log(s)
Newton- 3Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 218083 Technician(s): Tracy Carroll Date: 7/2/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC230830B	4.00	7/2/24 9:10
7.0 Buffer	WC240307F	7.01	7/2/24 9:06
10.0 Buffer	WC230619B	10.04	7/2/24 9:16
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1412	7/2/24 9:27

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1		
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-1	LCS	7/2/24 9:28	21.7	7.07	1,413	1.55		
CCV-1	CCV	7/2/24 14:49	23.6	7.09	1,435	1.89		

Comments:

Field Meter ID: Pine 218083 Technician(s): Tracy Carroll Date: 7/8/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC230830B	4.00	7/8/24 11:02
7.0 Buffer	WC240307F	7.01	7/8/24 11:00
10.0 Buffer	WC230619B	10.00	7/8/24 11:03
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1412	7/8/24 11:11

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1		
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-2	LCS	7/8/24 11:13	25.6	7.09	1,411	1.33		
CCV-2	CCV	7/8/24 15:05	27	7.05	1,427	1.46		

Comments: Lcs time is 1113

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Field Calibration Log(s)
Newton- 3Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 218083 Technician(s): Tracy Carroll Date: 7/9/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC230830B	4.00	7/9/24 8:57
7.0 Buffer	WC240307F	7.00	7/9/24 8:50
10.0 Buffer	WC230619B	10.00	7/9/24 8:58
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1412	7/9/24 9:01

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1		
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-3	LCS	7/9/24 9:01	21.7	7.00	1,411	1.67		
CCV-3	CCV	7/9/24 13:40	21.4	7.07	1,466	1.88		

Comments:

Field Meter ID: Pine 218083 Technician(s): Tracy Carroll Date: 7/10/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC230830B	4.00	7/10/24 9:15
7.0 Buffer	WC240307F	7.01	7/10/24 9:14
10.0 Buffer	WC230619B	10.01	7/10/24 9:17
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1412	7/10/24 9:20

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1		
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-4	LCS	7/10/24 9:21	20.5	7.03	1,413	1.02		
CCV-M-4	CCV	7/10/24 12:33	22.1	7.06	1,436	1.05		
CCV-4	CCV	7/10/24 14:21	24.0	7.10	1,487	1.49		

Comments:

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Field Calibration Log(s)
Newton- 3Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 218083 Technician(s): Tracy Carroll Date: 7/11/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC230830B	4.00	7/11/24 8:35
7.0 Buffer	WC240307F	7.01	7/11/24 8:32
10.0 Buffer	WC230619B	10.01	7/11/24 8:36
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1412	7/11/24 8:44

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1		
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-5	LCS	7/11/24 8:44	24.4	7.01	1,411	1.44		
CCV-5	CCV	7/11/24 12:22	25.3	7.06	1,455	1.88		

Comments:

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Field Calibration Log(s)
Newton- 3Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 211368 Technician(s): Justin Colp Date: 7/2/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830b	4.01	7/2/24 8:54
7.0 Buffer	wc240307f	7.01	7/2/24 8:52
10.0 Buffer	wc240521b	10.00	7/2/24 8:57
LCS/CCV (7.0 Buffer)	wc231207a		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1413	7/2/24 9:04

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.91	7/2/24 9:04
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-1	LCS	7/2/24 9:06	21.7	7.01	1,413	0.91		
CCV-M-1	CCV	7/2/24 12:02	22.1	7.02	1,420	0.95		
CCV-1	CCV	7/2/24 14:45	22.9	7.03	1,424	0.96		

Comments:

Field Meter ID: Pine 51294 Technician(s): justin colp Date: 7/8/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830b	4.00	7/8/24 10:20
7.0 Buffer	wc240307f	6.99	7/8/24 10:16
10.0 Buffer	wc240521b	9.98	7/8/24 10:25
LCS/CCV (7.0 Buffer)	wc231207a		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1413	7/8/24 10:31

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.86	7/8/24 10:31
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-2	LCS	7/8/24 10:35	23.5	6.99	1,413	0.86		
CCV-2	CCV	7/8/24 14:52	28.7	7.01	1,439	0.93		

Comments:

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Field Calibration Log(s)
Newton- 3Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 51294 Technician(s): justin colp Date: 7/9/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830b	3.98	7/9/24 8:16
7.0 Buffer	wc240307f	7.00	7/9/24 8:09
10.0 Buffer	wc240521b	9.99	7/9/24 8:23
LCS/CCV (7.0 Buffer)	wc231207a		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1416	7/9/24 8:33

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.89	7/9/24 8:33
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-3	LCS	7/9/24 8:39	21.3	7.00	1,416	0.89		
CCV-M-3	CCV	7/9/24 12:00	22.9	7.03	1,423	0.98		
CCV-3	CCV	7/9/24 13:39	23.8	7.02	1,429	0.95		

Comments:

Field Meter ID: Pine 51294 Technician(s): justin colp Date: 7/10/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830b	4.01	7/10/24 8:16
7.0 Buffer	wc240307f	7.00	7/10/24 8:12
10.0 Buffer	wc240521b	9.99	7/10/24 8:20
LCS/CCV (7.0 Buffer)	wc231207a		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1411	7/10/24 8:27

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.91	7/10/24 8:27
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-4	LCS	7/10/24 8:30	20.5	7.01	1,411	0.91		
CCV-M-4	CCV	7/10/24 11:41	23.3	7.05	1,423	0.96		
CCV-4	CCV	7/10/24 13:55	25.1	7.06	1,448	1.03		

Comments:

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Field Calibration Log(s)
Newton- 3Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 51294 Technician(s): justin colp Date: 7/11/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc230830b	4.02	7/11/24 8:11
7.0 Buffer	wc240307f	6.99	7/11/24 8:08
10.0 Buffer	wc240521b	9.99	7/11/24 8:15
LCS/CCV (7.0 Buffer)	wc231207a		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1409	7/11/24 8:20

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	1.01	7/11/24 8:20
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-5	LCS	7/11/24 8:22	22.3	7.00	1,409	1.01		
CCV-5	CCV	7/11/24 10:24	25.1	7.03	1,427	1.08		

Comments:

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Field Calibration Log(s)
Newton- 3Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 45720 Technician(s): Brett Gillihan Date: 7/2/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC230830B	3.99	7/2/24 8:52
7.0 Buffer	WC24307F	7.01	7/2/24 8:48
10.0 Buffer	WC240521B	10.02	7/2/24 8:56
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1415	7/2/24 8:59

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	1.5	7/2/24 9:01
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-1	LCS	7/2/24 9:04	25.5	7.00	1,415	1.5		
CCV-M-1	CCV	7/2/24 11:39	26	7.00	1,416	1.06		
CCV-1	CCV	7/2/24 14:42	27.3	7.02	1,415	1.5		

Comments:

Field Meter ID: Pine 45720 Technician(s): Brett Gillihan Date: 7/8/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC230830B	3.99	7/8/24 10:29
7.0 Buffer	WC24307F	7.02	7/8/24 10:22
10.0 Buffer	WC240521B	10.01	7/8/24 10:36
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1417	7/8/24 10:39

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	1.6	7/8/24 10:48
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-2	LCS	7/8/24 10:50	24.76	7.01	1,417	1.6		
CCV-2	CCV	7/8/24 15:03	26.76	7.02	1,417	1.6		

Comments:

Brett

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Field Calibration Log(s)
Newton- 3Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 45720 Technician(s): Brett Gillihan Date: 7/9/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC230830B	4.02	7/9/24 13:33
7.0 Buffer	WC24307F	7.00	7/9/24 8:18
10.0 Buffer	WC240521B	9.98	7/9/24 8:31
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1413	7/9/24 8:37

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	1.5	7/9/24 8:40
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-3	LCS	7/9/24 8:43	23.3	7.01	1,413	1.5		
CCV-M-3	CCV	7/9/24 11:44	24.6	7.03	1,418	1.06		
CCV-3	CCV	7/9/24 13:34	25.8	7.01	1,416	1.4		

Comments:

Field Meter ID: Pine 45720 Technician(s): Brett Gillihan Date: 7/10/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC230830B	4.00	7/10/24 8:31
7.0 Buffer	WC24307F	7.02	7/10/24 8:26
10.0 Buffer	WC240521B	10.00	7/10/24 8:35
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	95009	1412	7/10/24 8:40

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	1.5	7/10/24 8:50
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-4	LCS	7/10/24 8:55	23.07	7.02	1,412	1.5		
CCV-M-4	CCV	7/10/24 12:10	24.6	7.06	1,418	1.1		
CCV-4	CCV	7/10/24 14:19	27.21	7.01	1,410	1.3		

Comments:

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): DC, JC, TC, BG, PY

Field Calibration Log(s)
Newton- 3Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 45720 Technician(s): Brett Gillihan Date: 7/11/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC230830B	4.01	7/11/24 8:46
7.0 Buffer	WC24307F	6.99	7/11/24 8:41
10.0 Buffer	WC240521B	10.03	7/11/24 8:49
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	950059	1416	7/11/24 8:50

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	1.5	7/11/24 8:53
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-5	LCS	7/11/24 8:55	23	7.00	1,416	1		
CCV-5	CCV	7/11/24 10:24	25.34	7.01	1,420	1.1		

Comments:

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Field Calibration Log(s)
Newton- 3Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 218074 Technician(s): justin colp Date: 8/7/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc240612a	4.00	8/7/24 10:04
7.0 Buffer	wc231207a	6.99	8/7/24 9:55
10.0 Buffer	wc240625b	10.00	8/7/24 10:05
LCS/CCV (7.0 Buffer)	wc231207a		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	98627	1411	8/7/24 10:10

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.4	8/7/24 10:10
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-1	LCS	8/7/24 10:15	23.3	7.00	1,411	0.4		
CCV-1	CCV	8/7/24 14:09	26.4	7.02	1,423	0.48		

Comments:

Field Meter ID: Pine 218074 Technician(s): justin colp Date: 8/8/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc240612a	3.98	8/8/24 8:37
7.0 Buffer	wc231207a	7.00	8/8/24 8:33
10.0 Buffer	wc240625b	9.98	8/8/24 8:41
LCS/CCV (7.0 Buffer)	wc231207a		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	98627	1412	8/7/24 8:44

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.51	8/8/24 8:48
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-2	LCS	8/8/24 8:50	23.9	7.00	1,412	0.51		
CCV-2	CCV	8/8/24 14:31	24.6	7.03	1,427	0.57		

Comments:

Site Samping Event: NEW- 3Q24
LIMS Workorder: 24061026
Technician(s): JC, BG, PY

Field Calibration Log(s)
Newton- 3Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 45985 Technician(s): Brett Gillihan Date: 8/7/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC240612A	4.01	8/7/24 9:14
7.0 Buffer	WC240307F	7.00	8/7/24 9:18
10.0 Buffer	WC240625B	9.99	8/7/24 9:22
LCS/CCV (7.0 Buffer)	WC231207A		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	98627	1391	8/7/24 9:26

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	1.4	8/7/24 9:31
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-1	LCS	8/7/24 9:38	22.1	7.00	1,391	1.4		
CCV-1	CCV	8/7/24 14:08	25.6	7.00	1,391	1.6		

Comments:

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC
11669 Lilburn Park Rd.
St. Louis, MO 63146
Office: 314.344.1079

Pine Environmental Services, Inc.

Instrument ID 218083
Description YSI Pro DSS Sonde
Calibrated 6/27/2024 10:21:25AM

Manufacturer YSI
Model Number Pro DSS
Serial Number/ Lot Number 23F102674
Location St. Louis
Department

State Certified
Status Pass
Temp °C 22.2
Humidity % 43

Calibration Specifications

Group # 1
Group Name PH
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
7.00 / 7.00	PH	7.00	PH	7.01	7.02	0.29%	Pass
4.00 / 4.00	PH	4.00	PH	4.07	4.00	0.00%	Pass
10.00 / 10.00	PH	10.00	PH	10.04	10.04	0.40%	Pass

Group # 2
Group Name Turbidity (NTU)
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
0.00 / 0.00	FNU	0.00	FNU	0.34	0.00	0.00%	Pass
124.00 / 124.00	FNU	124.00	FNU	126.32	124.00	0.00%	Pass

Group # 3
Group Name Conductivity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.000

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
1.413 / 1.413	ms/cm	1.413	ms/cm	1.501	1.413	0.00%	Pass

Group # 4
Group Name Redox (ORP)
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
240.00 / 240.00	mv	240.00	mv	242.90	240.00	0.00%	Pass

Group # 5
Group Name Dissolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC
11669 Lilburn Park Rd.
St. Louis, MO 63146
Office: 314.344.1079

Pine Environmental Services, Inc.

Instrument ID 45720
Description YSI Pro DSS
Calibrated 6/27/2024 10:15:34AM

Manufacturer YSI
Model Number Pro DSS
Serial Number/ Lot Number 19E101794
Location St. Louis
Department

State Certified
Status Pass
Temp °C 22.2
Humidity % 43

Calibration Specifications

Group # 1
Group Name PH
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
7.00 / 7.00	PH	7.00	PH	7.00	7.02	0.29%	Pass
4.00 / 4.00	PH	4.00	PH	3.89	4.00	0.00%	Pass
10.00 / 10.00	PH	10.00	PH	10.05	10.04	0.40%	Pass

Group # 2
Group Name Turbidity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
0.00 / 0.00	NTU	0.00	NTU	-0.43	0.00	0.00%	Pass
124.00 / 124.00	NTU	124.00	NTU	128.39	124.00	0.00%	Pass

Group # 3
Group Name Conductivity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.000

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
1.413 / 1.413	ms/cm	1.413	ms/cm	1.378	1.413	0.00%	Pass

Group # 4
Group Name Redox (ORP)
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
240.00 / 240.00	mv	240.00	mv	244.10	240.00	0.00%	Pass

Group # 5
Group Name Disolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC
11669 Lilburn Park Rd.
St. Louis, MO 63146
Office: 314.344.1079

Pine Environmental Services, Inc.

Instrument ID 51294
Description YSI Pro DSS Sonde
Calibrated 7/5/2024 11:57:06AM

Manufacturer YSI
Model Number Pro DSS
Serial Number/ Lot Number 21D103486
Location St. Louis
Department

State Certified
Status Pass
Temp °C 22.2
Humidity % 43

Calibration Specifications

Group # 1
Group Name PH
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
7.00 / 7.00	PH	7.00	PH	7.23	7.02	0.29%	Pass
4.00 / 4.00	PH	4.00	PH	4.42	4.00	0.00%	Pass
10.00 / 10.00	PH	10.00	PH	9.95	10.05	0.50%	Pass

Group # 2
Group Name Turbidity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
0.00 / 0.00	NTU	0.00	NTU	0.25	0.00	0.00%	Pass
124.00 / 124.00	NTU	124.00	NTU	100.99	124.00	0.00%	Pass

Group # 3
Group Name Conductivity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.000

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
1.413 / 1.413	ms/cm	1.413	ms/cm	1.491	1.413	0.00%	Pass

Group # 4
Group Name Redox (ORP)
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
240.00 / 240.00	mv	240.00	mv	229.10	240.00	0.00%	Pass

Group # 5
Group Name Dissolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC
11669 Lilburn Park Rd.
St. Louis, MO 63146
Office: 314.344.1079

Pine Environmental Services, Inc.

Instrument ID 45985
Description YSI Pro DSS
Calibrated 7/25/2024 3:07:11PM

Manufacturer YSI
Model Number Pro DSS
Serial Number/ Lot Number 19E101797
Location St. Louis
Department

State Certified
Status Pass
Temp °C 22.2
Humidity % 43

Calibration Specifications

Group # 1
Group Name PH
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
7.00 / 7.00	PH	7.00	PH	7.06	7.02	0.29%	Pass
4.00 / 4.00	PH	4.00	PH	4.04	4.00	0.00%	Pass
10.00 / 10.00	PH	10.00	PH	10.03	10.04	0.40%	Pass

Group # 2
Group Name Turbidity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
0.00 / 0.00	NTU	0.00	NTU	0.24	0.00	0.00%	Pass
124.00 / 124.00	NTU	124.00	NTU	125.76	124.00	0.00%	Pass

Group # 3
Group Name Conductivity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.000

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
1.413 / 1.413	ms/cm	1.413	ms/cm	1.459	1.413	0.00%	Pass

Group # 4
Group Name Redox (ORP)
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
240.0 / 240.0	mv	240.0	mv	243.2	240.0	0.00%	Pass

Group # 5
Group Name Disolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC

11669 Lilburn Park Rd.
St. Louis, MO 63146
Office: 314.344.1079

Pine Environmental Services, Inc.

Instrument ID 45985
Description YSI Pro DSS
Calibrated 7/25/2024 3:07:11PM

Group # 5
Group Name Disolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
100.0 / 100.0	%	100.0	%	99.8	100.3	0.30%	Pass

Test Instruments Used During the Calibration **(As Of Cal Entry Date)**

Test Standard ID	Description	Manufacturer	Model Number	Serial Number / Lot Number	Last Cal Date/ Opened Date	Next Cal Date / Expiration Date
STL 126NTU L#24E24011653	STL 126 NTU L#24E24011653	YSI	126 NTU	24E24011653		5/25/2025
STL 1413 COND L#4GB0749	STL 1413 COND L#4GB0749	AquaPhoenix Scientific	31986	4GB0749		2/25/2025
STL AUTOCAL L#24009059	Auto Cal Solution 0 NTU/PH 4	GFS	8483	24009059		3/20/2025
STL ORP SOLUTION 240MV L#4GA1475	STL ORP SOLUTION 240MV L#4GA1475	AquaPhoenix Scientific	ORP Solution	4GA1475		10/25/2024
STL PH10 #4GB0253	STL PH10 #4GB0253	Absolute Accuracy	PH 10	4GB0253		2/25/2026
STL PH4 L#4GB0637	STL pH4 L#4GB0637	AquaPhoenix Scientific	pH 4	4GB0637		2/25/2026
STL PH7 L#4GB0027	STL PH7 L#4GB0027	AquaPhoenix Scientific	PH7	4GB0027		2/25/2026

Notes about this calibration

Calibration Result Calibration Successful
Who Calibrated Chris Harkins

All instruments are calibrated by Pine Environmental Services LLC according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

Notify Pine Environmental Services LLC of any defect within 24 hours of receipt of equipment
Please call 800-301-9663 for Technical Assistance

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC

11669 Lilburn Park Rd.
St. Louis, MO 63146
Office: 314.344.1079

Pine Environmental Services, Inc.

Instrument ID 218074
Description YSI Pro DSS Sonde
Calibrated 7/25/2024 6:32:30PM

Manufacturer YSI
Model Number Pro DSS
Serial Number/ Lot Number 23F102664
Location St. Louis
Department

State Certified
Status Pass
Temp °C 22.2
Humidity % 43

Calibration Specifications

Group # 1
Group Name PH
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
7.00 / 7.00	PH	7.00	PH	7.30	7.02	0.29%	Pass
4.00 / 4.00	PH	4.00	PH	4.36	4.00	0.00%	Pass
10.00 / 10.00	PH	10.00	PH	10.20	10.04	0.40%	Pass

Group # 2
Group Name Turbidity (NTU)
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
0.00 / 0.00	NTU	0.00	NTU	0.06	0.00	0.00%	Pass
124.00 / 124.00	NTU	124.00	NTU	105.31	124.00	0.00%	Pass

Group # 3
Group Name Conductivity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.000

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
1.413 / 1.413	ms/cm	1.413	ms/cm	1.435	1.413	0.00%	Pass

Group # 4
Group Name Redox (ORP)
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
240.00 / 240.00	mv	240.00	mv	216.10	240.00	0.00%	Pass

Group # 5
Group Name Dissolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC

11669 Lilburn Park Rd.
St. Louis, MO 63146
Office: 314.344.1079

Pine Environmental Services, Inc.

Instrument ID 218074
Description YSI Pro DSS Sonde
Calibrated 7/25/2024 6:32:30PM

Group # 5
Group Name Dissolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
100.00 / 100.00	%	100.00	%	98.90	100.00	0.00%	Pass

Test Instruments Used During the Calibration **(As Of Cal Entry Date)**

Test Standard ID	Description	Manufacturer	Model Number	Serial Number / Lot Number	Last Cal Date/ Opened Date	Next Cal Date / Expiration Date
STL 126NTU L#24E24011653	STL 126 NTU L#24E24011653	YSI	126 NTU	24E24011653		5/25/2025
STL 1413 COND L#4GB0749	STL 1413 COND L#4GB0749	AquaPhoenix Scientific	31986	4GB0749		2/25/2025
STL AUTOCAL L#24009059	Auto Cal Solution 0 NTU/PH 4	GFS	8483	24009059		3/20/2025
STL ORP SOLUTION 240MV L#4GA1475	STL ORP SOLUTION 240MV L#4GA1475	AquaPhoenix Scientific	ORP Solution	4GA1475		10/25/2024
STL PH10 #4GB0253	STL PH10 #4GB0253	Absolute Accuracy	PH 10	4GB0253		2/25/2026
STL PH4 L#4GB0637	STL pH4 L#4GB0637	AquaPhoenix Scientific	pH 4	4GB0637		2/25/2026
STL PH7 L#4GB0027	STL PH7 L#4GB0027	AquaPhoenix Scientific	PH7	4GB0027		2/25/2026

Notes about this calibration

Calibration Result Calibration Successful
Who Calibrated Chris Harkins

All instruments are calibrated by Pine Environmental Services LLC according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

Notify Pine Environmental Services LLC of any defect within 24 hours of receipt of equipment
Please call 800-301-9663 for Technical Assistance

September 06, 2024

Eric Bauer
Ramboll
234 W. Florida Street
Fifth Floor
Milwaukee, WI 53204
TEL: (414) 837-3607
FAX: (414) 837-3608

Illinois	100226
Illinois	1004652024-2
Kansas	E-10374
Louisiana	05002
Louisiana	05003
Oklahoma	9978

RE: NEW-24Q3 **WorkOrder:** 24061026

Dear Eric Bauer:

TEKLAB, INC received 20 samples for NEW_NE_501 on 8/8/2024 2:24:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report,Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Elizabeth A. Hurley
Director of Customer Service
(618)344-1004 ex 33
ehurley@teklabinc.com

Report Contents

Client: Ramboll
Work Order: 24061026
Client Project: NEW-24Q3
Report Date: 06-Sep-24

This reporting package includes the following:

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Accreditations	6
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Chain of Custody	Appended

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Abbr Definition

Abbr	Definition
*	Analytes on report marked with an asterisk are not NELAP accredited
CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
CRQL	A Client Requested Quantitation Limit is a reporting limit that varies according to customer request. The CRQL may not be less than the MDL.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilution factors.
DNI	Did not ignite
DUP	Laboratory duplicate is a replicate aliquot prepared under the same laboratory conditions and independently analyzed to obtain a measure of precision.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample is a sample matrix, free from the analytes of interest,spiked with verified known amounts of analytes and analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system.
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MBLK	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	"The method detection limit is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results."
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
NC	Data is not acceptable for compliance purposes
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions.
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TIC	Tentatively identified compound: Analytes tentatively identified in the sample by using a library search. Only results not in the calibration standard will be reported as tentatively identified compounds. Results for tentatively identified compounds that are not present in the calibration standard, but are assigned a specific chemical name based upon the library search, are calculated using total peak areas from reconstructed ion chromatograms and a response factor of one. The nearest Internal Standard is used for the calculation. The results of any TICs must be considered estimated, and are flagged with a "T". If the estimated result is above the calibration range it is flagged "ET"
TNTC	Too numerous to count (> 200 CFU)

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Qualifiers

- # - Unknown hydrocarbon
- B - Analyte detected in associated Method Blank
- C - RL shown is a Client Requested Quantitation Limit
- E - Value above quantitation range
- H - Holding times exceeded
- I - Associated internal standard was outside method criteria
- J - Analyte detected below quantitation limits
- M - Manual Integration used to determine area response
- ND - Not Detected at the Reporting Limit
- R - RPD outside accepted recovery limits
- S - Spike Recovery outside recovery limits
- T - TIC(Tentatively identified compound)
- X - Value exceeds Maximum Contaminant Level

Case Narrative

http://www.teklabinc.com/

Client: Ramboll
Client Project: NEW-24Q3

Work Order: 24061026
Report Date: 06-Sep-24

Cooler Receipt Temp: 22.9 °C

An employee of Teklab, Inc. collected the sample(s).

APW20S could not be collected; the well went dry. EAH 8/9/24

APW21S collection time per field file. EAH 8/16/24

Per Eric Bauer's request, only NEW_NE_501 data is included in this report. EAH 9/6/24

Locations

Collinsville

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Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email jhriley@teklabinc.com

Springfield

Address 3920 Pintail Dr
Springfield, IL 62711-9415
Phone (217) 698-1004
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Kansas City

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Lenexa, KS 66214
Phone (913) 541-1998
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Email jhriley@teklabinc.com

Collinsville Air

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
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Address 1319 Butterfield Rd.
Downers Grove, IL 60515
Phone (630) 324-6855
Fax
Email arenner@teklabinc.com

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2025	Collinsville
Illinois	IEPA	1004652024-2	NELAP	4/30/2025	Collinsville
Kansas	KDHE	E-10374	NELAP	4/30/2025	Collinsville
Louisiana	LDEQ	05002	NELAP	6/30/2025	Collinsville
Louisiana	LDEQ	05003	NELAP	6/30/2025	Collinsville
Oklahoma	ODEQ	9978	NELAP	12/31/2024	Collinsville
Arkansas	ADEQ	88-0966		3/14/2025	Collinsville
Illinois	IDPH	17584		5/31/2025	Collinsville
Iowa	IDNR	430		6/1/2026	Collinsville
Kentucky	UST	0073		1/31/2025	Collinsville
Mississippi	MSDH			4/30/2025	Collinsville
Missouri	MDNR	930		1/31/2025	Collinsville
Missouri	MDNR	00930		10/31/2026	Collinsville

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-005 **Client Sample ID:** APW03

Matrix: GROUNDWATER **Collection Date:** 07/08/2024 12:11

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**7.75**	ft	1	07/08/2024 12:11	R350256
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**57**	NTU	1	07/08/2024 12:11	R350256
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**84**	mV	1	07/08/2024 12:11	R350256
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**934**	µS/cm	1	07/08/2024 12:11	R350256
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**31.2**	°C	1	07/08/2024 12:11	R350256
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.98**	mg/L	1	07/08/2024 12:11	R350256
SW-846 9040B FIELD									
pH	*	0	1.00		**6.89**		1	07/08/2024 12:11	R350256
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	12	25	J	**12**	µg/L	5	07/09/2024 17:48	225411
Manganese	NELAP	0.8	2.0		**23.2**	µg/L	5	07/09/2024 17:48	225411

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-006 **Client Sample ID:** APW04

Matrix: GROUNDWATER **Collection Date:** 07/08/2024 11:25

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**5.14**	ft	1	07/08/2024 11:25	R350256
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**52**	NTU	1	07/08/2024 11:25	R350256
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**79**	mV	1	07/08/2024 11:25	R350256
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**2020**	µS/cm	1	07/08/2024 11:25	R350256
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**23.5**	°C	1	07/08/2024 11:25	R350256
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**1.53**	mg/L	1	07/08/2024 11:25	R350256
SW-846 9040B FIELD									
pH	*	0	1.00		**6.86**		1	07/08/2024 11:25	R350256
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	12	25	J	**16**	µg/L	5	07/09/2024 17:37	225411
Manganese	NELAP	0.8	2.0		**467**	µg/L	5	07/09/2024 17:37	225411

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-013 **Client Sample ID:** APW10

Matrix: GROUNDWATER **Collection Date:** 07/02/2024 13:04

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**18.56**	ft	1	07/02/2024 13:04	R350256
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**20**	NTU	1	07/02/2024 13:04	R350256
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**9**	mV	1	07/02/2024 13:04	R350256
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**1580**	µS/cm	1	07/02/2024 13:04	R350256
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**16.2**	°C	1	07/02/2024 13:04	R350256
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.27**	mg/L	1	07/02/2024 13:04	R350256
SW-846 9040B FIELD									
pH	*	0	1.00		**7.14**		1	07/02/2024 13:04	R350256
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**< 25.0**	µg/L	5	07/23/2024 12:14	225949
Manganese	NELAP	0.8	2.0		**290**	µg/L	5	07/22/2024 21:45	225949

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-079 **Client Sample ID:** Field Blank

Matrix: AQUEOUS **Collection Date:** 07/11/2024 10:05

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**5**	mg/L	1	07/12/2024 11:59	R350130
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/12/2024 11:59	R350130
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**< 20**	mg/L	1	07/12/2024 9:59	R350208
SW-846 9036 (TOTAL)									
Sulfate	NELAP	6	10		**< 10**	mg/L	1	07/12/2024 22:05	R350166
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.04	0.10		**< 0.10**	mg/L	1	07/12/2024 10:45	R350044
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**< 4**	mg/L	1	07/12/2024 22:04	R350172
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.10	J	**0.037**	mg/L	1	07/16/2024 14:36	225659
Magnesium	NELAP	0.006	0.050		**< 0.050**	mg/L	1	07/16/2024 14:36	225659
Potassium	NELAP	0.040	0.100		**< 0.100**	mg/L	1	07/16/2024 14:36	225659
Sodium	NELAP	0.018	0.050		**0.165**	mg/L	1	07/16/2024 14:36	225659
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**< 25.0**	µg/L	5	07/16/2024 11:47	225657
Manganese	NELAP	0.8	2.0		**< 2.0**	µg/L	5	07/15/2024 17:57	225657
Contamination present in the MBLK for Sb. Sample results below the reporting limit are reportable per the TNI Standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	07/15/2024 21:46	225659
Arsenic	NELAP	0.4	1.0		**< 1.0**	µg/L	5	07/15/2024 21:46	225659
Barium	NELAP	0.7	1.0		**< 1.0**	µg/L	5	07/15/2024 21:46	225659
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	07/15/2024 21:46	225659
Boron	NELAP	9.2	25.0		**< 25.0**	µg/L	5	07/15/2024 21:46	225659
Cadmium	*	0.2	1.0		**< 1.0**	µg/L	5	07/15/2024 21:46	225659
Chromium	NELAP	0.7	1.5	J	**0.8**	µg/L	5	07/15/2024 21:46	225659
Cobalt	NELAP	0.1	1.0		**< 1.0**	µg/L	5	07/15/2024 21:46	225659
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	07/15/2024 21:46	225659
Lithium	*	1.4	3.0		**< 3.0**	µg/L	5	07/15/2024 21:46	225659
Molybdenum	NELAP	0.6	1.5		**< 1.5**	µg/L	5	07/15/2024 21:46	225659
Selenium	NELAP	0.6	1.0		**< 1.0**	µg/L	5	07/15/2024 21:46	225659
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	07/15/2024 21:46	225659
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	07/16/2024 11:32	225717

Client: Ramboll
Work Order: 24061026
Client Project: NEW-24Q3
Report Date: 06-Sep-24
Lab ID: 24061026-083
Client Sample ID: Equipment Blank 1
Matrix: AQUEOUS
Collection Date: 07/11/2024 10:15

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**2**	mg/L	1	07/12/2024 12:24	R350130
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	07/12/2024 12:24	R350130
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**< 20**	mg/L	1	07/12/2024 9:59	R350208
SW-846 9036 (TOTAL)									
Sulfate	NELAP	6	10		**< 10**	mg/L	1	07/12/2024 22:07	R350166
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.04	0.10		**< 0.10**	mg/L	1	07/12/2024 10:43	R350044
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**< 4**	mg/L	1	07/12/2024 22:07	R350172
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.10	J	**0.076**	mg/L	1	07/16/2024 14:37	225659
Magnesium	NELAP	0.006	0.050	J	**0.028**	mg/L	1	07/16/2024 14:37	225659
Potassium	NELAP	0.040	0.100		**< 0.100**	mg/L	1	07/16/2024 14:37	225659
Sodium	NELAP	0.018	0.050		**0.151**	mg/L	1	07/16/2024 14:37	225659
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**< 25.0**	µg/L	5	07/16/2024 12:46	225657
Manganese	NELAP	0.8	2.0		**< 2.0**	µg/L	5	07/15/2024 18:02	225657
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	07/15/2024 21:52	225659
Arsenic	NELAP	0.4	1.0		**< 1.0**	µg/L	5	07/15/2024 21:52	225659
Barium	NELAP	0.7	1.0		**< 1.0**	µg/L	5	07/15/2024 21:52	225659
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	07/15/2024 21:52	225659
Boron	NELAP	9.2	25.0		**< 25.0**	µg/L	5	07/15/2024 21:52	225659
Cadmium	*	0.2	1.0		**< 1.0**	µg/L	5	07/15/2024 21:52	225659
Chromium	NELAP	0.7	1.5		**< 1.5**	µg/L	5	07/15/2024 21:52	225659
Cobalt	NELAP	0.1	1.0		**< 1.0**	µg/L	5	07/15/2024 21:52	225659
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	07/15/2024 21:52	225659
Lithium	*	1.4	3.0		**< 3.0**	µg/L	5	07/15/2024 21:52	225659
Molybdenum	NELAP	0.6	1.5		**< 1.5**	µg/L	5	07/15/2024 21:52	225659
Selenium	NELAP	0.6	1.0		**< 1.0**	µg/L	5	07/15/2024 21:52	225659
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	07/15/2024 21:52	225659
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	07/16/2024 11:37	225717

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-090 **Client Sample ID:** APW02

Matrix: GROUNDWATER **Collection Date:** 08/07/2024 13:31

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**5.14**	ft	1	08/07/2024 13:31	R350256
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**23**	NTU	1	08/07/2024 13:31	R350256
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**44**	mV	1	08/07/2024 13:31	R350256
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**4920**	µS/cm	1	08/07/2024 13:31	R350256
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**18.2**	°C	1	08/07/2024 13:31	R350256
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**1.64**	mg/L	1	08/07/2024 13:31	R350256
SW-846 9040B FIELD									
pH	*	0	1.00		**6.72**		1	08/07/2024 13:31	R350256
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**114**	µg/L	5	08/09/2024 11:01	226897
Manganese	NELAP	0.8	2.0		**352**	µg/L	5	08/28/2024 8:52	227702

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-091 **Client Sample ID:** APW05S

Matrix: GROUNDWATER **Collection Date:** 08/07/2024 10:08

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**10.55**	ft	1	08/07/2024 10:08	R350256
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**310**	NTU	1	08/07/2024 10:08	R350256
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**122**	mV	1	08/07/2024 10:08	R350256
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**3870**	µS/cm	1	08/07/2024 10:08	R350256
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**16.3**	°C	1	08/07/2024 10:08	R350256
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**1.98**	mg/L	1	08/07/2024 10:08	R350256
SW-846 9040B FIELD									
pH	*	0	1.00		**6.45**		1	08/07/2024 10:08	R350256
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**52.2**	µg/L	5	08/09/2024 11:07	226897
Manganese	NELAP	0.8	2.0		**271**	µg/L	5	08/09/2024 11:07	226897

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-092 **Client Sample ID:** APW14

Matrix: GROUNDWATER **Collection Date:** 08/07/2024 12:38

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**20.95**	ft	1	08/07/2024 12:38	R350256
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**5.2**	NTU	1	08/07/2024 12:38	R350256
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**-90**	mV	1	08/07/2024 12:38	R350256
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**1510**	µS/cm	1	08/07/2024 12:38	R350256
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**17.2**	°C	1	08/07/2024 12:38	R350256
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**1.77**	mg/L	1	08/07/2024 12:38	R350256
SW-846 9040B FIELD									
pH	*	0	1.00		**7.28**		1	08/07/2024 12:38	R350256
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**3250**	µg/L	5	08/09/2024 11:12	226897
Manganese	NELAP	0.8	2.0		**157**	µg/L	5	08/09/2024 11:12	226897

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-093 **Client Sample ID:** APW15

Matrix: GROUNDWATER **Collection Date:** 08/07/2024 11:55

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**21.21**	ft	1	08/07/2024 11:55	R350256
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**340**	NTU	1	08/07/2024 11:55	R350256
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**-140**	mV	1	08/07/2024 11:55	R350256
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**2000**	µS/cm	1	08/07/2024 11:55	R350256
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**16.7**	°C	1	08/07/2024 11:55	R350256
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.79**	mg/L	1	08/07/2024 11:55	R350256
SW-846 9040B FIELD									
pH	*	0	1.00		**7.11**		1	08/07/2024 11:55	R350256
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**9970**	µg/L	5	08/09/2024 11:18	226897
Manganese	NELAP	0.8	2.0		**79.5**	µg/L	5	08/09/2024 11:18	226897

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-094 **Client Sample ID:** APW19S

Matrix: GROUNDWATER **Collection Date:** 08/07/2024 11:25

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**5.99**	ft	1	08/07/2024 11:25	R350256
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**10**	NTU	1	08/07/2024 11:25	R350256
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**49**	mV	1	08/07/2024 11:25	R350256
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**3970**	µS/cm	1	08/07/2024 11:25	R350256
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**19.7**	°C	1	08/07/2024 11:25	R350256
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**3.08**	mg/L	1	08/07/2024 11:25	R350256
SW-846 9040B FIELD									
pH	*	0	1.00		**6.31**		1	08/07/2024 11:25	R350256
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**543**	mg/L	1	08/09/2024 10:30	R351503
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/09/2024 10:30	R351503
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20	H	**3520**	mg/L	1	08/15/2024 13:22	R351887
Sample analysis did not meet hold time requirements.									
SW-846 9036 (TOTAL)									
Sulfate	NELAP	307	500		**2360**	mg/L	50	08/16/2024 15:16	R351908
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.04	0.10		**1.13**	mg/L	1	08/14/2024 9:45	R351680
SW-846 9251 (TOTAL)									
Chloride	NELAP	5	40		**61**	mg/L	10	08/15/2024 16:36	R351860
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**336**	mg/L	1	08/12/2024 17:15	226925
Magnesium	NELAP	0.006	0.050		**257**	mg/L	1	08/12/2024 17:15	226925
Potassium	NELAP	0.040	0.100		**5.31**	mg/L	1	08/12/2024 17:15	226925
Sodium	NELAP	0.180	0.500		**498**	mg/L	10	08/13/2024 13:18	226925
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**128**	µg/L	5	08/09/2024 11:23	226897
Manganese	NELAP	0.8	2.0		**433**	µg/L	5	08/09/2024 11:23	226897
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**1.2**	µg/L	5	08/28/2024 16:59	227698
Arsenic	NELAP	0.4	1.0		**11.3**	µg/L	5	08/29/2024 8:49	227698
Barium	NELAP	0.7	1.0		**32.6**	µg/L	5	08/12/2024 15:44	226925
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 15:44	226925
Boron	NELAP	9.2	25.0		**74.6**	µg/L	5	08/12/2024 15:44	226925
Cadmium	*	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 15:44	226925
Chromium	NELAP	0.7	1.5	J	**1.4**	µg/L	5	08/12/2024 15:44	226925
Cobalt	NELAP	0.1	1.0		**1.2**	µg/L	5	08/13/2024 12:19	226925
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	08/12/2024 15:44	226925
Lithium	*	1.4	3.0		**67.2**	µg/L	5	08/12/2024 15:44	226925

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-094 **Client Sample ID:** APW19S

Matrix: GROUNDWATER **Collection Date:** 08/07/2024 11:25

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Molybdenum	NELAP	0.6	1.5		**138**	µg/L	5	08/12/2024 15:44	226925
Selenium	NELAP	0.6	1.0		**10.5**	µg/L	5	08/12/2024 15:44	226925
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	08/12/2024 15:44	226925
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	08/13/2024 11:22	226926

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-095 **Client Sample ID:** APW20S

Matrix: GROUNDWATER **Collection Date:** 08/07/2024 12:29

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**20.59**	ft	1	08/07/2024 12:29	R350256

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-096 **Client Sample ID:** APW21S

Matrix: GROUNDWATER **Collection Date:** 08/07/2024 10:48

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**11.51**	ft	1	08/07/2024 10:48	R350256
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**9.2**	NTU	1	08/07/2024 10:48	R350256
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**102**	mV	1	08/07/2024 10:48	R350256
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**1270**	µS/cm	1	08/07/2024 10:48	R350256
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**19.0**	°C	1	08/07/2024 10:48	R350256
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**3.34**	mg/L	1	08/07/2024 10:48	R350256
SW-846 9040B FIELD									
pH	*	0	1.00		**6.73**		1	08/07/2024 10:48	R350256
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**260**	mg/L	1	08/09/2024 11:20	R351503
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/09/2024 11:20	R351503
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20	H	**1100**	mg/L	1	08/15/2024 13:23	R351887
Sample analysis did not meet hold time requirements.									
SW-846 9036 (TOTAL)									
Sulfate	NELAP	123	200		**567**	mg/L	20	08/16/2024 15:19	R351908
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.04	0.10		**0.27**	mg/L	1	08/14/2024 9:46	R351680
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**8**	mg/L	1	08/15/2024 16:39	R351860
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**203**	mg/L	1	08/12/2024 17:16	226925
Magnesium	NELAP	0.006	0.050		**63.8**	mg/L	1	08/12/2024 17:16	226925
Potassium	NELAP	0.040	0.100		**1.01**	mg/L	1	08/12/2024 17:16	226925
Sodium	NELAP	0.018	0.050		**30.6**	mg/L	1	08/12/2024 17:16	226925
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**62.7**	µg/L	5	08/09/2024 11:29	226897
Manganese	NELAP	0.8	2.0		**650**	µg/L	5	08/09/2024 11:29	226897
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	08/12/2024 15:50	226925
Arsenic	NELAP	0.4	1.0	J	**0.9**	µg/L	5	08/12/2024 15:50	226925
Barium	NELAP	0.7	1.0		**36.1**	µg/L	5	08/12/2024 15:50	226925
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 15:50	226925
Boron	NELAP	9.2	25.0		**254**	µg/L	5	08/12/2024 15:50	226925
Cadmium	*	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 15:50	226925
Chromium	NELAP	0.7	1.5		**2.3**	µg/L	5	08/13/2024 12:24	226925
Cobalt	NELAP	0.1	1.0	J	**0.8**	µg/L	5	08/12/2024 15:50	226925
Lead	NELAP	0.6	1.0		**21.3**	µg/L	5	08/12/2024 15:50	226925
Lithium	*	1.4	3.0		**12.7**	µg/L	5	08/12/2024 15:50	226925

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-096 **Client Sample ID:** APW21S

Matrix: GROUNDWATER **Collection Date:** 08/07/2024 10:48

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Molybdenum	NELAP	0.6	1.5		**5.2**	µg/L	5	08/14/2024 13:45	226925
Selenium	NELAP	0.6	1.0		**1.2**	µg/L	5	08/13/2024 12:24	226925
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	08/12/2024 15:50	226925
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	08/13/2024 11:28	226926

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-097 **Client Sample ID:** APW22S

Matrix: GROUNDWATER **Collection Date:** 08/08/2024 9:20

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**8.92**	ft	1	08/08/2024 9:20	R350256
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**6.0**	NTU	1	08/08/2024 9:20	R350256
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**172**	mV	1	08/08/2024 9:20	R350256
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**6940**	µS/cm	1	08/08/2024 9:20	R350256
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**18.0**	°C	1	08/08/2024 9:20	R350256
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**1.36**	mg/L	1	08/08/2024 9:20	R350256
SW-846 9040B FIELD									
pH	*	0	1.00		**6.27**		1	08/08/2024 9:20	R350256
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**671**	mg/L	1	08/12/2024 11:59	R351579
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/12/2024 11:59	R351579
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20	H	**3300**	mg/L	1	08/15/2024 10:57	R351887
Sample analysis did not meet hold time requirements.									
SW-846 9036 (TOTAL)									
Sulfate	NELAP	307	500		**1870**	mg/L	50	08/16/2024 15:24	R351908
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.04	0.10		**0.23**	mg/L	1	08/14/2024 9:48	R351680
SW-846 9251 (TOTAL)									
Chloride	NELAP	25	200		**1260**	mg/L	50	08/16/2024 15:24	R351927
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**547**	mg/L	1	08/12/2024 17:16	226925
Magnesium	NELAP	0.006	0.050		**417**	mg/L	1	08/12/2024 17:16	226925
Potassium	NELAP	0.040	0.100		**3.84**	mg/L	1	08/12/2024 17:16	226925
Sodium	NELAP	0.180	0.500		**513**	mg/L	10	08/13/2024 13:19	226925
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**35.1**	µg/L	5	08/12/2024 12:40	226897
Manganese	NELAP	3.0	8.0		**14000**	µg/L	20	08/12/2024 11:27	226897
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	08/12/2024 15:55	226925
Arsenic	NELAP	0.4	1.0	J	**0.8**	µg/L	5	08/12/2024 15:55	226925
Barium	NELAP	0.7	1.0		**30.3**	µg/L	5	08/12/2024 15:55	226925
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 15:55	226925
Boron	NELAP	9.2	25.0		**114**	µg/L	5	08/12/2024 15:55	226925
Cadmium	*	0.2	1.0	J	**0.2**	µg/L	5	08/12/2024 15:55	226925
Chromium	NELAP	0.7	1.5		**< 1.5**	µg/L	5	08/12/2024 15:55	226925
Cobalt	NELAP	0.1	1.0		**32.2**	µg/L	5	08/12/2024 15:55	226925
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	08/12/2024 15:55	226925
Lithium	*	1.4	3.0		**22.8**	µg/L	5	08/12/2024 15:55	226925

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-097 **Client Sample ID:** APW22S

Matrix: GROUNDWATER **Collection Date:** 08/08/2024 9:20

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Molybdenum	NELAP	0.6	1.5	J	**1.3**	µg/L	5	08/12/2024 15:55	226925
Selenium	NELAP	0.6	1.0	J	**0.7**	µg/L	5	08/12/2024 15:55	226925
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	08/12/2024 15:55	226925
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	08/13/2024 11:35	226926

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-098 **Client Sample ID:** APW23S

Matrix: GROUNDWATER **Collection Date:** 08/08/2024 10:25

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**7.71**	ft	1	08/08/2024 10:25	R350256
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**7.6**	NTU	1	08/08/2024 10:25	R350256
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**34**	mV	1	08/08/2024 10:25	R350256
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**2660**	µS/cm	1	08/08/2024 10:25	R350256
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**20.9**	°C	1	08/08/2024 10:25	R350256
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**1.75**	mg/L	1	08/08/2024 10:25	R350256
SW-846 9040B FIELD									
pH	*	0	1.00		**7.06**		1	08/08/2024 10:25	R350256
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**486**	mg/L	1	08/12/2024 12:06	R351579
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/12/2024 12:06	R351579
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20	H	**2380**	mg/L	1	08/15/2024 10:57	R351887
Sample analysis did not meet hold time requirements.									
SW-846 9036 (TOTAL)									
Sulfate	NELAP	307	500		**1370**	mg/L	50	08/16/2024 15:27	R351908
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.04	0.10		**0.35**	mg/L	1	08/14/2024 9:50	R351680
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**45**	mg/L	1	08/15/2024 16:55	R351860
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**236**	mg/L	1	08/12/2024 17:17	226925
Magnesium	NELAP	0.006	0.050		**255**	mg/L	1	08/12/2024 17:17	226925
Potassium	NELAP	0.040	0.100		**0.567**	mg/L	1	08/12/2024 17:17	226925
Sodium	NELAP	0.018	0.050		**140**	mg/L	1	08/12/2024 17:17	226925
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**79.3**	µg/L	5	08/09/2024 11:40	226897
Manganese	NELAP	0.8	2.0		**216**	µg/L	5	08/09/2024 11:40	226897
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	08/12/2024 16:01	226925
Arsenic	NELAP	0.4	1.0	J	**0.9**	µg/L	5	08/12/2024 16:01	226925
Barium	NELAP	0.7	1.0		**19.2**	µg/L	5	08/12/2024 16:01	226925
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 16:01	226925
Boron	NELAP	9.2	25.0		**< 25.0**	µg/L	5	08/12/2024 16:01	226925
Cadmium	*	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 16:01	226925
Chromium	NELAP	0.7	1.5	J	**0.9**	µg/L	5	08/12/2024 16:01	226925
Cobalt	NELAP	0.1	1.0		**1.4**	µg/L	5	08/13/2024 12:30	226925
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	08/12/2024 16:01	226925
Lithium	*	1.4	3.0		**21.7**	µg/L	5	08/12/2024 16:01	226925

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-098 **Client Sample ID:** APW23S

Matrix: GROUNDWATER **Collection Date:** 08/08/2024 10:25

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Molybdenum	NELAP	0.6	1.5	J	**1.3**	µg/L	5	08/12/2024 16:01	226925
Selenium	NELAP	0.6	1.0		**< 1.0**	µg/L	5	08/12/2024 16:01	226925
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	08/12/2024 16:01	226925
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	08/13/2024 11:37	226926

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-099 **Client Sample ID:** APW23

Matrix: GROUNDWATER **Collection Date:** 08/08/2024 10:55

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**14.40**	ft	1	08/08/2024 10:55	R350256
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**160**	NTU	1	08/08/2024 10:55	R350256
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**-127**	mV	1	08/08/2024 10:55	R350256
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**1440**	µS/cm	1	08/08/2024 10:55	R350256
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**19.9**	°C	1	08/08/2024 10:55	R350256
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**4.32**	mg/L	1	08/08/2024 10:55	R350256
SW-846 9040B FIELD									
pH	*	0	1.00		**7.42**		1	08/08/2024 10:55	R350256
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**454**	mg/L	1	08/09/2024 11:14	R351503
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/09/2024 11:14	R351503
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20	H	**966**	mg/L	1	08/15/2024 10:58	R351887
Sample analysis did not meet hold time requirements.									
SW-846 9036 (TOTAL)									
Sulfate	NELAP	61	100		**339**	mg/L	10	08/15/2024 17:09	R351845
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.04	0.10		**0.42**	mg/L	1	08/14/2024 13:22	R351680
SW-846 9251 (TOTAL)									
Chloride	NELAP	5	40		**46**	mg/L	10	08/15/2024 17:08	R351860
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**109**	mg/L	1	08/12/2024 17:18	226925
Magnesium	NELAP	0.006	0.050		**64.9**	mg/L	1	08/12/2024 17:18	226925
Potassium	NELAP	0.040	0.100		**2.51**	mg/L	1	08/12/2024 17:18	226925
Sodium	NELAP	0.018	0.050		**150**	mg/L	1	08/12/2024 17:18	226925
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**6830**	µg/L	5	08/09/2024 12:09	226897
Manganese	NELAP	0.8	2.0		**900**	µg/L	5	08/09/2024 12:09	226897
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	08/12/2024 16:06	226925
Arsenic	NELAP	0.4	1.0		**5.1**	µg/L	5	08/12/2024 16:06	226925
Barium	NELAP	0.7	1.0		**55.0**	µg/L	5	08/12/2024 16:06	226925
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 16:06	226925
Boron	NELAP	9.2	25.0		**77.2**	µg/L	5	08/12/2024 16:06	226925
Cadmium	*	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 16:06	226925
Chromium	NELAP	0.7	1.5		**< 1.5**	µg/L	5	08/12/2024 16:06	226925
Cobalt	NELAP	0.1	1.0	J	**0.5**	µg/L	5	08/12/2024 16:06	226925
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	08/12/2024 16:06	226925
Lithium	*	1.4	3.0		**25.5**	µg/L	5	08/12/2024 16:06	226925

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-099 **Client Sample ID:** APW23

Matrix: GROUNDWATER **Collection Date:** 08/08/2024 10:55

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Molybdenum	NELAP	0.6	1.5		**11.2**	µg/L	5	08/12/2024 16:06	226925
Selenium	NELAP	0.6	1.0		**< 1.0**	µg/L	5	08/12/2024 16:06	226925
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	08/12/2024 16:06	226925
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	08/13/2024 11:40	226926

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-102 **Client Sample ID:** Field Blank 2

Matrix: AQUEOUS **Collection Date:** 08/08/2024 11:05

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**2**	mg/L	1	08/09/2024 10:47	R351503
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/09/2024 10:47	R351503
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20	H	**< 20**	mg/L	1	08/15/2024 11:13	R351887
Sample analysis did not meet hold time requirements.									
SW-846 9036 (TOTAL)									
Sulfate	NELAP	6	10		**< 10**	mg/L	1	08/15/2024 17:44	R351845
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.04	0.10		**< 0.10**	mg/L	1	08/14/2024 13:32	R351680
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**< 4**	mg/L	1	08/15/2024 17:43	R351860
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**0.163**	mg/L	1	08/12/2024 16:28	226933
Magnesium	NELAP	0.006	0.050	J	**0.018**	mg/L	1	08/12/2024 16:28	226933
Potassium	NELAP	0.040	0.100		**< 0.100**	mg/L	1	08/12/2024 16:28	226933
Sodium	NELAP	0.018	0.050		**0.057**	mg/L	1	08/12/2024 16:28	226933
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**< 25.0**	µg/L	5	08/09/2024 12:14	226897
Manganese	NELAP	0.8	2.0		**< 2.0**	µg/L	5	08/09/2024 12:14	226897
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0	J	**0.6**	µg/L	5	08/12/2024 12:59	226933
Arsenic	NELAP	0.4	1.0		**< 1.0**	µg/L	5	08/12/2024 12:59	226933
Barium	NELAP	0.7	1.0		**< 1.0**	µg/L	5	08/12/2024 12:59	226933
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 12:59	226933
Boron	NELAP	9.2	25.0		**< 25.0**	µg/L	5	08/14/2024 13:11	226933
Cadmium	*	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 12:59	226933
Chromium	NELAP	0.7	1.5		**< 1.5**	µg/L	5	08/12/2024 12:59	226933
Cobalt	NELAP	0.1	1.0		**< 1.0**	µg/L	5	08/12/2024 12:59	226933
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	08/12/2024 12:59	226933
Lithium	*	1.4	3.0		**< 3.0**	µg/L	5	08/12/2024 12:59	226933
Molybdenum	NELAP	0.6	1.5		**< 1.5**	µg/L	5	08/12/2024 12:59	226933
Selenium	NELAP	0.6	1.0		**< 1.0**	µg/L	5	08/12/2024 12:59	226933
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	08/12/2024 12:59	226933
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	08/13/2024 11:42	226926

Client: Ramboll
Work Order: 24061026
Client Project: NEW-24Q3
Report Date: 06-Sep-24
Lab ID: 24061026-103
Client Sample ID: APW02 Duplicate
Matrix: GROUNDWATER
Collection Date: 08/07/2024 13:31

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**5.14**	ft	1	08/07/2024 13:31	R350256
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**23**	NTU	1	08/07/2024 13:31	R350256
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**44**	mV	1	08/07/2024 13:31	R350256
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**4920**	µS/cm	1	08/07/2024 13:31	R350256
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**18.2**	°C	1	08/07/2024 13:31	R350256
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**1.64**	mg/L	1	08/07/2024 13:31	R350256
SW-846 9040B FIELD									
pH	*	0	1.00		**6.72**		1	08/07/2024 13:31	R350256
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**98.3**	µg/L	5	08/09/2024 12:20	226897
Manganese	NELAP	0.8	2.0		**361**	µg/L	5	08/09/2024 12:20	226897

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-104 **Client Sample ID:** APW19S Duplicate

Matrix: GROUNDWATER **Collection Date:** 08/07/2024 11:25

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**5.99**	ft	1	08/07/2024 11:25	R350256
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**10**	NTU	1	08/07/2024 11:25	R350256
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-300	-300		**49**	mV	1	08/07/2024 11:25	R350256
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**3970**	µS/cm	1	08/07/2024 11:25	R350256
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**19.7**	°C	1	08/07/2024 11:25	R350256
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**3.08**	mg/L	1	08/07/2024 11:25	R350256
SW-846 9040B FIELD									
pH	*	0	1.00		**6.31**		1	08/07/2024 11:25	R350256
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**516**	mg/L	1	08/12/2024 12:21	R351579
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/12/2024 12:21	R351579
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20	H	**3860**	mg/L	1	08/15/2024 13:39	R351887
Sample analysis did not meet hold time requirements.									
SW-846 9036 (TOTAL)									
Sulfate	NELAP	307	500		**2320**	mg/L	50	08/16/2024 15:35	R351908
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.04	0.10		**1.06**	mg/L	1	08/14/2024 13:40	R351680
SW-846 9251 (TOTAL)									
Chloride	NELAP	5	40		**60**	mg/L	10	08/15/2024 17:59	R351860
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**376**	mg/L	1	08/12/2024 16:33	226933
Magnesium	NELAP	0.006	0.050		**284**	mg/L	1	08/12/2024 16:33	226933
Potassium	NELAP	0.040	0.100		**5.57**	mg/L	1	08/12/2024 16:33	226933
Sodium	NELAP	0.180	0.500		**426**	mg/L	10	08/13/2024 17:42	226933
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**139**	µg/L	5	08/09/2024 12:25	226897
Manganese	NELAP	0.8	2.0		**511**	µg/L	5	08/09/2024 12:25	226897
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**1.2**	µg/L	5	08/12/2024 13:11	226933
Arsenic	NELAP	0.4	1.0		**11.2**	µg/L	5	08/12/2024 13:11	226933
Barium	NELAP	0.7	1.0		**43.7**	µg/L	5	08/12/2024 13:11	226933
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	08/14/2024 13:22	226933
Boron	NELAP	9.2	25.0		**79.2**	µg/L	5	08/14/2024 13:22	226933
Cadmium	*	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 13:11	226933
Chromium	NELAP	0.7	1.5		**2.0**	µg/L	5	08/14/2024 13:22	226933
Cobalt	NELAP	0.1	1.0		**1.2**	µg/L	5	08/14/2024 13:22	226933
Lead	NELAP	0.6	1.0	J	**0.6**	µg/L	5	08/12/2024 13:11	226933
Lithium	*	1.4	3.0		**67.3**	µg/L	5	08/14/2024 13:22	226933

Client: Ramboll
Work Order: 24061026
Client Project: NEW-24Q3
Report Date: 06-Sep-24
Lab ID: 24061026-104
Client Sample ID: APW19S Duplicate
Matrix: GROUNDWATER
Collection Date: 08/07/2024 11:25

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Molybdenum	NELAP	0.6	1.5		**150**	µg/L	5	08/12/2024 13:11	226933
Selenium	NELAP	0.6	1.0		**11.3**	µg/L	5	08/12/2024 13:11	226933
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	08/12/2024 13:11	226933
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	08/13/2024 13:04	226941

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-105 **Client Sample ID:** Equipment Blank 2

Matrix: AQUEOUS **Collection Date:** 08/08/2024 11:13

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**2**	mg/L	1	08/09/2024 10:38	R351503
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/09/2024 10:38	R351503
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20	H	**< 20**	mg/L	1	08/15/2024 11:13	R351887
Sample analysis did not meet hold time requirements.									
SW-846 9036 (TOTAL)									
Sulfate	NELAP	6	10		**< 10**	mg/L	1	08/15/2024 18:06	R351845
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.04	0.10		**< 0.10**	mg/L	1	08/14/2024 13:42	R351680
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**< 4**	mg/L	1	08/15/2024 18:04	R351860
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**4.42**	mg/L	1	08/12/2024 16:34	226933
Magnesium	NELAP	0.006	0.050		**0.393**	mg/L	1	08/12/2024 16:34	226933
Potassium	NELAP	0.040	0.100		**1.13**	mg/L	1	08/12/2024 16:34	226933
Sodium	NELAP	0.018	0.050		**1.37**	mg/L	1	08/12/2024 16:34	226933
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**< 25.0**	µg/L	5	08/09/2024 12:31	226897
Manganese	NELAP	0.8	2.0		**< 2.0**	µg/L	5	08/09/2024 12:31	226897
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	08/12/2024 13:17	226933
Arsenic	NELAP	0.4	1.0		**< 1.0**	µg/L	5	08/12/2024 13:17	226933
Barium	NELAP	0.7	1.0	J	**0.8**	µg/L	5	08/12/2024 13:17	226933
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 13:17	226933
Boron	NELAP	9.2	25.0		**< 25.0**	µg/L	5	08/14/2024 13:28	226933
Cadmium	*	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 13:17	226933
Chromium	NELAP	0.7	1.5		**< 1.5**	µg/L	5	08/12/2024 13:17	226933
Cobalt	NELAP	0.1	1.0		**< 1.0**	µg/L	5	08/12/2024 13:17	226933
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	08/12/2024 13:17	226933
Lithium	*	1.4	3.0		**< 3.0**	µg/L	5	08/12/2024 13:17	226933
Molybdenum	NELAP	0.6	1.5	J	**0.7**	µg/L	5	08/12/2024 13:17	226933
Selenium	NELAP	0.6	1.0		**< 1.0**	µg/L	5	08/12/2024 13:17	226933
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	08/12/2024 13:17	226933
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	08/13/2024 13:06	226941

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

Lab ID: 24061026-106 **Client Sample ID:** Equipment Blank 3

Matrix: AQUEOUS **Collection Date:** 08/07/2024 13:45

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**1**	mg/L	1	08/09/2024 10:58	R351503
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	08/09/2024 10:58	R351503
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20	JH	**16**	mg/L	1	08/15/2024 13:39	R351887
Sample analysis did not meet hold time requirements.									
SW-846 9036 (TOTAL)									
Sulfate	NELAP	6	10		**< 10**	mg/L	1	08/15/2024 18:08	R351845
SW-846 9214 (TOTAL)									
Fluoride	NELAP	0.04	0.10		**< 0.10**	mg/L	1	08/14/2024 13:44	R351680
SW-846 9251 (TOTAL)									
Chloride	NELAP	1	4		**< 4**	mg/L	1	08/15/2024 18:07	R351860
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**0.467**	mg/L	1	08/12/2024 16:35	226933
Magnesium	NELAP	0.006	0.050		**0.050**	mg/L	1	08/12/2024 16:35	226933
Potassium	NELAP	0.040	0.100		**0.600**	mg/L	1	08/12/2024 16:35	226933
Sodium	NELAP	0.018	0.050		**0.152**	mg/L	1	08/12/2024 16:35	226933
SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)									
Iron	NELAP	11.5	25.0		**< 25.0**	µg/L	5	08/09/2024 12:36	226897
Manganese	NELAP	0.8	2.0		**< 2.0**	µg/L	5	08/09/2024 12:36	226897
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	08/12/2024 13:23	226933
Arsenic	NELAP	0.4	1.0		**< 1.0**	µg/L	5	08/12/2024 13:23	226933
Barium	NELAP	0.7	1.0		**< 1.0**	µg/L	5	08/12/2024 13:23	226933
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 13:23	226933
Boron	NELAP	9.2	25.0		**< 25.0**	µg/L	5	08/14/2024 13:33	226933
Cadmium	*	0.2	1.0		**< 1.0**	µg/L	5	08/12/2024 13:23	226933
Chromium	NELAP	0.7	1.5		**< 1.5**	µg/L	5	08/12/2024 13:23	226933
Cobalt	NELAP	0.1	1.0		**< 1.0**	µg/L	5	08/12/2024 13:23	226933
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	08/12/2024 13:23	226933
Lithium	*	1.4	3.0		**< 3.0**	µg/L	5	08/12/2024 13:23	226933
Molybdenum	NELAP	0.6	1.5		**< 1.5**	µg/L	5	08/12/2024 13:23	226933
Selenium	NELAP	0.6	1.0		**< 1.0**	µg/L	5	08/12/2024 13:23	226933
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	08/12/2024 13:23	226933
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	08/13/2024 13:08	226941

Client: Ramboll
Client Project: NEW-24Q3

Work Order: 24061026
Report Date: 06-Sep-24

Lab Sample ID	Client Sample ID	Matrix	Fractions	Collection Date
24061026-005	APW03	Groundwater	2	07/08/2024 12:11
24061026-006	APW04	Groundwater	2	07/08/2024 11:25
24061026-013	APW10	Groundwater	2	07/02/2024 13:04
24061026-079	Field Blank	Aqueous	6	07/11/2024 10:05
24061026-083	Equipment Blank 1	Aqueous	6	07/11/2024 10:15
24061026-090	APW02	Groundwater	2	08/07/2024 13:31
24061026-091	APW05S	Groundwater	2	08/07/2024 10:08
24061026-092	APW14	Groundwater	2	08/07/2024 12:38
24061026-093	APW15	Groundwater	2	08/07/2024 11:55
24061026-094	APW19S	Groundwater	3	08/07/2024 11:25
24061026-095	APW20S	Groundwater	3	08/07/2024 12:29
24061026-096	APW21S	Groundwater	3	08/07/2024 10:48
24061026-097	APW22S	Groundwater	3	08/08/2024 9:20
24061026-098	APW23S	Groundwater	3	08/08/2024 10:25
24061026-099	APW23	Groundwater	3	08/08/2024 10:55
24061026-102	Field Blank 2	Aqueous	4	08/08/2024 11:05
24061026-103	APW02 Duplicate	Groundwater	2	08/07/2024 13:31
24061026-104	APW19S Duplicate	Groundwater	3	08/07/2024 11:25
24061026-105	Equipment Blank 2	Aqueous	4	08/08/2024 11:13
24061026-106	Equipment Blank 3	Aqueous	4	08/07/2024 13:45

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 2510 B FIELD

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-1B

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1420**	1412	0	100.2	90	110	07/02/2024

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-1-BG

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1390**	1412	0	98.5	90	110	08/07/2024

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-1J

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	100.1	90	110	07/02/2024

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-1-JC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	99.9	90	110	08/07/2024

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-1T

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	100.1	90	110	07/02/2024

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-2B

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1420**	1412	0	100.4	90	110	07/08/2024

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-2J

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	100.1	90	110	07/08/2024

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-2-JC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	100.0	90	110	08/08/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 2510 B FIELD

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-2T

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	99.9	90	110	07/08/2024

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-3B

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	100.1	90	110	07/09/2024

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-3J

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1420**	1412	0	100.3	90	110	07/09/2024

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-3T

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	99.9	90	110	07/09/2024

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-4B

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	100.0	90	110	07/10/2024

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-4J

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	99.9	90	110	07/10/2024

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-4T

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	100.1	90	110	07/10/2024

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-5B

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1420**	1412	0	100.3	90	110	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 2510 B FIELD

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-5J

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	99.8	90	110	07/11/2024

Batch R350256 **SampType:** LCS Units **µS/cm**
SampID: LCS-5T

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	99.9	90	110	07/11/2024

SW-846 9040B FIELD

Batch R350256 **SampType:** LCS Units
SampID: LCS-1B

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.00**	7.000	0	100.0	98.57	101.4	07/02/2024

Batch R350256 **SampType:** LCS Units
SampID: LCS-1-BG

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.00**	7.000	0	100.0	98.57	101.4	08/07/2024

Batch R350256 **SampType:** LCS Units
SampID: LCS-1J

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.01**	7.000	0	100.1	98.57	101.4	07/02/2024

Batch R350256 **SampType:** LCS Units
SampID: LCS-1-JC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.00**	7.000	0	100.0	98.57	101.4	08/07/2024

Batch R350256 **SampType:** LCS Units
SampID: LCS-1T

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.07**	7.000	0	101.0	98.57	101.4	07/02/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9040B FIELD

Batch R350256 **SampType:** LCS Units

SampID: LCS-2B

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.01**	7.000	0	100.1	98.57	101.4	07/08/2024

Batch R350256 **SampType:** LCS Units

SampID: LCS-2J

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**6.99**	7.000	0	99.9	98.57	101.4	07/08/2024

Batch R350256 **SampType:** LCS Units

SampID: LCS-2-JC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.00**	7.000	0	100.0	98.57	101.4	08/08/2024

Batch R350256 **SampType:** LCS Units

SampID: LCS-2T

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.09**	7.000	0	101.3	98.57	101.4	07/08/2024

Batch R350256 **SampType:** LCS Units

SampID: LCS-3B

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.01**	7.000	0	100.1	98.57	101.4	07/09/2024

Batch R350256 **SampType:** LCS Units

SampID: LCS-3J

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.00**	7.000	0	100.0	98.57	101.4	07/09/2024

Batch R350256 **SampType:** LCS Units

SampID: LCS-3T

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.00**	7.000	0	100.0	98.57	101.4	07/09/2024

Batch R350256 **SampType:** LCS Units

SampID: LCS-4B

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.02**	7.000	0	100.3	98.57	101.4	07/10/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9040B FIELD

Batch R350256 **SampType:** LCS Units

SampID: LCS-4J

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.01**	7.000	0	100.1	98.57	101.4	07/10/2024

Batch R350256 **SampType:** LCS Units

SampID: LCS-4T

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.03**	7.000	0	100.4	98.57	101.4	07/10/2024

Batch R350256 **SampType:** LCS Units

SampID: LCS-5B

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.00**	7.000	0	100.0	98.57	101.4	07/11/2024

Batch R350256 **SampType:** LCS Units

SampID: LCS-5J

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.00**	7.000	0	100.0	98.57	101.4	07/11/2024

Batch R350256 **SampType:** LCS Units

SampID: LCS-5T

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.01**	7.000	0	100.1	98.57	101.4	07/11/2024

EPA 1664A

Batch R350298 **SampType:** MBLK Units **mg/L**

SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hexane Extractable Material		5		**< 5**	4.400	0	0	-100	100	07/16/2024

Batch R350298 **SampType:** LCS Units **mg/L**

SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hexane Extractable Material		5		**32**	40.00	0	79.0	78	114	07/16/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

EPA 1664A

Batch R350298 **SampType:** MS Units **mg/L**

SampID: 24070896-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hexane Extractable Material		6		**39**	47.02	0	82.2	78	114	07/16/2024

EPA 600 350.1 (DISSOLVED)

Batch R349887 **SampType:** MS Units **mg/L**

SampID: 24061026-071FMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10	E	**6.04**	2.000	4.197	92.0	90	110	07/08/2024

Batch R349887 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24061026-071FMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10	E	**6.05**	2.000	4.197	92.4	6.038	0.13	07/08/2024

Batch R349887 **SampType:** MS Units **mg/L**

SampID: 24070386-006EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.80**	2.000	0.9070	94.6	90	110	07/08/2024

Batch R349887 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070386-006EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.80**	2.000	0.9070	94.4	2.799	0.14	07/08/2024

Batch R349887 **SampType:** MS Units **mg/L**

SampID: 24070426-003HMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.06**	2.000	0.2240	91.9	90	110	07/08/2024

Batch R349887 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070426-003HMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.06**	2.000	0.2240	91.7	2.062	0.19	07/08/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

EPA 600 350.1 (DISSOLVED)

Batch R349978 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**< 0.10**	0.0270	0	0	-100	100	07/10/2024

Batch R349978 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.01**	1.000	0	101.4	90	110	07/10/2024

Batch R349978 **SampType:** MS Units **mg/L**
SampID: 24061026-082EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.90**	2.000	0.06500	91.9	90	110	07/10/2024

Batch R349978 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24061026-082EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.92**	2.000	0.06500	92.8	1.903	0.89	07/10/2024

Batch R349978 **SampType:** MS Units **mg/L**
SampID: 24070451-005AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10	S	**1.57**	2.000	0	78.7	90	110	07/10/2024

Batch R349978 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070451-005AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10	S	**1.68**	2.000	0	84.0	1.574	6.57	07/10/2024

Batch R349978 **SampType:** MS Units **mg/L**
SampID: 24070539-002CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.32**	2.000	0.4720	92.5	90	110	07/10/2024

Batch R349978 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070539-002CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.33**	2.000	0.4720	93.0	2.322	0.39	07/10/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

EPA 600 350.1 (DISSOLVED)

Batch R349978 **SampType:** MS Units **mg/L**
SampID: 24070672-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**4.21**	2.000	2.371	91.8	90	110	07/10/2024

Batch R349978 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070672-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**4.23**	2.000	2.371	93.0	4.207	0.55	07/10/2024

Batch R349978 **SampType:** MS Units **mg/L**
SampID: 24070677-001EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.88**	2.000	0	94.0	90	110	07/10/2024

Batch R349978 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070677-001EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.88**	2.000	0	94.0	1.880	0.05	07/10/2024

Batch R350163 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**< 0.10**	0.0270	0	0	-100	100	07/12/2024

Batch R350163 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.01**	1.000	0	101.4	90	110	07/12/2024

Batch R350163 **SampType:** MS Units **mg/L**
SampID: 24070571-007EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.20	S	**3.88**	4.000	0.4710	85.2	90	110	07/12/2024

Batch R350163 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070571-007EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.20		**4.09**	4.000	0.4710	90.5	3.878	5.32	07/12/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

EPA 600 350.1 (DISSOLVED)

Batch R350163 **SampType:** MS Units **mg/L**
SampID: 24070813-003BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		1.00		**30.8**	20.00	12.21	92.9	90	110	07/12/2024

Batch R350163 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070813-003BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		1.00		**30.9**	20.00	12.21	93.2	30.80	0.20	07/12/2024

Batch R350163 **SampType:** MS Units **mg/L**
SampID: 24070875-006AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.83**	2.000	0	91.3	90	110	07/12/2024

Batch R350163 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070875-006AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.82**	2.000	0	90.8	1.826	0.55	07/12/2024

Batch R350163 **SampType:** MS Units **mg/L**
SampID: 24070875-020AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.88**	2.000	0.06200	91.0	90	110	07/12/2024

Batch R350163 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070875-020AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.89**	2.000	0.06200	91.3	1.881	0.37	07/12/2024

Batch R350163 **SampType:** MS Units **mg/L**
SampID: 24070879-002EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.67**	2.000	0.8560	90.9	90	110	07/12/2024

Batch R350163 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070879-002EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.69**	2.000	0.8560	91.9	2.674	0.75	07/12/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

EPA 600 350.1 (DISSOLVED)

Batch R350163 **SampType:** MS Units **mg/L**
SampID: 24070879-007EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.48**	2.000	0.6180	93.0	90	110	07/12/2024

Batch R350163 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070879-007EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.46**	2.000	0.6180	92.2	2.477	0.65	07/12/2024

Batch R350163 **SampType:** MS Units **mg/L**
SampID: 24070881-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.48**	2.000	0.6560	91.3	90	110	07/12/2024

Batch R350163 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070881-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.50**	2.000	0.6560	92.0	2.482	0.56	07/12/2024

Batch R350163 **SampType:** MS Units **mg/L**
SampID: 24070940-004DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.81**	2.000	0	90.5	90	110	07/12/2024

Batch R350163 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070940-004DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.83**	2.000	0	91.6	1.810	1.21	07/12/2024

Batch R350163 **SampType:** MS Units **mg/L**
SampID: 24070948-007BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.85**	2.000	0	92.5	90	110	07/12/2024

Batch R350163 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070948-007BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.84**	2.000	0	92.2	1.850	0.38	07/12/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

EPA 600 350.1 (DISSOLVED)

Batch R350163 **SampType:** MS Units **mg/L**
SampID: 24070948-012BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.84**	2.000	0	91.9	90	110	07/12/2024

Batch R350163 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070948-012BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.83**	2.000	0	91.6	1.838	0.33	07/12/2024

Batch R350880 **SampType:** MS Units **mg/L**
SampID: 24071459-002HMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		1.00		**21.7**	20.00	2.659	95.0	90	110	07/29/2024

Batch R350880 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24071459-002HMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		1.00		**21.7**	20.00	2.659	95.0	21.66	0.01	07/29/2024

STANDARD METHODS 2540 C (TOTAL) 1997, 2011

Batch R349790 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	07/03/2024

Batch R349790 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**980**	1000	0	98.0	90	110	07/03/2024

Batch R349790 **SampType:** DUP Units **mg/L** RPD Limit: **10**
SampID: 24070113-001ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		50		**4760**				4655	2.34	07/03/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 2540 C (TOTAL) 1997, 2011

Batch R349980 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	07/09/2024

Batch R349980 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**910**	1000	0	91.0	90	110	07/09/2024

Batch R349980 **SampType:** DUP Units **mg/L** RPD Limit: **10**
SampID: 24070559-001ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		50		**415**				385.0	7.50	07/09/2024

Batch R350125 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	07/11/2024
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	07/11/2024

Batch R350125 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**954**	1000	0	95.4	90	110	07/11/2024
Total Dissolved Solids		20		**970**	1000	0	97.0	90	110	07/11/2024

Batch R350125 **SampType:** DUP Units **mg/L** RPD Limit: **10**
SampID: 24061026-017ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20		**1040**				1072	2.65	07/11/2024

Batch R350125 **SampType:** DUP Units **mg/L** RPD Limit: **10**
SampID: 24061026-021ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20		**618**				626.0	1.29	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 2540 C (TOTAL) 1997, 2011

Batch R350208 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	07/12/2024
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	07/12/2024

Batch R350208 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**1010**	1000	0	100.6	90	110	07/12/2024
Total Dissolved Solids		20		**990**	1000	0	99.0	90	110	07/12/2024

Batch R350208 **SampType:** DUP Units **mg/L** RPD Limit: **10**
SampID: 24061026-057ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20		**834**				890.0	6.50	07/12/2024

Batch R350208 **SampType:** DUP Units **mg/L** RPD Limit: **10**
SampID: 24061026-074ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		50		**4700**				4800	2.21	07/12/2024

Batch R350261 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	07/15/2024
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	07/15/2024

Batch R350261 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**954**	1000	0	95.4	90	110	07/15/2024
Total Dissolved Solids		20		**940**	1000	0	94.0	90	110	07/15/2024

Batch R350261 **SampType:** DUP Units **mg/L** RPD Limit: **10**
SampID: 24061026-040ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		1000		**13300**				13300	0.00	07/15/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 2540 C (TOTAL) 1997, 2011

Batch R350261 **SampType:** DUP Units **mg/L** RPD Limit: **10**

SampID: 24071020-008BDUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20		**436**				450.0	3.16	07/15/2024

Batch R350404 **SampType:** MBLK Units **mg/L**

SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	07/17/2024

Batch R350404 **SampType:** LCS Units **mg/L**

SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**944**	1000	0	94.4	90	110	07/17/2024

Batch R350404 **SampType:** DUP Units **mg/L** RPD Limit: **10**

SampID: 24070962-001ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		50		**690**				635.0	8.30	07/17/2024

Batch R350404 **SampType:** DUP Units **mg/L** RPD Limit: **10**

SampID: 24071298-001ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20		**446**				446.0	0.00	07/17/2024

Batch R351887 **SampType:** MBLK Units **mg/L**

SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	08/15/2024
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	08/15/2024
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	08/15/2024

Batch R351887 **SampType:** LCS Units **mg/L**

SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**994**	1000	0	99.4	90	110	08/15/2024
Total Dissolved Solids		20		**1000**	1000	0	100.0	90	110	08/15/2024
Total Dissolved Solids		20		**1010**	1000	0	100.8	90	110	08/15/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 2540 C (TOTAL) 1997, 2011

Batch R351887 **SampType:** DUP Units **mg/L** RPD Limit: **10**

SampID: 24071451-043ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20	H	**820**				844.0	2.88	08/15/2024

Batch R351887 **SampType:** DUP Units **mg/L** RPD Limit: **10**

SampID: 24071451-059ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20	H	**1850**				1826	1.31	08/15/2024

Batch R351887 **SampType:** DUP Units **mg/L** RPD Limit: **10**

SampID: 24080002-007ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20		**474**				492.0	3.73	08/15/2024

Batch R351887 **SampType:** DUP Units **mg/L** RPD Limit: **10**

SampID: 24080862-001ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		200	H	**24200**				24660	1.97	08/15/2024

Batch R351887 **SampType:** DUP Units **mg/L** RPD Limit: **10**

SampID: 24080863-001ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20	H	**1160**				1136	2.09	08/15/2024

STANDARD METHODS 4500-NO2 B (DISSOLVED) 2000, 2011

Batch R349749 **SampType:** MS Units **mg/L**

SampID: 24061026-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.48**	0.5000	0	96.0	85	115	07/03/2024

Batch R349749 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24061026-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.46**	0.5000	0	92.6	0.4800	3.61	07/03/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 4500-NO2 B (DISSOLVED) 2000, 2011

Batch R349749 **SampType:** MS Units **mg/L**
SampID: 24070386-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.49**	0.5000	0	97.8	85	115	07/03/2024

Batch R349749 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070386-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.49**	0.5000	0	97.4	0.4890	0.41	07/03/2024

Batch R349749 **SampType:** MS Units **mg/L**
SampID: 24070386-011BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.48**	0.5000	0	95.8	85	115	07/03/2024

Batch R349749 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070386-011BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.49**	0.5000	0	98.2	0.4790	2.47	07/03/2024

Batch R349862 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	07/08/2024
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	07/08/2024

Batch R349862 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.30**	0.3045	0	99.8	90	110	07/08/2024
Nitrogen, Nitrite (as N)		0.05		**0.31**	0.3045	0	101.8	90	110	07/08/2024

Batch R349862 **SampType:** MS Units **mg/L**
SampID: 24070467-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.48**	0.5000	0	95.0	85	115	07/08/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 4500-NO2 B (DISSOLVED) 2000, 2011

Batch R349862 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070467-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.48**	0.5000	0	95.0	0.4750	0.00	07/08/2024

Batch R349862 **SampType:** MS Units **mg/L**

SampID: 24070495-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05	E	**0.85**	0.5000	0.3740	94.4	85	115	07/08/2024

Batch R349862 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070495-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05	E	**0.85**	0.5000	0.3740	94.4	0.8460	0.00	07/08/2024

Batch R349862 **SampType:** MS Units **mg/L**

SampID: 24070559-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.49**	0.5000	0	97.4	85	115	07/08/2024

Batch R349862 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070559-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.49**	0.5000	0	97.8	0.4870	0.41	07/08/2024

Batch R349910 **SampType:** MBLK Units **mg/L**

SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	07/09/2024

Batch R349910 **SampType:** LCS Units **mg/L**

SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.31**	0.3045	0	101.8	90	110	07/09/2024

Batch R349910 **SampType:** MS Units **mg/L**

SampID: 24070571-003BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.49**	0.5000	0	97.6	85	115	07/09/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 4500-NO2 B (DISSOLVED) 2000, 2011

Batch R349910 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070571-003BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.49**	0.5000	0	97.4	0.4880	0.21	07/09/2024

Batch R349910 **SampType:** MS Units **mg/L**

SampID: 24070630-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.51**	0.5000	0.04700	92.8	85	115	07/09/2024

Batch R349910 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070630-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.51**	0.5000	0.04700	92.4	0.5110	0.39	07/09/2024

Batch R350048 **SampType:** MBLK Units **mg/L**

SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	07/11/2024
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	07/11/2024

Batch R350048 **SampType:** LCS Units **mg/L**

SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.32**	0.3045	0	104.1	90	110	07/11/2024
Nitrogen, Nitrite (as N)		0.05		**0.32**	0.3045	0	104.1	90	110	07/11/2024

Batch R350048 **SampType:** MS Units **mg/L**

SampID: 24061026-039BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.49**	0.5000	0	98.6	85	115	07/11/2024

Batch R350048 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24061026-039BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.50**	0.5000	0	99.8	0.4930	1.21	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 4500-NO2 B (DISSOLVED) 2000, 2011

Batch R350048 **SampType:** MS Units **mg/L**
SampID: 24070774-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05	S	**0.37**	0.5000	0.07300	59.6	85	115	07/11/2024

Batch R350048 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070774-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05	S	**0.37**	0.5000	0.07300	59.2	0.3710	0.54	07/11/2024

Batch R350048 **SampType:** MS Units **mg/L**
SampID: 24070874-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.57**	0.5000	0.09800	94.0	85	115	07/11/2024

Batch R350048 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070874-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.57**	0.5000	0.09800	93.4	0.5680	0.53	07/11/2024

Batch R350072 **SampType:** MS Units **mg/L**
SampID: 24061026-034BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.48**	0.5000	0	95.2	85	115	07/11/2024

Batch R350072 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24061026-034BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.48**	0.5000	0	96.8	0.4760	1.67	07/11/2024

Batch R350072 **SampType:** MS Units **mg/L**
SampID: 24070879-007BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.49**	0.5000	0	97.8	85	115	07/11/2024

Batch R350072 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070879-007BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.49**	0.5000	0	98.2	0.4890	0.41	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011

Batch R349753 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						07/03/2024
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	07/03/2024

Batch R349753 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.477**	0.5000	0	95.4	90	110	07/03/2024

Batch R349753 **SampType:** MS Units **mg/L**
SampID: 24061026-003BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.247**	0.2500	0	98.8	85	115	07/03/2024

Batch R349753 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24061026-003BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.245**	0.2500	0	98.0	0.2470	0.81	07/03/2024

Batch R349753 **SampType:** MS Units **mg/L**
SampID: 24070087-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.250		**4.28**	1.250	2.933	107.4	90	110	07/03/2024

Batch R349753 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070087-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.250		**4.18**	1.250	2.933	99.9	4.276	2.22	07/03/2024

Batch R349753 **SampType:** MS Units **mg/L**
SampID: 24070113-001DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500		**2.37**	2.500	0.1090	90.3	90	110	07/03/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011

Batch R349753 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070113-001DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500	S	**2.28**	2.500	0.1090	86.8	2.366	3.70	07/03/2024

Batch R349753 **SampType:** MS Units **mg/L**

SampID: 24070180-001DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		1.00	E	**23.0**	5.000	17.58	107.5	90	110	07/03/2024

Batch R349753 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070180-001DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		1.00	E	**22.8**	5.000	17.58	104.4	22.96	0.68	07/03/2024

Batch R349753 **SampType:** MS Units **mg/L**

SampID: 24070223-003AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		1.00		**10.7**	5.000	5.779	99.4	90	110	07/03/2024

Batch R349753 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070223-003AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		1.00		**10.8**	5.000	5.779	99.7	10.75	0.16	07/03/2024

Batch R349753 **SampType:** MS Units **mg/L**

SampID: 24070330-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		1.00		**19.0**	5.000	13.98	100.9	90	110	07/03/2024

Batch R349753 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070330-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		1.00		**19.3**	5.000	13.98	106.3	19.03	1.39	07/03/2024

Batch R349753 **SampType:** MS Units **mg/L**

SampID: 24070395-004DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		2.50		**26.4**	12.50	14.64	94.3	90	110	07/03/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011

Batch R349753 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070395-004DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		2.50		**27.0**	12.50	14.64	98.5	26.43	1.96	07/03/2024

Batch R349905 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						07/09/2024
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	07/09/2024

Batch R349905 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.506**	0.5000	0	101.2	90	110	07/09/2024

Batch R349905 **SampType:** MS Units **mg/L**

SampID: 24070315-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.250		**3.46**	1.250	2.168	103.8	90	110	07/09/2024

Batch R349905 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070315-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.250		**3.52**	1.250	2.168	108.2	3.465	1.60	07/09/2024

Batch R349905 **SampType:** MS Units **mg/L**

SampID: 24070495-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		2.50		**27.2**	12.50	15.03	97.6	90	110	07/09/2024

Batch R349905 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070495-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		2.50		**27.1**	12.50	15.03	96.6	27.23	0.44	07/09/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011

Batch R349905 **SampType:** MS Units **mg/L**

SampID: 24070559-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.214**	0.2500	0	85.6	85	115	07/09/2024

Batch R349905 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070559-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.217**	0.2500	0	86.8	0.2140	1.39	07/09/2024

Batch R350027 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						07/10/2024
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	07/10/2024

Batch R350027 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.503**	0.5000	0	100.6	90	110	07/10/2024

Batch R350027 **SampType:** MS Units **mg/L**

SampID: 24070679-004AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.258**	0.2500	0	103.2	85	115	07/10/2024

Batch R350027 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070679-004AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.259**	0.2500	0	103.6	0.2580	0.39	07/10/2024

Batch R350027 **SampType:** MS Units **mg/L**

SampID: 24070707-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		2.50		**32.0**	12.50	18.44	108.7	90	110	07/10/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011

Batch R350027 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070707-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		2.50		**31.6**	12.50	18.44	105.0	32.03	1.45	07/10/2024

Batch R350027 **SampType:** MS Units **mg/L**

SampID: 24070769-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.05		**0.31**	0.2500	0.05900	100.0	90	110	07/10/2024

Batch R350027 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070769-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.05		**0.31**	0.2500	0.05900	102.0	0.3090	1.61	07/10/2024

Batch R350087 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						07/11/2024
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	07/11/2024

Batch R350087 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.507**	0.5000	0	101.4	90	110	07/11/2024

Batch R350087 **SampType:** MS Units **mg/L**

SampID: 24061026-042BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.593**	0.2500	0.3150	111.2	85	115	07/11/2024

Batch R350087 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24061026-042BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.582**	0.2500	0.3150	106.8	0.5930	1.87	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011

Batch R350087 **SampType:** MS Units **mg/L**
SampID: 24070596-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		1.00	E	**23.9**	5.000	19.12	96.3	90	110	07/11/2024

Batch R350087 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070596-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		1.00	E	**23.8**	5.000	19.12	93.8	23.94	0.52	07/11/2024

Batch R350087 **SampType:** MS Units **mg/L**
SampID: 24070656-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.502**	0.2500	0.2360	106.4	90	110	07/11/2024

Batch R350087 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070656-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.506**	0.2500	0.2360	108.0	0.5020	0.79	07/11/2024

Batch R350087 **SampType:** MS Units **mg/L**
SampID: 24070740-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.250		**3.83**	1.250	2.544	102.6	90	110	07/11/2024

Batch R350087 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070740-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.250		**3.88**	1.250	2.544	107.3	3.826	1.53	07/11/2024

Batch R350087 **SampType:** MS Units **mg/L**
SampID: 24070813-005BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500		**6.37**	2.500	3.877	99.5	90	110	07/11/2024

Batch R350087 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070813-005BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500		**6.50**	2.500	3.877	105.0	6.365	2.14	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011

Batch R350087 **SampType:** MS Units **mg/L**
SampID: 24070825-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.248**	0.2500	0	99.2	85	115	07/11/2024

Batch R350087 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070825-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.255**	0.2500	0	102.0	0.2480	2.78	07/11/2024

Batch R350087 **SampType:** MS Units **mg/L**
SampID: 24070879-003BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.392**	0.2500	0.1380	101.6	85	115	07/11/2024

Batch R350087 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070879-003BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.386**	0.2500	0.1380	99.2	0.3920	1.54	07/11/2024

Batch R350087 **SampType:** MS Units **mg/L**
SampID: 24070948-008AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.100	E	**2.01**	0.5000	1.508	100.4	85	115	07/11/2024

Batch R350087 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070948-008AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.100	E	**2.02**	0.5000	1.508	103.2	2.010	0.69	07/11/2024

Batch R350189 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						07/12/2024
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	07/12/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011

Batch R350189 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.502**	0.5000	0	100.4	90	110	07/12/2024

Batch R350189 **SampType:** MS Units **mg/L**
SampID: 24070875-018AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.263**	0.2500	0	105.2	90	110	07/12/2024

Batch R350189 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070875-018AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.262**	0.2500	0	104.8	0.2630	0.38	07/12/2024

Batch R350189 **SampType:** MS Units **mg/L**
SampID: 24070905-002DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.250		**4.11**	1.250	2.804	104.6	90	110	07/12/2024

Batch R350189 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070905-002DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.250		**3.99**	1.250	2.804	94.6	4.111	3.06	07/12/2024

Batch R350189 **SampType:** MS Units **mg/L**
SampID: 24070921-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		1.00		**16.8**	5.000	11.75	100.1	90	110	07/12/2024

Batch R350189 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070921-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		1.00		**16.5**	5.000	11.75	95.0	16.76	1.52	07/12/2024

Batch R350189 **SampType:** MS Units **mg/L**
SampID: 24070948-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		2.50	H	**33.7**	12.50	20.64	104.3	85	115	07/12/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011

Batch R350189 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070948-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		2.50	H	**33.7**	12.50	20.64	104.2	33.68	0.03	07/12/2024

Batch R350189 **SampType:** MS Units **mg/L**

SampID: 24070962-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.247**	0.2500	0	98.8	85	115	07/12/2024

Batch R350189 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070962-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.250**	0.2500	0	100.0	0.2470	1.21	07/12/2024

Batch R350189 **SampType:** MS Units **mg/L**

SampID: 24070966-004BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.250		**3.31**	1.250	2.041	101.8	90	110	07/12/2024

Batch R350189 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070966-004BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.250		**3.38**	1.250	2.041	107.0	3.313	1.94	07/12/2024

Batch R350189 **SampType:** MS Units **mg/L**

SampID: 24070983-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500		**8.52**	2.500	5.827	107.6	90	110	07/12/2024

Batch R350189 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070983-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500		**8.37**	2.500	5.827	101.8	8.517	1.73	07/12/2024

Batch R350189 **SampType:** MS Units **mg/L**

SampID: 24071020-008BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.245**	0.2500	0	98.0	85	115	07/12/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011

Batch R350189 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24071020-008BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.249**	0.2500	0	99.6	0.2450	1.62	07/12/2024

Batch R350189 **SampType:** MS Units **mg/L**

SampID: 24071023-003BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		1.00		**16.0**	5.000	11.20	95.3	85	115	07/12/2024

Batch R350189 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24071023-003BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		1.00		**16.2**	5.000	11.20	99.9	15.97	1.41	07/12/2024

Batch R350951 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	07/30/2024

Batch R350951 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.463**	0.5000	0	92.6	90	110	07/30/2024

Batch R350951 **SampType:** MS Units **mg/L**

SampID: 24072288-002CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500		**8.24**	2.500	5.842	96.0	90	110	07/30/2024

Batch R350951 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24072288-002CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500		**8.12**	2.500	5.842	91.0	8.242	1.53	07/30/2024

Batch R350951 **SampType:** MS Units **mg/L**

SampID: 24072332-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		5.00		**38.6**	25.00	15.65	91.8	90	110	07/30/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011

Batch R350951 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24072332-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		5.00		**40.2**	25.00	15.65	98.1	38.61	4.01	07/30/2024

Batch R350951 **SampType:** MS Units **mg/L**

SampID: 24072335-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050	H	**0.237**	0.2500	0	94.8	85	115	07/30/2024

Batch R350951 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24072335-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050	H	**0.239**	0.2500	0	95.6	0.2370	0.84	07/30/2024

Batch R350951 **SampType:** MS Units **mg/L**

SampID: 24072364-002CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050	S	**0.566**	0.2500	0.3740	76.8	90	110	07/30/2024

Batch R350951 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24072364-002CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050	S	**0.581**	0.2500	0.3740	82.8	0.5660	2.62	07/30/2024

Batch R350951 **SampType:** MS Units **mg/L**

SampID: 24072367-003BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500		**4.31**	2.500	2.018	91.8	85	115	07/30/2024

Batch R350951 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24072367-003BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500		**4.34**	2.500	2.018	92.7	4.313	0.53	07/30/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9012A (TOTAL)

Batch 225296 **SampType:** MBLK Units **mg/L**
SampID: MBLK 240703 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	07/08/2024

Batch 225296 **SampType:** LCS Units **mg/L**
SampID: LCS 240703 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0	98.4	90	110	07/08/2024

Batch 225296 **SampType:** MS Units **mg/L**
SampID: 24061026-003DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0	99.4	75	125	07/08/2024

Batch 225296 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24061026-003DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0	100.3	0.02484	0.90	07/08/2024

Batch 225465 **SampType:** MBLK Units **mg/L**
SampID: MBLK 240709 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	07/10/2024

Batch 225465 **SampType:** LCS Units **mg/L**
SampID: LCS 240709 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0	98.9	90	110	07/10/2024

Batch 225465 **SampType:** MS Units **mg/L**
SampID: 24070571-001DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0	102.0	75	125	07/10/2024

Batch 225465 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24070571-001DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0	101.7	0.02550	0.31	07/10/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9012A (TOTAL)

Batch 225535 **SampType:** MBLK Units **mg/L**
SampID: MBLK 240710 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	07/11/2024

Batch 225535 **SampType:** LCS Units **mg/L**
SampID: LCS 240710 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.023**	0.0250	0	90.9	90	110	07/11/2024

Batch 225535 **SampType:** MS Units **mg/L**
SampID: 24070628-001EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.026**	0.0250	0	105.1	90	110	07/11/2024

Batch 225535 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24070628-001EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0	101.7	0.02626	3.27	07/11/2024

Batch 225535 **SampType:** MS Units **mg/L**
SampID: 24070679-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.024**	0.0250	0	97.9	75	125	07/11/2024

Batch 225535 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24070679-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0	98.5	0.02446	0.69	07/11/2024

Batch 225601 **SampType:** MBLK Units **mg/L**
SampID: MBLK 240711 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	07/12/2024

Batch 225601 **SampType:** LCS Units **mg/L**
SampID: LCS 240711 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.023**	0.0250	0	90.1	90	110	07/12/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9012A (TOTAL)

Batch 225601 **SampType:** MS Units **mg/L**
SampID: 24070898-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.025	S	**0.123**	0.1250	0.01565	85.6	90	110	07/12/2024

Batch 225601 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24070898-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.025	S	**0.125**	0.1250	0.01565	87.7	0.1227	2.12	07/12/2024

Batch 225602 **SampType:** MBLK Units **mg/L**
SampID: MBLK 240711 TCN2

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	07/12/2024

Batch 225602 **SampType:** LCS Units **mg/L**
SampID: LCS 240711 TCN2

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.024**	0.0250	0	94.4	90	110	07/15/2024

Batch 225664 **SampType:** MBLK Units **mg/L**
SampID: MBLK 240712 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	07/15/2024

Batch 225664 **SampType:** LCS Units **mg/L**
SampID: LCS 240712 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0	99.5	90	110	07/15/2024

Batch 225664 **SampType:** MS Units **mg/L**
SampID: 24070767-002CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.026**	0.0250	0.003085	93.3	90	110	07/15/2024

Batch 225664 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24070767-002CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.005		**0.027**	0.0250	0.003085	96.6	0.02641	3.06	07/15/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9012A (TOTAL)

Batch 225735 **SampType:** MBLK Units **mg/L**
SampID: MBLK 240715 TCN2

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005	S	**0.016**	0.0015	0	1120	-100	100	07/16/2024

Batch 225735 **SampType:** MS Units **mg/L**
SampID: 24061026-059EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005	B	**0.026**	0.0250	0	104.6	75	125	07/16/2024

SW-846 9036 (DISSOLVED)

Batch R349714 **SampType:** MS Units **mg/L**
SampID: 24061026-053BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10	S	**30**	20.00	22.12	39.4	85	115	07/03/2024

Batch R349714 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24061026-053BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10	S	**28**	20.00	22.12	27.0	30.01	8.62	07/03/2024

Batch R349714 **SampType:** MS Units **mg/L**
SampID: 24070182-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		50		**195**	100.0	91.66	103.1	85	115	07/03/2024

Batch R349714 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070182-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		50		**196**	100.0	91.66	104.7	194.8	0.82	07/03/2024

Batch R349714 **SampType:** MS Units **mg/L**
SampID: 24070182-004BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10	S	**24**	20.00	11.00	63.1	85	115	07/03/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9036 (DISSOLVED)

Batch R349714 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070182-004BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10	S	**24**	20.00	11.00	66.8	23.62	3.08	07/03/2024

Batch R349876 **SampType:** MS Units **mg/L**
SampID: 24070386-007BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**46**	20.00	26.33	97.2	85	115	07/08/2024

Batch R349876 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070386-007BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10		**46**	20.00	26.33	99.4	45.78	0.91	07/08/2024

Batch R349911 **SampType:** MS Units **mg/L**
SampID: 24061026-062BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		50		**212**	100.0	118.1	94.1	85	115	07/09/2024

Batch R349911 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24061026-062BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		50		**217**	100.0	118.1	98.5	212.2	2.06	07/09/2024

Batch R350166 **SampType:** MS Units **mg/L**
SampID: 24061026-034BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**48**	20.00	29.76	90.6	85	115	07/12/2024

Batch R350166 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24061026-034BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10		**48**	20.00	29.76	91.3	47.87	0.29	07/12/2024

Batch R350166 **SampType:** MS Units **mg/L**
SampID: 24070571-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		50		**161**	100.0	68.17	93.2	85	115	07/12/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9036 (DISSOLVED)

Batch R350166 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24070571-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		50		**167**	100.0	68.17	99.1	161.3	3.63	07/12/2024

Batch R350265 **SampType:** MS Units **mg/L**

SampID: 24071020-004BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10	S	**31**	20.00	14.35	83.8	85	115	07/16/2024

Batch R350265 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24071020-004BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10		**32**	20.00	14.35	87.4	31.11	2.32	07/16/2024

Batch R350922 **SampType:** MS Units **mg/L**

SampID: 24061962-008BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		50		**166**	100.0	75.94	89.6	85	115	07/29/2024

Batch R350922 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24061962-008BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		50		**164**	100.0	75.94	88.3	165.5	0.75	07/29/2024

Batch R351845 **SampType:** MS Units **mg/L**

SampID: 24080823-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		100		**473**	200.0	298.6	87.3	85	115	08/15/2024

Batch R351845 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24080823-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		100		**486**	200.0	298.6	93.9	473.3	2.75	08/15/2024

Batch R351908 **SampType:** MS Units **mg/L**

SampID: 24080241-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10	S	**22**	20.00	8.190	70.2	85	115	08/16/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9036 (DISSOLVED)

Batch R351908 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24080241-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10	S	**22**	20.00	8.190	69.8	22.22	0.36	08/16/2024

Batch R351908 **SampType:** MS Units **mg/L**

SampID: 24080241-005BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		50	E	**253**	100.0	163.1	90.3	85	115	08/16/2024

Batch R351908 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24080241-005BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		50	E	**257**	100.0	163.1	94.3	253.5	1.56	08/16/2024

Batch R351908 **SampType:** MS Units **mg/L**

SampID: 24080241-011BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**30**	20.00	12.67	86.2	85	115	08/16/2024

Batch R351908 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24080241-011BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10		**30**	20.00	12.67	88.0	29.90	1.26	08/16/2024

Batch R351908 **SampType:** MS Units **mg/L**

SampID: 24080857-005CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		500		**2070**	1000	1132	94.1	85	115	08/16/2024

Batch R351908 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24080857-005CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		500		**2110**	1000	1132	97.7	2074	1.73	08/16/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9036 (TOTAL)

Batch R349714 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	07/03/2024

Batch R349714 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**19**	20.00	0	95.5	90	110	07/03/2024

Batch R349714 **SampType:** MS Units **mg/L**
SampID: 24061026-007AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10	S	**29**	20.00	15.87	65.8	85	115	07/03/2024

Batch R349714 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24061026-007AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10	S	**29**	20.00	15.87	67.8	29.04	1.33	07/03/2024

Batch R349714 **SampType:** MS Units **mg/L**
SampID: 24070024-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		20		**84**	40.00	44.59	97.4	90	110	07/03/2024

Batch R349714 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070024-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		20		**83**	40.00	44.59	95.1	83.53	1.11	07/03/2024

Batch R349876 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	07/08/2024

Batch R349876 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**20**	20.00	0	101.8	90	110	07/08/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9036 (TOTAL)

Batch R349876 **SampType:** MS Units **mg/L**
SampID: 24070428-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**31**	20.00	12.75	91.8	90	110	07/08/2024

Batch R349876 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070428-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10		**31**	20.00	12.75	90.8	31.12	0.64	07/08/2024

Batch R349876 **SampType:** MS Units **mg/L**
SampID: 24070460-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		50		**214**	100.0	118.6	95.8	85	115	07/08/2024

Batch R349876 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070460-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		50		**217**	100.0	118.6	98.0	214.4	1.03	07/08/2024

Batch R349911 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	07/09/2024

Batch R349911 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**20**	20.00	0	98.1	90	110	07/09/2024

Batch R349911 **SampType:** MS Units **mg/L**
SampID: 24070426-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		50		**149**	100.0	51.62	97.6	90	110	07/09/2024

Batch R349911 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070426-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		50		**154**	100.0	51.62	102.1	149.2	2.99	07/09/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9036 (TOTAL)

Batch R349911 **SampType:** MS Units **mg/L**
SampID: 24070559-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		20		**85**	40.00	46.75	95.1	85	115	07/09/2024

Batch R349911 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070559-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		20		**85**	40.00	46.75	94.6	84.80	0.24	07/09/2024

Batch R350008 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	07/10/2024

Batch R350008 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**20**	20.00	0	99.3	90	110	07/10/2024

Batch R350008 **SampType:** MS Units **mg/L**
SampID: 24061026-054AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		50		**215**	100.0	119.9	95.0	85	115	07/10/2024

Batch R350008 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24061026-054AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		50		**215**	100.0	119.9	95.2	214.8	0.12	07/10/2024

Batch R350008 **SampType:** MS Units **mg/L**
SampID: 24070704-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		2000	S	**9900**	4000	6733	79.2	90	110	07/10/2024

Batch R350008 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070704-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		2000	S	**9880**	4000	6733	78.6	9900	0.25	07/10/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9036 (TOTAL)

Batch R350166 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	07/12/2024

Batch R350166 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**20**	20.00	0	98.4	90	110	07/12/2024

Batch R350166 **SampType:** MS Units **mg/L**
SampID: 24061026-011AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		20		**97**	40.00	58.52	96.6	85	115	07/12/2024

Batch R350166 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24061026-011AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		20		**97**	40.00	58.52	95.5	97.15	0.43	07/12/2024

Batch R350166 **SampType:** MS Units **mg/L**
SampID: 24061026-022AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		20	S	**41**	40.00	14.66	66.3	85	115	07/12/2024

Batch R350166 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24061026-022AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		20	S	**43**	40.00	14.66	69.6	41.19	3.15	07/12/2024

Batch R350166 **SampType:** MS Units **mg/L**
SampID: 24070825-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		20		**88**	40.00	49.27	97.8	85	115	07/13/2024

Batch R350166 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070825-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		20		**92**	40.00	49.27	105.6	88.38	3.49	07/13/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9036 (TOTAL)

Batch R350166 **SampType:** MS Units **mg/L**
SampID: 24070832-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**41**	20.00	20.54	103.2	90	110	07/12/2024

Batch R350166 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070832-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10		**41**	20.00	20.54	104.6	41.17	0.70	07/12/2024

Batch R350231 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	07/15/2024

Batch R350231 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**19**	20.00	0	94.9	90	110	07/15/2024

Batch R350231 **SampType:** MS Units **mg/L**
SampID: 24070962-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		20		**96**	40.00	57.30	96.1	85	115	07/15/2024

Batch R350231 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24070962-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		20		**97**	40.00	57.30	98.2	95.73	0.89	07/15/2024

Batch R350265 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	07/16/2024

Batch R350265 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**19**	20.00	0	96.5	90	110	07/16/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9036 (TOTAL)

Batch R350265 **SampType:** MS Units **mg/L**
SampID: 24071150-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		100		**456**	200.0	261.7	97.4	90	110	07/16/2024

Batch R350265 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24071150-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		100		**469**	200.0	261.7	103.6	456.4	2.67	07/16/2024

Batch R350265 **SampType:** MS Units **mg/L**
SampID: 24071151-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		100		**476**	200.0	279.1	98.5	90	110	07/16/2024

Batch R350265 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24071151-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		100		**478**	200.0	279.1	99.4	476.0	0.40	07/16/2024

Batch R350265 **SampType:** MS Units **mg/L**
SampID: 24071163-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10	E	**50**	20.00	31.51	94.5	85	115	07/16/2024

Batch R350265 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24071163-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10	E	**51**	20.00	31.51	98.5	50.40	1.59	07/16/2024

Batch R350922 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	07/29/2024

Batch R350922 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**19**	20.00	0	94.1	90	110	07/29/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9036 (TOTAL)

Batch R350922 **SampType:** MS Units **mg/L**
SampID: 24071132-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		20	S	**75**	40.00	43.29	79.1	85	115	07/29/2024

Batch R350922 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24071132-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		20		**78**	40.00	43.29	86.6	74.94	3.91	07/29/2024

Batch R350922 **SampType:** MS Units **mg/L**
SampID: 24071132-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**37**	20.00	16.61	99.6	85	115	07/29/2024

Batch R350922 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24071132-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10		**36**	20.00	16.61	99.2	36.52	0.22	07/29/2024

Batch R350922 **SampType:** MS Units **mg/L**
SampID: 24071132-010AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		50		**141**	100.0	55.92	85.4	85	115	07/29/2024

Batch R350922 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24071132-010AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		50		**145**	100.0	55.92	89.2	141.4	2.59	07/29/2024

Batch R350922 **SampType:** MS Units **mg/L**
SampID: 24071132-013AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		20		**75**	40.00	36.86	95.0	85	115	07/29/2024

Batch R350922 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24071132-013AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		20		**74**	40.00	36.86	92.2	74.84	1.49	07/29/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9036 (TOTAL)

Batch R350922 **SampType:** MS Units **mg/L**
SampID: 24072345-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		200		**720**	400.0	327.6	98.1	90	110	07/29/2024

Batch R350922 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24072345-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		200		**718**	400.0	327.6	97.7	720.0	0.22	07/29/2024

Batch R350922 **SampType:** MS Units **mg/L**
SampID: 24072346-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		200		**725**	400.0	351.0	93.6	90	110	07/29/2024

Batch R350922 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24072346-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		200	S	**709**	400.0	351.0	89.5	725.4	2.28	07/29/2024

Batch R351845 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	08/15/2024

Batch R351845 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**19**	20.00	0	93.8	90	110	08/15/2024

Batch R351845 **SampType:** MS Units **mg/L**
SampID: 24071451-025AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		50		**169**	100.0	75.41	93.1	85	115	08/15/2024

Batch R351845 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24071451-025AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		50		**176**	100.0	75.41	100.4	168.5	4.24	08/15/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9036 (TOTAL)

Batch R351845 **SampType:** MS Units **mg/L**
SampID: 24071451-077AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		50		**186**	100.0	87.05	98.8	85	115	08/15/2024

Batch R351845 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24071451-077AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		50		**187**	100.0	87.05	100.4	185.8	0.87	08/15/2024

Batch R351845 **SampType:** MS Units **mg/L**
SampID: 24080820-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		50	E	**258**	100.0	165.4	92.8	85	115	08/15/2024

Batch R351845 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24080820-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		50	E	**258**	100.0	165.4	92.2	258.2	0.26	08/15/2024

Batch R351845 **SampType:** MS Units **mg/L**
SampID: 24080823-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		100		**487**	200.0	284.1	101.5	85	115	08/15/2024

Batch R351845 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24080823-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		100		**470**	200.0	284.1	93.1	487.1	3.50	08/15/2024

Batch R351908 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	08/16/2024

Batch R351908 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**19**	20.00	0	94.3	90	110	08/16/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9036 (TOTAL)

Batch R351908 **SampType:** MS Units **mg/L**
SampID: 24080002-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10	E	**57**	20.00	39.49	85.9	85	115	08/16/2024

Batch R351908 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24080002-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10	E	**57**	20.00	39.49	86.5	56.67	0.21	08/16/2024

Batch R351908 **SampType:** MS Units **mg/L**
SampID: 24080004-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		50		**204**	100.0	109.8	94.2	85	115	08/16/2024

Batch R351908 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24080004-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		50		**209**	100.0	109.8	99.2	204.0	2.45	08/16/2024

Batch R352032 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**< 10**	6.140	0	0	-100	100	08/20/2024

Batch R352032 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		**18**	20.00	0	91.5	90	110	08/20/2024

Batch R352032 **SampType:** MS Units **mg/L**
SampID: 24080242-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10	S	**30**	20.00	13.54	82.6	85	115	08/20/2024

Batch R352032 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24080242-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10	S	**30**	20.00	13.54	83.6	30.06	0.70	08/20/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9036 (TOTAL)

Batch R352032 **SampType:** MS Units **mg/L**
SampID: 24080242-007AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10	S	**27**	20.00	10.87	80.2	85	115	08/20/2024

Batch R352032 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24080242-007AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10	S	**27**	20.00	10.87	79.2	26.90	0.75	08/20/2024

Batch R352032 **SampType:** MS Units **mg/L**
SampID: 24080243-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		100		**452**	200.0	268.3	92.0	85	115	08/20/2024

Batch R352032 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24080243-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		100		**467**	200.0	268.3	99.4	452.3	3.22	08/20/2024

Batch R352032 **SampType:** MS Units **mg/L**
SampID: 24080243-004AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		100		**421**	200.0	226.5	97.5	85	115	08/20/2024

Batch R352032 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24080243-004AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		100		**428**	200.0	226.5	100.6	421.4	1.50	08/20/2024

Batch R352032 **SampType:** MS Units **mg/L**
SampID: 24081587-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		200		**690**	400.0	308.6	95.5	90	110	08/20/2024

Batch R352032 **SampType:** MSD Units **mg/L** RPD Limit: **10**
SampID: 24081587-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		200		**695**	400.0	308.6	96.5	690.4	0.59	08/20/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9036 (TOTAL)

Batch R352032 **SampType:** MS Units **mg/L**

SampID: 24081588-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		100		**494**	200.0	304.0	94.8	90	110	08/20/2024

Batch R352032 **SampType:** MSD Units **mg/L** RPD Limit: **10**

SampID: 24081588-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		100		**498**	200.0	304.0	96.8	493.6	0.80	08/20/2024

SW-846 9066 (TOTAL)

Batch R350270 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phenols		0.005		**< 0.005**	0.0028	0	0	-100	100	07/16/2024

Batch R350270 **SampType:** MBLK Units **mg/L**

SampID: MBLK-225747

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phenols	*	0.005		**< 0.005**	0.0028	0	0	-100	100	07/16/2024

Batch R350270 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phenols		0.005		**0.048**	0.0500	0	95.8	90	110	07/16/2024

Batch R350270 **SampType:** MS Units **mg/L**

SampID: 24071098-001GMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phenols		0.005	S	**0.064**	0.0500	0.006110	115.8	90	110	07/16/2024

Batch R350270 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24071098-001GMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Phenols		0.005		**0.060**	0.0500	0.006110	108.1	0.06402	6.22	07/16/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9066 (TOTAL)

Batch R350270 **SampType:** MS Units **mg/L**
SampID: 24071150-002CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Phenols		0.005	S	**0.059**	0.0500	0	117.6	90	110	07/16/2024

Batch R350270 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24071150-002CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Phenols		0.005		**0.052**	0.0500	0	104.2	0.05879	12.03	07/16/2024

SW-846 9214 (DISSOLVED)

Batch R350044 **SampType:** MS Units **mg/L**
SampID: 24061026-041BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**1.83**	2.000	0.1780	82.6	75	125	07/11/2024

Batch R350044 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24061026-041BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**1.82**	2.000	0.1780	82.0	1.829	0.55	07/11/2024

Batch R350044 **SampType:** MS Units **mg/L**
SampID: 24061026-044BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**1.93**	2.000	0.1960	86.8	75	125	07/11/2024

Batch R350044 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24061026-044BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**1.96**	2.000	0.1960	88.2	1.931	1.54	07/11/2024

Batch R350044 **SampType:** MS Units **mg/L**
SampID: 24070677-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.07**	2.000	0.2200	92.5	75	125	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9214 (DISSOLVED)

Batch R350044 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24070677-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.19**	2.000	0.2200	98.6	2.070	5.77	07/11/2024

Batch R350044 **SampType:** MS Units **mg/L**

SampID: 24070879-008BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.43**	2.000	0.4330	99.6	75	125	07/11/2024

Batch R350044 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24070879-008BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.43**	2.000	0.4330	99.9	2.425	0.25	07/11/2024

SW-846 9214 (TOTAL)

Batch R349705 **SampType:** MBLK Units **mg/L**

SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**< 0.10**	0.0500	0	0	-100	100	07/03/2024

Batch R349705 **SampType:** LCS Units **mg/L**

SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**1.02**	1.000	0	102.4	90	110	07/03/2024

Batch R349705 **SampType:** MS Units **mg/L**

SampID: 24061026-012AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.67**	2.000	0.5380	106.8	75	125	07/03/2024

Batch R349705 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24061026-012AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.60**	2.000	0.5380	102.8	2.673	2.96	07/03/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9214 (TOTAL)

Batch R349705 **SampType:** MS Units **mg/L**
SampID: 24070169-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.89**	2.000	0.6460	112.2	75	125	07/03/2024

Batch R349705 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24070169-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.75**	2.000	0.6460	105.1	2.890	5.04	07/03/2024

Batch R349987 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**< 0.10**	0.0500	0	0	-100	100	07/10/2024

Batch R349987 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**1.02**	1.000	0	102.0	90	110	07/10/2024

Batch R349987 **SampType:** MS Units **mg/L**
SampID: 24061026-006AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.12**	2.000	0.1920	96.6	75	125	07/10/2024

Batch R349987 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24061026-006AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.15**	2.000	0.1920	98.0	2.123	1.36	07/10/2024

Batch R349987 **SampType:** MS Units **mg/L**
SampID: 24061026-061AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.42**	2.000	0.4220	100.0	75	125	07/10/2024

Batch R349987 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24061026-061AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.44**	2.000	0.4220	100.7	2.423	0.49	07/10/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9214 (TOTAL)

Batch R349987 **SampType:** MS Units **mg/L**
SampID: 24070704-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		1.00		**59.9**	20.00	39.88	100.0	75	125	07/10/2024

Batch R349987 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24070704-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		1.00		**60.2**	20.00	39.88	101.8	59.89	0.58	07/10/2024

Batch R349987 **SampType:** MS Units **mg/L**
SampID: 24070726-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.81**	2.000	0.7350	103.7	75	125	07/10/2024

Batch R349987 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24070726-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.81**	2.000	0.7350	104.0	2.809	0.18	07/10/2024

Batch R350044 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**< 0.10**	0.0500	0	0	-100	100	07/11/2024

Batch R350044 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**0.97**	1.000	0	97.2	90	110	07/11/2024

Batch R350044 **SampType:** MS Units **mg/L**
SampID: 24061026-055AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.85**	2.000	0.8270	101.0	75	125	07/11/2024

Batch R350044 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24061026-055AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.84**	2.000	0.8270	100.7	2.846	0.21	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9214 (TOTAL)

Batch R350044 **SampType:** MS Units **mg/L**
SampID: 24061026-079AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**1.64**	2.000	0	82.2	75	125	07/12/2024

Batch R350044 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24061026-079AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**1.88**	2.000	0	93.9	1.644	13.29	07/12/2024

Batch R351680 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**< 0.10**	0.0500	0	0	-100	100	08/14/2024

Batch R351680 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**0.99**	1.000	0	98.7	90	110	08/14/2024

Batch R351680 **SampType:** MS Units **mg/L**
SampID: 24061026-098AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.26**	2.000	0.3470	95.8	75	125	08/14/2024

Batch R351680 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24061026-098AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.27**	2.000	0.3470	96.0	2.263	0.18	08/14/2024

Batch R351680 **SampType:** MS Units **mg/L**
SampID: 24061026-102AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.10		**2.13**	2.000	0	106.4	75	125	08/14/2024

Batch R351680 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24061026-102AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**2.10**	2.000	0	105.2	2.128	1.18	08/14/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9214 (TOTAL)

Batch R351680 **SampType:** DUP Units **mg/L** RPD Limit: **15**

SampID: 24080444-001ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.10		**0.48**				0.4850	0.41	08/14/2024

SW-846 9251 (DISSOLVED)

Batch R349718 **SampType:** MS Units **mg/L**

SampID: 24061026-053BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		8	E	**120**	40.00	78.35	104.5	85	115	07/03/2024

Batch R349718 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24061026-053BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		8	E	**116**	40.00	78.35	93.3	120.1	3.80	07/03/2024

Batch R349718 **SampType:** MS Units **mg/L**

SampID: 24070182-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		20		**159**	100.0	64.81	93.8	85	115	07/03/2024

Batch R349718 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24070182-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		20		**159**	100.0	64.81	94.4	158.6	0.35	07/03/2024

Batch R349718 **SampType:** MS Units **mg/L**

SampID: 24070182-004BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**30**	20.00	11.59	91.1	85	115	07/03/2024

Batch R349718 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24070182-004BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**30**	20.00	11.59	92.0	29.81	0.64	07/03/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9251 (DISSOLVED)

Batch R349891 **SampType:** MS Units **mg/L**
SampID: 24070386-007BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**33**	20.00	14.91	90.2	85	115	07/08/2024

Batch R349891 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24070386-007BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**33**	20.00	14.91	90.6	32.94	0.24	07/08/2024

Batch R349943 **SampType:** MS Units **mg/L**
SampID: 24061026-062BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		20		**156**	100.0	62.46	93.0	85	115	07/09/2024

Batch R349943 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24061026-062BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		20		**155**	100.0	62.46	92.9	155.5	0.07	07/09/2024

Batch R349979 **SampType:** MS Units **mg/L**
SampID: 24070571-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**42**	20.00	25.25	86.2	85	115	07/10/2024

Batch R349979 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24070571-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**43**	20.00	25.25	88.2	42.48	0.96	07/10/2024

Batch R350172 **SampType:** MS Units **mg/L**
SampID: 24061026-034BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4	E	**55**	20.00	36.24	93.0	85	115	07/12/2024

Batch R350172 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24061026-034BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4	E	**54**	20.00	36.24	90.0	54.84	1.10	07/12/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9251 (DISSOLVED)

Batch R350234 **SampType:** MS Units **mg/L**
SampID: 24071020-004BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**22**	20.00	3.050	96.0	85	115	07/15/2024

Batch R350234 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24071020-004BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**22**	20.00	3.050	97.0	22.24	0.94	07/15/2024

Batch R351860 **SampType:** MS Units **mg/L**
SampID: 24080823-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		200		**1520**	1000	606.4	91.8	85	115	08/15/2024

Batch R351860 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24080823-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		200		**1520**	1000	606.4	91.8	1524	0.03	08/15/2024

Batch R351860 **SampType:** MS Units **mg/L**
SampID: 24080857-005CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4	E	**66**	20.00	47.08	95.2	85	115	08/15/2024

Batch R351860 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24080857-005CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4	E	**66**	20.00	47.08	95.4	66.11	0.09	08/15/2024

Batch R351927 **SampType:** MS Units **mg/L**
SampID: 24080241-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**26**	20.00	6.550	96.3	85	115	08/16/2024

Batch R351927 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24080241-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**26**	20.00	6.550	98.2	25.81	1.46	08/16/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9251 (DISSOLVED)

Batch R351927 **SampType:** MS Units **mg/L**
SampID: 24080241-005BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		20		**146**	100.0	53.35	93.1	85	115	08/16/2024

Batch R351927 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24080241-005BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		20		**146**	100.0	53.35	93.1	146.5	0.00	08/16/2024

Batch R351927 **SampType:** MS Units **mg/L**
SampID: 24080241-011BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**47**	20.00	28.53	91.8	85	115	08/16/2024

Batch R351927 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24080241-011BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**47**	20.00	28.53	91.4	46.88	0.13	08/16/2024

SW-846 9251 (TOTAL)

Batch R349718 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	07/03/2024

Batch R349718 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	99.3	90	110	07/03/2024

Batch R349718 **SampType:** MS Units **mg/L**
SampID: 24061026-007AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4	E	**66**	20.00	46.93	97.7	85	115	07/03/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9251 (TOTAL)

Batch R349718 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24061026-007AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4	E	**67**	20.00	46.93	99.0	66.46	0.39	07/03/2024

Batch R349718 **SampType:** MS Units **mg/L**

SampID: 24070024-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**45**	20.00	28.10	85.6	85	115	07/03/2024

Batch R349718 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24070024-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**46**	20.00	28.10	89.1	45.22	1.54	07/03/2024

Batch R349891 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	07/08/2024

Batch R349891 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	100.1	90	110	07/08/2024

Batch R349891 **SampType:** MS Units **mg/L**

SampID: 24070428-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4	E	**51**	20.00	34.10	85.3	85	115	07/08/2024

Batch R349891 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24070428-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4	E	**52**	20.00	34.10	89.5	51.15	1.65	07/08/2024

Batch R349943 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	07/09/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9251 (TOTAL)

Batch R349943 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	98.7	90	110	07/09/2024

Batch R349943 **SampType:** MS Units **mg/L**
SampID: 24070426-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**24**	20.00	3.650	99.6	85	115	07/09/2024

Batch R349943 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24070426-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**23**	20.00	3.650	99.0	23.56	0.43	07/09/2024

Batch R349943 **SampType:** MS Units **mg/L**
SampID: 24070559-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**48**	20.00	29.35	91.5	85	115	07/09/2024

Batch R349943 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24070559-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**48**	20.00	29.35	93.0	47.65	0.65	07/09/2024

Batch R349979 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	07/10/2024

Batch R349979 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	98.0	90	110	07/10/2024

Batch R349979 **SampType:** MS Units **mg/L**
SampID: 24061026-054AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		20		**166**	100.0	76.84	88.9	85	115	07/10/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9251 (TOTAL)

Batch R349979 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24061026-054AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		20		**164**	100.0	76.84	86.8	165.7	1.23	07/10/2024

Batch R349979 **SampType:** MS Units **mg/L**

SampID: 24070656-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		8		**62**	40.00	25.31	92.9	85	115	07/10/2024

Batch R349979 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24070656-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		8		**63**	40.00	25.31	94.7	62.46	1.18	07/10/2024

Batch R349979 **SampType:** MS Units **mg/L**

SampID: 24070704-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		2000		**17500**	10000	8389	91.5	85	115	07/10/2024

Batch R349979 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24070704-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		2000		**17300**	10000	8389	89.3	17540	1.27	07/10/2024

Batch R350172 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	07/12/2024

Batch R350172 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	97.9	90	110	07/12/2024

Batch R350172 **SampType:** MS Units **mg/L**

SampID: 24061026-011AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		8		**91**	40.00	54.41	91.0	85	115	07/12/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9251 (TOTAL)

Batch R350172 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24061026-011AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		8		**89**	40.00	54.41	86.5	90.80	1.98	07/12/2024

Batch R350172 **SampType:** MS Units **mg/L**

SampID: 24070740-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		8		**79**	40.00	43.40	89.2	85	115	07/12/2024

Batch R350172 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24070740-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		8		**78**	40.00	43.40	87.7	79.08	0.77	07/12/2024

Batch R350172 **SampType:** MS Units **mg/L**

SampID: 24070825-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**33**	20.00	15.21	90.0	85	115	07/13/2024

Batch R350172 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24070825-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**33**	20.00	15.21	88.6	33.20	0.85	07/13/2024

Batch R350172 **SampType:** MS Units **mg/L**

SampID: 24070832-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**28**	20.00	8.540	97.2	85	115	07/12/2024

Batch R350172 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24070832-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**28**	20.00	8.540	97.0	27.97	0.11	07/12/2024

Batch R350172 **SampType:** MS Units **mg/L**

SampID: 24070962-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		40		**275**	200.0	89.97	92.8	85	115	07/13/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9251 (TOTAL)

Batch R350172 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24070962-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		40		**274**	200.0	89.97	92.1	275.5	0.45	07/13/2024

Batch R350234 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	07/15/2024

Batch R350234 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	98.8	90	110	07/15/2024

Batch R350234 **SampType:** MS Units **mg/L**

SampID: 24061026-022AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		20		**149**	100.0	55.25	94.0	85	115	07/15/2024

Batch R350234 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24061026-022AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		20		**149**	100.0	55.25	94.0	149.2	0.01	07/15/2024

Batch R350317 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	07/16/2024

Batch R350317 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	100.1	90	110	07/16/2024

Batch R350317 **SampType:** MS Units **mg/L**

SampID: 24071150-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**24**	20.00	4.900	97.0	85	115	07/16/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9251 (TOTAL)

Batch R350317 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24071150-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**25**	20.00	4.900	98.7	24.30	1.39	07/16/2024

Batch R350317 **SampType:** MS Units **mg/L**

SampID: 24071163-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4	E	**50**	20.00	32.17	89.7	85	115	07/16/2024

Batch R350317 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24071163-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4	E	**51**	20.00	32.17	92.4	50.11	1.05	07/16/2024

Batch R350942 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	07/29/2024

Batch R350942 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	98.2	90	110	07/29/2024

Batch R350942 **SampType:** MS Units **mg/L**

SampID: 24071132-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**33**	20.00	14.64	91.7	85	115	07/29/2024

Batch R350942 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24071132-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**33**	20.00	14.64	90.4	32.97	0.79	07/29/2024

Batch R350942 **SampType:** MS Units **mg/L**

SampID: 24071132-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**37**	20.00	19.34	90.2	85	115	07/29/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9251 (TOTAL)

Batch R350942 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24071132-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**37**	20.00	19.34	88.4	37.39	0.97	07/29/2024

Batch R350942 **SampType:** MS Units **mg/L**

SampID: 24071132-013AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		8	E	**123**	40.00	84.65	95.8	85	115	07/29/2024

Batch R350942 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24071132-013AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		8	E	**121**	40.00	84.65	91.7	123.0	1.34	07/29/2024

Batch R350942 **SampType:** MS Units **mg/L**

SampID: 24071773-005AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		80		**668**	400.0	315.5	88.1	85	115	07/29/2024

Batch R350942 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24071773-005AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		80		**676**	400.0	315.5	90.0	667.9	1.16	07/29/2024

Batch R350942 **SampType:** MS Units **mg/L**

SampID: 24071875-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		40		**363**	200.0	188.6	87.3	85	115	07/29/2024

Batch R350942 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24071875-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		40		**364**	200.0	188.6	87.5	363.1	0.13	07/29/2024

Batch R350942 **SampType:** MS Units **mg/L**

SampID: 24072346-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**27**	20.00	8.420	95.0	85	115	07/29/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9251 (TOTAL)

Batch R350942 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24072346-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**27**	20.00	8.420	95.2	27.41	0.15	07/29/2024

Batch R351860 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	08/15/2024

Batch R351860 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	98.3	90	110	08/15/2024

Batch R351860 **SampType:** MS Units **mg/L**

SampID: 24080717-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4	H	**34**	20.00	15.42	90.8	85	115	08/15/2024

Batch R351860 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24080717-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4	H	**34**	20.00	15.42	91.1	33.58	0.18	08/15/2024

Batch R351860 **SampType:** MS Units **mg/L**

SampID: 24080855-004AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		80		**872**	400.0	507.2	91.1	85	115	08/15/2024

Batch R351860 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24080855-004AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		80		**858**	400.0	507.2	87.8	871.7	1.54	08/15/2024

Batch R351927 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	08/16/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9251 (TOTAL)

Batch R351927 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	99.0	90	110	08/16/2024

Batch R351927 **SampType:** MS Units **mg/L**
SampID: 24080002-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**22**	20.00	2.650	97.6	85	115	08/16/2024

Batch R351927 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24080002-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**22**	20.00	2.650	97.2	22.17	0.36	08/16/2024

Batch R351927 **SampType:** MS Units **mg/L**
SampID: 24080004-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		20		**198**	100.0	109.2	88.4	85	115	08/16/2024

Batch R351927 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24080004-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		20		**199**	100.0	109.2	90.2	197.6	0.89	08/16/2024

Batch R351927 **SampType:** MS Units **mg/L**
SampID: 24080876-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		40		**353**	200.0	142.9	104.9	85	115	08/16/2024

Batch R351927 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24080876-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		40		**346**	200.0	142.9	101.7	352.6	1.84	08/16/2024

Batch R352062 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**< 4**	0.5000	0	0	-100	100	08/20/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9251 (TOTAL)

Batch R352062 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**20**	20.00	0	98.6	90	110	08/20/2024

Batch R352062 **SampType:** MS Units **mg/L**
SampID: 24080242-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**47**	20.00	28.68	91.0	85	115	08/20/2024

Batch R352062 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24080242-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**46**	20.00	28.68	89.0	46.87	0.84	08/20/2024

Batch R352062 **SampType:** MS Units **mg/L**
SampID: 24080242-007AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4	E	**55**	20.00	37.19	87.8	85	115	08/20/2024

Batch R352062 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24080242-007AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4	E	**55**	20.00	37.19	87.0	54.74	0.26	08/20/2024

Batch R352062 **SampType:** MS Units **mg/L**
SampID: 24080243-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		20		**204**	100.0	108.5	95.2	85	115	08/20/2024

Batch R352062 **SampType:** MSD Units **mg/L** RPD Limit: **15**
SampID: 24080243-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		20		**200**	100.0	108.5	91.7	203.7	1.71	08/20/2024

Batch R352062 **SampType:** MS Units **mg/L**
SampID: 24080243-004AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		40		**358**	200.0	175.5	91.5	85	115	08/20/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 9251 (TOTAL)

Batch R352062 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24080243-004AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		40		**359**	200.0	175.5	91.8	358.5	0.20	08/20/2024

Batch R352062 **SampType:** MS Units **mg/L**

SampID: 24081588-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		4		**27**	20.00	8.000	97.2	85	115	08/20/2024

Batch R352062 **SampType:** MSD Units **mg/L** RPD Limit: **15**

SampID: 24081588-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		4		**27**	20.00	8.000	97.2	27.44	0.04	08/20/2024

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 225285 **SampType:** MBLK Units **mg/L**

SampID: MBLK-225285

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	07/05/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	07/09/2024
Magnesium		0.050		**< 0.050**	0.0055	0	0	-100	100	07/09/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	07/09/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	07/05/2024
Sodium		0.050		**< 0.050**	0.0180	0	0	-100	100	07/05/2024
Sodium		0.050		**< 0.050**	0.0180	0	0	-100	100	07/09/2024

Batch 225285 **SampType:** LCS Units **mg/L**

SampID: LCS-225285

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.36**	2.500	0	94.6	85	115	07/05/2024
Calcium		0.100		**2.48**	2.500	0	99.0	85	115	07/09/2024
Magnesium		0.050		**2.27**	2.500	0	90.8	85	115	07/09/2024
Potassium		0.100		**2.58**	2.500	0	103.2	85	115	07/05/2024
Potassium		0.100		**2.66**	2.500	0	106.3	85	115	07/09/2024
Sodium		0.050		**2.55**	2.500	0	101.9	85	115	07/09/2024
Sodium		0.050		**2.51**	2.500	0	100.5	85	115	07/05/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 225411 **SampType:** MBLK Units **mg/L**

SampID: MBLK-225411

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**< 0.0500**	0.0068	0	0	-100	100	07/09/2024
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	07/09/2024
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	07/09/2024
Cadmium		0.0020		**< 0.0020**	0.0005	0	0	-100	100	07/09/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	07/09/2024
Chromium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	07/09/2024
Lead		0.0150		**< 0.0150**	0.0014	0	0	-100	100	07/09/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	07/09/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	07/09/2024
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	07/09/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	07/09/2024

Batch 225411 **SampType:** LCS Units **mg/L**

SampID: LCS-225411

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**0.477**	0.5000	0	95.3	85	115	07/09/2024
Arsenic		0.0250		**0.497**	0.5000	0	99.4	85	115	07/09/2024
Boron		0.0200		**0.480**	0.5000	0	96.1	85	115	07/09/2024
Cadmium		0.0020		**0.0437**	0.0500	0	87.4	85	115	07/09/2024
Calcium		0.100		**2.47**	2.500	0	98.6	85	115	07/09/2024
Chromium		0.0050		**0.195**	0.2000	0	97.3	85	115	07/09/2024
Lead		0.0150		**0.475**	0.5000	0	95.1	85	115	07/09/2024
Magnesium		0.0500		**2.24**	2.500	0	89.8	85	115	07/09/2024
Potassium		0.100		**2.61**	2.500	0	104.2	85	115	07/09/2024
Selenium		0.0400		**0.455**	0.5000	0	91.0	85	115	07/09/2024
Sodium		0.0500		**2.51**	2.500	0	100.3	85	115	07/09/2024

Batch 225500 **SampType:** MBLK Units **mg/L**

SampID: MBLK-225500

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	07/10/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	07/10/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	07/10/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	07/10/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 225500 **SampType:** LCS Units **mg/L**

SampID: LCS-225500

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.33**	2.500	0	93.3	85	115	07/10/2024
Calcium		0.100		**2.39**	2.500	0	95.5	85	115	07/10/2024
Magnesium		0.0500	S	**2.08**	2.500	0	83.4	85	115	07/10/2024
Magnesium		0.0500		**2.13**	2.500	0	85.3	85	115	07/10/2024
Potassium		0.100		**2.52**	2.500	0	100.8	85	115	07/10/2024
Potassium		0.100		**2.57**	2.500	0	102.9	85	115	07/10/2024
Sodium		0.0500		**2.41**	2.500	0	96.3	85	115	07/10/2024
Sodium		0.0500		**2.36**	2.500	0	94.2	85	115	07/10/2024

Batch 225500 **SampType:** MS Units **mg/L**

SampID: 24061026-045CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**190**	2.500	192.9	-99.6	75	125	07/10/2024
Magnesium		0.050	S	**137**	2.500	138.7	-55.8	75	125	07/10/2024
Potassium		0.100		**4.36**	2.500	1.829	101.1	75	125	07/10/2024
Sodium		0.050	S	**93.4**	2.500	92.90	20.4	75	125	07/10/2024

Batch 225500 **SampType:** MSD Units **mg/L** RPD Limit: **20**

SampID: 24061026-045CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**191**	2.500	192.9	-70.8	190.4	0.38	07/10/2024
Magnesium		0.050	S	**138**	2.500	138.7	-46.2	137.3	0.18	07/10/2024
Potassium		0.100		**4.40**	2.500	1.829	102.7	4.358	0.90	07/10/2024
Sodium		0.050	S	**93.6**	2.500	92.90	29.6	93.41	0.25	07/10/2024

Batch 225500 **SampType:** MS Units **mg/L**

SampID: 24061026-061DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**118**	2.500	120.2	-72.4	75	125	07/10/2024
Magnesium		0.050	S	**47.1**	2.500	46.64	19.3	75	125	07/10/2024
Potassium		0.100		**5.11**	2.500	2.689	96.8	75	125	07/10/2024
Sodium		0.050	S	**92.4**	2.500	93.52	-45.2	75	125	07/10/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 225500 **SampType:** MSD Units **mg/L** RPD Limit: **20**

SampID: 24061026-061DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**119**	2.500	120.2	-62.8	118.4	0.20	07/10/2024
Magnesium		0.050	S	**47.1**	2.500	46.64	19.0	47.12	0.01	07/10/2024
Potassium		0.100		**5.10**	2.500	2.689	96.5	5.109	0.14	07/10/2024
Sodium		0.050	S	**93.0**	2.500	93.52	-22.8	92.39	0.60	07/10/2024

Batch 225569 **SampType:** MBLK Units **mg/L**

SampID: MBLK-225569

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**< 0.0500**	0.0068	0	0	-100	100	07/11/2024
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	07/11/2024
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	07/11/2024
Cadmium		0.0020		**< 0.0020**	0.0005	0	0	-100	100	07/11/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	07/11/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	07/11/2024
Chromium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	07/11/2024
Lead		0.0150		**< 0.0150**	0.0014	0	0	-100	100	07/11/2024
Magnesium		0.050		**< 0.050**	0.0055	0	0	-100	100	07/11/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	07/11/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	07/11/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	07/11/2024
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	07/11/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	07/11/2024
Sodium		0.050		**< 0.050**	0.0180	0	0	-100	100	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 225569 **SampType:** LCS Units **mg/L**

SampID: LCS-225569

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**0.459**	0.5000	0	91.8	85	115	07/11/2024
Arsenic		0.0250		**0.471**	0.5000	0	94.1	85	115	07/11/2024
Boron		0.0200		**0.468**	0.5000	0	93.7	85	115	07/11/2024
Cadmium		0.0020		**0.0460**	0.0500	0	92.0	85	115	07/11/2024
Calcium		0.100		**2.30**	2.500	0	91.8	85	115	07/11/2024
Calcium		0.100		**2.30**	2.500	0	91.8	85	115	07/11/2024
Chromium		0.0050		**0.184**	0.2000	0	91.8	85	115	07/11/2024
Lead		0.0150		**0.455**	0.5000	0	91.0	85	115	07/11/2024
Magnesium		0.0500		**2.14**	2.500	0	85.7	85	115	07/11/2024
Magnesium		0.050		**2.14**	2.500	0	85.7	85	115	07/11/2024
Potassium		0.100		**2.49**	2.500	0	99.6	85	115	07/11/2024
Potassium		0.100		**2.49**	2.500	0	99.6	85	115	07/11/2024
Selenium		0.0400		**0.450**	0.5000	0	89.9	85	115	07/11/2024
Sodium		0.0500		**2.40**	2.500	0	96.1	85	115	07/11/2024
Sodium		0.050		**2.40**	2.500	0	96.1	85	115	07/11/2024

Batch 225569 **SampType:** MS Units **mg/L**

SampID: 24061026-043CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**514**	2.500	520.0	-243.2	75	125	07/11/2024
Magnesium		0.050	S	**172**	2.500	174.3	-75.0	75	125	07/11/2024
Potassium		0.100		**3.70**	2.500	1.095	104.1	75	125	07/11/2024
Sodium		0.050	S	**118**	2.500	116.7	59.6	75	125	07/11/2024

Batch 225569 **SampType:** MSD Units **mg/L** RPD Limit: **20**

SampID: 24061026-043CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**516**	2.500	520.0	-145.6	513.9	0.47	07/11/2024
Magnesium		0.050	S	**173**	2.500	174.3	-36.3	172.4	0.56	07/11/2024
Potassium		0.100		**3.72**	2.500	1.095	105.0	3.697	0.64	07/11/2024
Sodium		0.050	S	**118**	2.500	116.7	61.6	118.2	0.04	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 225569 **SampType:** MS Units **mg/L**

SampID: 24061026-059DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**108**	2.500	106.1	83.6	75	125	07/11/2024
Magnesium		0.050		**43.0**	2.500	40.73	89.7	75	125	07/11/2024
Potassium		0.100		**5.26**	2.500	2.815	97.7	75	125	07/11/2024
Sodium		0.050	S	**97.0**	2.500	95.28	70.4	75	125	07/11/2024

Batch 225569 **SampType:** MSD Units **mg/L** RPD Limit: **20**

SampID: 24061026-059DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100		**108**	2.500	106.1	91.6	108.2	0.18	07/11/2024
Magnesium		0.050		**43.0**	2.500	40.73	92.3	42.98	0.15	07/11/2024
Potassium		0.100		**5.46**	2.500	2.815	105.6	5.257	3.71	07/11/2024
Sodium		0.050	S	**98.5**	2.500	95.28	128.8	97.04	1.49	07/11/2024

Batch 225657 **SampType:** MBLK Units **mg/L**

SampID: MBLK-225657

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	07/15/2024
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	07/15/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	07/15/2024
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	07/15/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	07/15/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	07/15/2024

Batch 225657 **SampType:** LCS Units **mg/L**

SampID: LCS-225657

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.28**	2.500	0	91.1	85	115	07/15/2024
Iron		0.0400		**1.82**	2.000	0	91.2	85	115	07/15/2024
Magnesium		0.0500		**2.16**	2.500	0	86.3	85	115	07/15/2024
Manganese		0.0070		**0.464**	0.5000	0	92.9	85	115	07/15/2024
Potassium		0.100		**2.43**	2.500	0	97.1	85	115	07/15/2024
Sodium		0.0500		**2.31**	2.500	0	92.3	85	115	07/15/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 225657 **SampType:** MS Units **mg/L**

SampID: 24070879-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**62.8**	2.500	61.34	56.8	75	125	07/15/2024
Magnesium		0.050	S	**17.9**	2.500	16.08	72.2	75	125	07/15/2024
Potassium		0.100		**4.29**	2.500	1.925	94.7	75	125	07/15/2024
Sodium		0.050	S	**22.2**	2.500	20.87	54.4	75	125	07/15/2024

Batch 225657 **SampType:** MSD Units **mg/L** RPD Limit: **20**

SampID: 24070879-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**62.9**	2.500	61.34	60.8	62.76	0.16	07/15/2024
Magnesium		0.050		**18.0**	2.500	16.08	76.1	17.88	0.53	07/15/2024
Potassium		0.100		**4.31**	2.500	1.925	95.4	4.291	0.44	07/15/2024
Sodium		0.050	S	**22.3**	2.500	20.87	56.4	22.23	0.22	07/15/2024

Batch 225657 **SampType:** MS Units **mg/L**

SampID: 24070981-002CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Iron		0.0400		**1.92**	2.000	0	95.8	75	125	07/15/2024
Manganese		0.0070		**0.555**	0.5000	0.06410	98.2	75	125	07/15/2024

Batch 225657 **SampType:** MSD Units **mg/L** RPD Limit: **20**

SampID: 24070981-002CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Iron		0.0400		**1.93**	2.000	0	96.4	1.915	0.67	07/15/2024
Manganese		0.0070		**0.559**	0.5000	0.06410	99.0	0.5553	0.65	07/15/2024

Batch 225657 **SampType:** MS Units **mg/L**

SampID: 24070982-002CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Iron		0.0400		**1.83**	2.000	0	91.3	75	125	07/15/2024
Manganese		0.0070		**0.600**	0.5000	0.1322	93.5	75	125	07/15/2024

Batch 225657 **SampType:** MSD Units **mg/L** RPD Limit: **20**

SampID: 24070982-002CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Iron		0.0400		**1.89**	2.000	0	94.3	1.826	3.22	07/15/2024
Manganese		0.0070		**0.615**	0.5000	0.1322	96.5	0.5995	2.54	07/15/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 224960 **SampType:** MBLK Units **mg/L**

SampID: MBLK-224960

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**< 0.0500**	0.0068	0	0	-100	100	07/09/2024
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	07/09/2024
Barium		0.0025		**< 0.0025**	0.0007	0	0	-100	100	07/09/2024
Beryllium		0.0005		**< 0.0005**	0.0002	0	0	-100	100	07/09/2024
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	07/09/2024
Cadmium		0.0020		**< 0.0020**	0.0005	0	0	-100	100	07/09/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	07/09/2024
Chromium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	07/09/2024
Cobalt		0.0050		**< 0.0050**	0.0020	0	0	-100	100	07/09/2024
Lead		0.0150		**< 0.0150**	0.0014	0	0	-100	100	07/09/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	07/09/2024
Molybdenum		0.0100		**< 0.0100**	0.0037	0	0	-100	100	07/09/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	07/09/2024
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	07/09/2024
Silver		0.0070		**< 0.0070**	0.0027	0	0	-100	100	07/09/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	07/09/2024
Thallium		0.0500		**< 0.0500**	0.0111	0	0	-100	100	07/09/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 224960 **SampType:** LCS Units **mg/L**

SampID: LCS-224960

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**0.532**	0.5000	0	106.3	85	115	07/09/2024
Arsenic		0.0250		**0.542**	0.5000	0	108.3	85	115	07/09/2024
Barium		0.0025		**2.06**	2.000	0	103.0	85	115	07/09/2024
Beryllium		0.0005		**0.0556**	0.0500	0	111.2	85	115	07/09/2024
Boron		0.0200		**0.520**	0.5000	0	104.1	85	115	07/09/2024
Cadmium		0.0020		**0.0485**	0.0500	0	97.0	85	115	07/09/2024
Calcium		0.100		**2.66**	2.500	0	106.5	85	115	07/09/2024
Chromium		0.0050		**0.210**	0.2000	0	104.8	85	115	07/09/2024
Cobalt		0.0050		**0.527**	0.5000	0	105.4	85	115	07/09/2024
Lead		0.0150		**0.514**	0.5000	0	102.8	85	115	07/09/2024
Magnesium		0.0500		**2.44**	2.500	0	97.5	85	115	07/09/2024
Molybdenum		0.0100		**0.508**	0.5000	0	101.6	85	115	07/09/2024
Potassium		0.100		**2.76**	2.500	0	110.5	85	115	07/09/2024
Selenium		0.0400		**0.505**	0.5000	0	101.0	85	115	07/09/2024
Silver		0.0070		**0.0528**	0.0500	0	105.6	85	115	07/09/2024
Sodium		0.0500		**2.73**	2.500	0	109.1	85	115	07/09/2024
Thallium		0.0500		**0.254**	0.2500	0	101.6	85	115	07/09/2024

Batch 224960 **SampType:** MS Units **mg/L**

SampID: 24070559-003BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		0.0250		**1.07**	1.000	0	106.6	75	125	07/09/2024
Lead		0.0150		**1.00**	1.000	0	100.1	75	125	07/09/2024

Batch 224960 **SampType:** MSD Units **mg/L** RPD Limit: **20**

SampID: 24070559-003BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		0.0250		**1.05**	1.000	0	105.1	1.066	1.45	07/09/2024
Lead		0.0150		**0.988**	1.000	0	98.8	1.001	1.30	07/09/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 225284 **SampType:** MBLK Units **mg/L**

SampID: MBLK-225284

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	07/08/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	07/08/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	07/08/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	07/08/2024

Batch 225284 **SampType:** LCS Units **mg/L**

SampID: LCS-225284

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.59**	2.500	0	103.7	85	115	07/08/2024
Magnesium		0.0500		**2.36**	2.500	0	94.4	85	115	07/08/2024
Potassium		0.100		**2.66**	2.500	0	106.3	85	115	07/08/2024
Sodium		0.0500		**2.54**	2.500	0	101.6	85	115	07/08/2024

Batch 225284 **SampType:** MS Units **mg/L**

SampID: 24061026-058CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**144**	2.500	142.1	79.2	75	125	07/08/2024
Magnesium		0.050		**59.3**	2.500	57.39	76.6	75	125	07/08/2024
Potassium		0.100		**7.04**	2.500	4.516	100.8	75	125	07/08/2024
Sodium		0.050		**126**	2.500	124.2	88.0	75	125	07/08/2024

Batch 225284 **SampType:** MSD Units **mg/L** RPD Limit: **20**

SampID: 24061026-058CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**141**	2.500	142.1	-35.6	144.1	2.01	07/08/2024
Magnesium		0.050	S	**58.1**	2.500	57.39	29.7	59.31	2.00	07/08/2024
Potassium		0.100		**6.81**	2.500	4.516	91.9	7.037	3.22	07/08/2024
Sodium		0.050	S	**122**	2.500	124.2	-109.2	126.4	3.98	07/08/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 225498 **SampType:** MBLK Units **mg/L**

SampID: MBLK-225498

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**< 0.0500**	0.0068	0	0	-100	100	07/11/2024
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	07/11/2024
Barium		0.0025		**< 0.0025**	0.0007	0	0	-100	100	07/11/2024
Beryllium		0.0005		**< 0.0005**	0.0002	0	0	-100	100	07/11/2024
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	07/11/2024
Cadmium		0.0020		**< 0.0020**	0.0005	0	0	-100	100	07/11/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	07/11/2024
Chromium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	07/11/2024
Cobalt		0.0050		**< 0.0050**	0.0020	0	0	-100	100	07/11/2024
Lead		0.0150		**< 0.0150**	0.0014	0	0	-100	100	07/11/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	07/11/2024
Molybdenum		0.0100		**< 0.0100**	0.0037	0	0	-100	100	07/11/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	07/11/2024
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	07/11/2024
Silver		0.0070		**< 0.0070**	0.0027	0	0	-100	100	07/11/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	07/11/2024
Thallium		0.0500		**< 0.0500**	0.0111	0	0	-100	100	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 225498 **SampType:** LCS Units **mg/L**

SampID: LCS-225498

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**0.518**	0.5000	0	103.5	85	115	07/11/2024
Arsenic		0.0250		**0.547**	0.5000	0	109.3	85	115	07/11/2024
Barium		0.0025		**2.06**	2.000	0	103.0	85	115	07/11/2024
Beryllium		0.0005		**0.0515**	0.0500	0	103.0	85	115	07/11/2024
Boron		0.0200		**0.512**	0.5000	0	102.4	85	115	07/11/2024
Cadmium		0.0020		**0.0520**	0.0500	0	104.0	85	115	07/11/2024
Calcium		0.100		**2.56**	2.500	0	102.4	85	115	07/11/2024
Chromium		0.0050		**0.206**	0.2000	0	103.2	85	115	07/11/2024
Cobalt		0.0050		**0.521**	0.5000	0	104.3	85	115	07/11/2024
Lead		0.0150		**0.515**	0.5000	0	102.9	85	115	07/11/2024
Magnesium		0.0500		**2.41**	2.500	0	96.6	85	115	07/11/2024
Molybdenum		0.0100		**0.502**	0.5000	0	100.3	85	115	07/11/2024
Potassium		0.100		**2.64**	2.500	0	105.6	85	115	07/11/2024
Selenium		0.0400		**0.515**	0.5000	0	103.1	85	115	07/11/2024
Silver		0.0070		**0.0527**	0.0500	0	105.4	85	115	07/11/2024
Sodium		0.0500		**2.64**	2.500	0	105.7	85	115	07/11/2024
Thallium		0.0500		**0.250**	0.2500	0	99.9	85	115	07/11/2024

Batch 225498 **SampType:** MS Units **mg/L**

SampID: 24061026-017BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**137**	2.500	134.9	89.2	75	125	07/11/2024
Magnesium		0.050		**68.2**	2.500	65.90	93.6	75	125	07/11/2024
Potassium		0.100		**4.38**	2.500	1.696	107.5	75	125	07/11/2024
Sodium		0.050	S	**135**	2.500	131.4	162.4	75	125	07/11/2024

Batch 225498 **SampType:** MSD Units **mg/L** RPD Limit: **20**

SampID: 24061026-017BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100		**137**	2.500	134.9	94.8	137.1	0.10	07/11/2024
Magnesium		0.050		**68.4**	2.500	65.90	100.2	68.23	0.24	07/11/2024
Potassium		0.100		**4.40**	2.500	1.696	108.0	4.384	0.30	07/11/2024
Sodium		0.050	S	**135**	2.500	131.4	158.8	135.4	0.07	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 225498 **SampType:** MS Units **mg/L**

SampID: 24061026-060CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**120**	2.500	114.5	233.6	75	125	07/11/2024
Magnesium		0.050	S	**47.3**	2.500	43.73	144.6	75	125	07/11/2024
Potassium		0.100		**5.86**	2.500	3.113	109.8	75	125	07/11/2024
Sodium		0.050	S	**92.7**	2.500	87.51	208.4	75	125	07/11/2024

Batch 225498 **SampType:** MSD Units **mg/L** RPD Limit: **20**

SampID: 24061026-060CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**120**	2.500	114.5	204.0	120.4	0.62	07/11/2024
Magnesium		0.050	S	**46.9**	2.500	43.73	127.1	47.34	0.93	07/11/2024
Potassium		0.100		**5.87**	2.500	3.113	110.2	5.858	0.18	07/11/2024
Sodium		0.050	S	**92.1**	2.500	87.51	183.2	92.72	0.68	07/11/2024

Batch 225566 **SampType:** MBLK Units **mg/L**

SampID: MBLK-225566

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	07/12/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	07/12/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	07/12/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	07/12/2024

Batch 225566 **SampType:** LCS Units **mg/L**

SampID: LCS-225566

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.42**	2.500	0	96.7	85	115	07/12/2024
Magnesium		0.0500		**2.41**	2.500	0	96.4	85	115	07/12/2024
Potassium		0.100		**2.65**	2.500	0	106.1	85	115	07/12/2024
Sodium		0.0500		**2.59**	2.500	0	103.6	85	115	07/12/2024

Batch 225566 **SampType:** MS Units **mg/L**

SampID: 24061026-022BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**122**	2.500	115.7	241.6	75	125	07/12/2024
Magnesium		0.050	S	**55.2**	2.500	51.42	150.7	75	125	07/12/2024
Potassium		0.100		**6.05**	2.500	3.159	115.8	75	125	07/12/2024
Sodium		0.050	S	**160**	2.500	153.5	280.8	75	125	07/12/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 225566 **SampType:** MSD Units **mg/L** RPD Limit: **20**

SampID: 24061026-022BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**121**	2.500	115.7	196.0	121.8	0.94	07/12/2024
Magnesium		0.050	S	**54.6**	2.500	51.42	126.9	55.19	1.09	07/12/2024
Potassium		0.100		**6.01**	2.500	3.159	113.9	6.054	0.79	07/12/2024
Sodium		0.050	S	**160**	2.500	153.5	261.6	160.5	0.30	07/12/2024

Batch 225659 **SampType:** MBLK Units **mg/L**

SampID: MBLK-225659

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	07/16/2024
Lead		0.0150		**< 0.0150**	0.0040	0	0	-100	100	07/16/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	07/16/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	07/16/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	07/16/2024

Batch 225659 **SampType:** LCS Units **mg/L**

SampID: LCS-225659

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.55**	2.500	0	102.0	85	115	07/16/2024
Lead		0.0150		**0.535**	0.5000	0	106.9	85	115	07/16/2024
Magnesium		0.0500		**2.48**	2.500	0	99.1	85	115	07/16/2024
Potassium		0.100		**2.71**	2.500	0	108.4	85	115	07/16/2024
Sodium		0.0500		**2.57**	2.500	0	102.6	85	115	07/16/2024

Batch 225659 **SampType:** MS Units **mg/L**

SampID: 24070962-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		0.0250		**0.529**	0.5000	0	105.8	75	125	07/16/2024
Lead		0.0150		**0.515**	0.5000	0	103.1	75	125	07/16/2024

Batch 225659 **SampType:** MSD Units **mg/L** RPD Limit: **20**

SampID: 24070962-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		0.0250		**0.530**	0.5000	0	106.0	0.5288	0.19	07/16/2024
Lead		0.0150		**0.507**	0.5000	0	101.4	0.5154	1.62	07/16/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 226569 **SampType:** MBLK Units **mg/L**

SampID: MBLK-226569

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/05/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/05/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/05/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/05/2024

Batch 226569 **SampType:** LCS Units **mg/L**

SampID: LCS-226569

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.76**	2.500	0	110.5	85	115	08/05/2024
Magnesium		0.0500		**2.60**	2.500	0	104.1	85	115	08/05/2024
Potassium		0.100		**2.76**	2.500	0	110.3	85	115	08/05/2024
Sodium		0.0500		**2.75**	2.500	0	110.2	85	115	08/05/2024

Batch 226569 **SampType:** MS Units **mg/L**

SampID: 24071451-035CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**61.9**	2.500	56.00	234.8	75	125	08/05/2024
Magnesium		0.050	S	**31.2**	2.500	26.92	169.2	75	125	08/05/2024
Potassium		0.100		**3.38**	2.500	0.5302	114.1	75	125	08/05/2024
Sodium		0.050	S	**68.5**	2.500	63.24	209.2	75	125	08/05/2024

Batch 226569 **SampType:** MSD Units **mg/L** RPD Limit: **20**

SampID: 24071451-035CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**60.3**	2.500	56.00	172.4	61.87	2.55	08/05/2024
Magnesium		0.050	S	**30.2**	2.500	26.92	132.2	31.15	3.02	08/05/2024
Potassium		0.100		**3.29**	2.500	0.5302	110.4	3.384	2.79	08/05/2024
Sodium		0.050	S	**66.6**	2.500	63.24	136.0	68.47	2.71	08/05/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 226925 **SampType:** MBLK Units **mg/L**

SampID: MBLK-226925

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/13/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/12/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/12/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/13/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/12/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/13/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/13/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/12/2024

Batch 226925 **SampType:** LCS Units **mg/L**

SampID: LCS-226925

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.65**	2.500	0	106.0	85	115	08/12/2024
Calcium		0.100		**2.66**	2.500	0	106.3	85	115	08/13/2024
Magnesium		0.0500		**2.38**	2.500	0	95.2	85	115	08/13/2024
Magnesium		0.0500		**2.38**	2.500	0	95.2	85	115	08/12/2024
Potassium		0.100		**2.73**	2.500	0	109.3	85	115	08/13/2024
Potassium		0.100		**2.68**	2.500	0	107.1	85	115	08/12/2024
Sodium		0.0500		**2.64**	2.500	0	105.8	85	115	08/12/2024
Sodium		0.0500		**2.70**	2.500	0	108.0	85	115	08/13/2024

Batch 226933 **SampType:** MBLK Units **mg/L**

SampID: MBLK-226933

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/14/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/12/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	08/13/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/13/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	08/14/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/14/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/13/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	08/12/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/14/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/12/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	08/13/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 226933 **SampType:** LCS Units **mg/L**

SampID: LCS-226933

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.57**	2.500	0	102.6	85	115	08/12/2024
Calcium		0.100		**2.55**	2.500	0	101.8	85	115	08/13/2024
Calcium		0.100		**2.48**	2.500	0	99.2	85	115	08/14/2024
Magnesium		0.0500		**2.30**	2.500	0	91.9	85	115	08/14/2024
Magnesium		0.0500		**2.31**	2.500	0	92.4	85	115	08/13/2024
Potassium		0.100		**2.64**	2.500	0	105.7	85	115	08/13/2024
Potassium		0.100		**2.66**	2.500	0	106.4	85	115	08/14/2024
Potassium		0.100		**2.66**	2.500	0	106.3	85	115	08/12/2024
Sodium		0.0500		**2.60**	2.500	0	104.0	85	115	08/12/2024
Sodium		0.0500		**2.61**	2.500	0	104.3	85	115	08/13/2024
Sodium		0.0500		**2.53**	2.500	0	101.2	85	115	08/14/2024

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 225285 **SampType:** MBLK Units **µg/L**

SampID: MBLK-225285

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	07/05/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	07/05/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	07/05/2024
Cadmium	*	1.0		**< 1.0**	0.1340	0	0	-100	100	07/05/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	07/05/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	07/05/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	07/05/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	07/05/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	07/05/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	07/05/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 225285 **SampType:** LCS Units **µg/L**

SampID: LCS-225285

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**415**	500.0	0	83.1	80	120	07/05/2024
Arsenic		1.0		**443**	500.0	0	88.5	80	120	07/05/2024
Boron		25.0		**451**	500.0	0	90.2	80	120	07/05/2024
Cadmium	*	1.0		**50.3**	50.00	0	100.6	80	120	07/05/2024
Chromium		1.5		**183**	200.0	0	91.7	80	120	07/05/2024
Iron		25.0		**1690**	2000	0	84.3	80	120	07/05/2024
Lead		1.0		**456**	500.0	0	91.3	80	120	07/05/2024
Selenium		1.0		**431**	500.0	0	86.1	80	120	07/05/2024
Vanadium		5.0		**443**	500.0	0	88.5	80	120	07/05/2024
Zinc		15.0		**442**	500.0	0	88.4	80	120	07/05/2024

Batch 225285 **SampType:** MS Units **µg/L**

SampID: 24061026-010CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		1.0		**450**	500.0	12.48	87.4	75	125	07/06/2024
Iron		25.0	S	**3370**	2000	2267	55.2	75	125	07/08/2024

Batch 225285 **SampType:** MSD Units **µg/L** RPD Limit: **20**

SampID: 24061026-010CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		1.0		**446**	500.0	12.48	86.7	449.7	0.87	07/06/2024
Iron		25.0	S	**3600**	2000	2267	66.4	3372	6.42	07/08/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 225411 **SampType:** MBLK Units µg/L

SampID: MBLK-225411

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0	S	**1.2**	0.4500	0	277.8	-100	100	07/09/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	07/09/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	07/09/2024
Cadmium	*	1.0		**< 1.0**	0.1340	0	0	-100	100	07/09/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	07/09/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	07/09/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	07/09/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	07/09/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	07/09/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	07/09/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	07/09/2024

Batch 225411 **SampType:** LCS Units µg/L

SampID: LCS-225411

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0	B	**438**	500.0	0	87.5	80	120	07/09/2024
Arsenic		1.0		**470**	500.0	0	93.9	80	120	07/09/2024
Boron		25.0		**437**	500.0	0	87.3	80	120	07/09/2024
Cadmium	*	1.0		**46.4**	50.00	0	92.7	80	120	07/09/2024
Chromium		1.5		**190**	200.0	0	95.2	80	120	07/09/2024
Iron		25.0		**1930**	2000	0	96.4	80	120	07/09/2024
Lead		1.0		**436**	500.0	0	87.2	80	120	07/09/2024
Manganese		2.0		**469**	500.0	0	93.9	80	120	07/09/2024
Selenium		1.0		**448**	500.0	0	89.6	80	120	07/09/2024
Vanadium		5.0		**468**	500.0	0	93.6	80	120	07/09/2024
Zinc		15.0		**452**	500.0	0	90.4	80	120	07/09/2024

Batch 225411 **SampType:** MS Units µg/L

SampID: 24061026-005DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Iron		25.0		**1860**	2000	12.03	92.6	75	125	07/09/2024
Manganese		2.0		**488**	500.0	23.18	93.0	75	125	07/09/2024
Zinc		15.0		**458**	500.0	7.857	90.0	75	125	07/09/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 225411 **SampType:** MSD Units **µg/L** RPD Limit: **20**

SampID: 24061026-005DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Iron		25.0		**1890**	2000	12.03	93.8	1865	1.26	07/09/2024
Manganese		2.0		**472**	500.0	23.18	89.7	488.3	3.47	07/09/2024
Zinc		15.0		**453**	500.0	7.857	89.0	458.0	1.11	07/09/2024

Batch 225500 **SampType:** MBLK Units **µg/L**

SampID: MBLK-225500

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	07/10/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	07/10/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	07/10/2024
Cadmium	*	1.0		**< 1.0**	0.1340	0	0	-100	100	07/10/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	07/10/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	07/10/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	07/10/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	07/10/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	07/10/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	07/10/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	07/10/2024

Batch 225500 **SampType:** LCS Units **µg/L**

SampID: LCS-225500

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**445**	500.0	0	88.9	80	120	07/10/2024
Arsenic		1.0		**462**	500.0	0	92.4	80	120	07/10/2024
Boron		25.0		**424**	500.0	0	84.7	80	120	07/10/2024
Cadmium	*	1.0		**45.2**	50.00	0	90.3	80	120	07/10/2024
Chromium		1.5		**190**	200.0	0	94.8	80	120	07/10/2024
Iron		25.0		**2080**	2000	0	104.2	80	120	07/10/2024
Lead		1.0		**450**	500.0	0	89.9	80	120	07/10/2024
Manganese		2.0		**471**	500.0	0	94.2	80	120	07/10/2024
Selenium		1.0		**463**	500.0	0	92.6	80	120	07/10/2024
Vanadium		5.0		**462**	500.0	0	92.5	80	120	07/10/2024
Zinc		15.0		**450**	500.0	0	89.9	80	120	07/10/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 225500 **SampType:** MS Units **µg/L**

SampID: 24061026-045CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		1.0		**506**	500.0	0	101.2	75	125	07/10/2024
Boron		25.0		**553**	500.0	29.64	104.7	75	125	07/10/2024
Cadmium	*	1.0		**48.4**	50.00	0	96.9	75	125	07/10/2024
Chromium		1.5		**197**	200.0	0.8586	98.3	75	125	07/10/2024
Iron		25.0		**2150**	2000	146.6	100.3	75	125	07/10/2024
Lead		1.0		**475**	500.0	0	95.1	75	125	07/10/2024
Manganese		2.0		**636**	500.0	136.1	100.1	75	125	07/10/2024
Selenium		1.0		**488**	500.0	0	97.7	75	125	07/10/2024
Zinc		15.0		**464**	500.0	0	92.9	75	125	07/10/2024

Batch 225500 **SampType:** MSD Units **µg/L** RPD Limit: **20**

SampID: 24061026-045CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		1.0		**463**	500.0	0	92.5	506.2	8.98	07/10/2024
Boron		25.0		**506**	500.0	29.64	95.4	553.0	8.79	07/10/2024
Cadmium	*	1.0		**44.2**	50.00	0	88.3	48.44	9.23	07/10/2024
Chromium		1.5		**181**	200.0	0.8586	90.0	197.5	8.77	07/10/2024
Iron		25.0		**1980**	2000	146.6	91.7	2153	8.29	07/10/2024
Lead		1.0		**455**	500.0	0	90.9	475.4	4.49	07/10/2024
Manganese		2.0		**577**	500.0	136.1	88.2	636.4	9.74	07/10/2024
Selenium		1.0		**450**	500.0	0	90.0	488.4	8.17	07/10/2024
Zinc		15.0		**434**	500.0	0	86.8	464.4	6.75	07/10/2024

Batch 225500 **SampType:** MS Units **µg/L**

SampID: 24061026-061DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**467**	500.0	0	93.4	75	125	07/10/2024
Arsenic		1.0		**495**	500.0	5.936	97.8	75	125	07/10/2024
Boron		25.0		**607**	500.0	94.35	102.6	75	125	07/10/2024
Cadmium	*	1.0		**48.4**	50.00	0	96.9	75	125	07/10/2024
Chromium		1.5		**193**	200.0	0.7735	95.9	75	125	07/10/2024
Lead		1.0		**476**	500.0	0	95.3	75	125	07/10/2024
Selenium		1.0		**459**	500.0	0	91.8	75	125	07/10/2024
Vanadium		5.0		**487**	500.0	0	97.3	75	125	07/10/2024
Zinc		15.0		**472**	500.0	0	94.3	75	125	07/10/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 225500 **SampType:** MSD Units **µg/L** RPD Limit: **20**

SampID: 24061026-061DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		1.0		**506**	500.0	0	101.1	467.1	7.90	07/10/2024
Arsenic		1.0		**503**	500.0	5.936	99.4	494.9	1.62	07/10/2024
Boron		25.0		**638**	500.0	94.35	108.7	607.1	4.95	07/10/2024
Cadmium	*	1.0		**49.6**	50.00	0	99.2	48.44	2.38	07/10/2024
Chromium		1.5		**199**	200.0	0.7735	98.9	192.5	3.14	07/10/2024
Lead		1.0		**499**	500.0	0	99.7	476.3	4.58	07/10/2024
Selenium		1.0		**466**	500.0	0	93.2	458.8	1.57	07/10/2024
Vanadium		5.0		**498**	500.0	0	99.5	486.7	2.20	07/10/2024
Zinc		15.0		**473**	500.0	0	94.6	471.6	0.34	07/10/2024

Batch 225569 **SampType:** MBLK Units **µg/L**

SampID: MBLK-225569

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	07/11/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	07/11/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	07/15/2024
Cadmium	*	1.0		**< 1.0**	0.1340	0	0	-100	100	07/11/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	07/11/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	07/11/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	07/11/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	07/11/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	07/11/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	07/11/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 225569 **SampType:** LCS Units **µg/L**

SampID: LCS-225569

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**424**	500.0	0	84.8	80	120	07/11/2024
Arsenic		1.0		**432**	500.0	0	86.3	80	120	07/11/2024
Boron		25.0		**449**	500.0	0	89.8	80	120	07/15/2024
Cadmium	*	1.0		**43.4**	50.00	0	86.9	80	120	07/11/2024
Chromium		1.5		**179**	200.0	0	89.5	80	120	07/11/2024
Iron		25.0		**1750**	2000	0	87.4	80	120	07/11/2024
Lead		1.0		**437**	500.0	0	87.5	80	120	07/11/2024
Manganese		2.0		**441**	500.0	0	88.2	80	120	07/11/2024
Selenium		1.0		**430**	500.0	0	86.1	80	120	07/11/2024
Vanadium		5.0		**437**	500.0	0	87.4	80	120	07/11/2024
Zinc		15.0		**440**	500.0	0	88.0	80	120	07/11/2024

Batch 225569 **SampType:** MS Units **µg/L**

SampID: 24061026-043CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		1.0		**434**	500.0	0	86.8	75	125	07/12/2024
Boron		50.0		**451**	500.0	0	90.1	75	125	07/15/2024
Cadmium	*	1.0		**40.2**	50.00	0	80.4	75	125	07/12/2024
Chromium		3.0		**172**	200.0	1.888	85.2	75	125	07/16/2024
Iron		50.0		**1830**	2000	0	91.4	75	125	07/16/2024
Lead		1.0		**437**	500.0	0	87.5	75	125	07/12/2024
Manganese		4.0		**532**	500.0	89.66	88.5	75	125	07/15/2024
Selenium		1.0		**433**	500.0	0	86.5	75	125	07/12/2024
Zinc		30.0		**441**	500.0	0	88.2	75	125	07/15/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 225569 **SampType:** MSD Units µg/L RPD Limit: 20

SampID: 24061026-043CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		1.0		**457**	500.0	0	91.4	434.0	5.15	07/12/2024
Boron		50.0		**453**	500.0	0	90.6	450.7	0.46	07/15/2024
Cadmium	*	1.0		**42.6**	50.00	0	85.2	40.20	5.75	07/12/2024
Chromium		3.0		**182**	200.0	1.888	89.8	172.3	5.24	07/16/2024
Iron		50.0		**1900**	2000	0	95.1	1828	3.93	07/16/2024
Lead		1.0		**453**	500.0	0	90.5	437.3	3.42	07/12/2024
Manganese		4.0		**529**	500.0	89.66	88.0	532.1	0.49	07/15/2024
Selenium		1.0		**458**	500.0	0	91.7	432.7	5.78	07/12/2024
Zinc		30.0		**444**	500.0	0	88.8	440.8	0.75	07/15/2024

Batch 225569 **SampType:** MS Units µg/L

SampID: 24061026-059DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**453**	500.0	0	90.5	75	125	07/12/2024
Arsenic		1.0		**453**	500.0	9.716	88.6	75	125	07/12/2024
Boron		25.0		**511**	500.0	91.60	83.8	75	125	07/15/2024
Cadmium	*	1.0		**42.7**	50.00	0	85.3	75	125	07/12/2024
Chromium		1.5		**178**	200.0	1.124	88.5	75	125	07/12/2024
Lead		1.0		**445**	500.0	0	89.0	75	125	07/12/2024
Selenium		1.0		**448**	500.0	0	89.6	75	125	07/12/2024
Vanadium		5.0		**427**	500.0	0	85.5	75	125	07/12/2024
Zinc		15.0		**417**	500.0	0	83.5	75	125	07/12/2024

Batch 225569 **SampType:** MSD Units µg/L RPD Limit: 20

SampID: 24061026-059DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		1.0		**436**	500.0	0	87.2	452.6	3.76	07/12/2024
Arsenic		1.0		**455**	500.0	9.716	89.0	452.6	0.46	07/12/2024
Boron		25.0		**539**	500.0	91.60	89.4	510.5	5.39	07/15/2024
Cadmium	*	1.0		**41.5**	50.00	0	83.0	42.66	2.78	07/12/2024
Chromium		1.5		**173**	200.0	1.124	86.2	178.1	2.67	07/12/2024
Lead		1.0		**432**	500.0	0	86.4	445.1	2.95	07/12/2024
Selenium		1.0		**454**	500.0	0	90.7	448.1	1.24	07/12/2024
Vanadium		5.0		**425**	500.0	0	85.1	427.3	0.46	07/12/2024
Zinc		15.0		**424**	500.0	0	84.9	417.5	1.64	07/12/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 225657 **SampType:** MBLK Units µg/L

SampID: MBLK-225657

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	07/15/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	07/15/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	07/15/2024
Cadmium	*	1.0		**< 1.0**	0.1340	0	0	-100	100	07/15/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	07/15/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	07/15/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	07/15/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	07/15/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	07/15/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	07/15/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	07/15/2024

Batch 225657 **SampType:** LCS Units µg/L

SampID: LCS-225657

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**444**	500.0	0	88.8	80	120	07/15/2024
Arsenic		1.0		**449**	500.0	0	89.9	80	120	07/15/2024
Boron		25.0		**427**	500.0	0	85.4	80	120	07/15/2024
Cadmium	*	1.0		**44.1**	50.00	0	88.3	80	120	07/15/2024
Chromium		1.5		**175**	200.0	0	87.4	80	120	07/15/2024
Iron		25.0		**1880**	2000	0	93.9	80	120	07/16/2024
Lead		1.0		**439**	500.0	0	87.8	80	120	07/15/2024
Manganese		2.0		**467**	500.0	0	93.3	80	120	07/15/2024
Selenium		1.0		**461**	500.0	0	92.2	80	120	07/15/2024
Vanadium		5.0		**430**	500.0	0	86.0	80	120	07/15/2024
Zinc		15.0		**446**	500.0	0	89.2	80	120	07/15/2024

Batch 225657 **SampType:** MS Units µg/L

SampID: 24070879-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**482**	500.0	0	96.3	75	125	07/15/2024
Arsenic		1.0		**470**	500.0	3.960	93.2	75	125	07/15/2024
Lead		1.0		**447**	500.0	0	89.4	75	125	07/15/2024
Selenium		1.0		**463**	500.0	0.8546	92.5	75	125	07/15/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 225657 **SampType:** MSD Units µg/L RPD Limit: 20

SampID: 24070879-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		1.0		**507**	500.0	0	101.4	481.7	5.15	07/15/2024
Arsenic		1.0		**476**	500.0	3.960	94.5	470.2	1.31	07/15/2024
Lead		1.0		**478**	500.0	0	95.6	447.0	6.67	07/15/2024
Selenium		1.0		**470**	500.0	0.8546	93.9	463.5	1.42	07/15/2024

Batch 225949 **SampType:** MBLK Units µg/L

SampID: MBLK-225949

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	07/22/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	07/23/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	07/22/2024

Batch 225949 **SampType:** LCS Units µg/L

SampID: LCS-225949

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		25.0		**414**	500.0	0	82.9	80	120	07/22/2024
Iron		25.0		**1980**	2000	0	98.9	80	120	07/23/2024
Manganese		2.0		**422**	500.0	0	84.5	80	120	07/22/2024

Batch 225949 **SampType:** MS Units µg/L

SampID: 24061026-013CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Iron		25.0		**1900**	2000	0	95.2	75	125	07/23/2024
Manganese		2.0		**709**	500.0	289.6	83.9	75	125	07/22/2024

Batch 225949 **SampType:** MSD Units µg/L RPD Limit: 20

SampID: 24061026-013CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Iron		25.0		**1940**	2000	0	96.8	1905	1.60	07/23/2024
Manganese		2.0		**715**	500.0	289.6	85.1	709.4	0.79	07/22/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 226587 **SampType:** MBLK Units **µg/L**

SampID: MBLK-226587

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0	S	**1.3**	0.4500	0	299.5	-100	100	08/02/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	08/02/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	08/02/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	08/02/2024

Batch 226587 **SampType:** LCS Units **µg/L**

SampID: LCS-226587

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0	B	**464**	500.0	0	92.7	80	120	08/02/2024
Iron		25.0		**2100**	2000	0	104.9	80	120	08/02/2024
Manganese		2.0		**500**	500.0	0	100.0	80	120	08/02/2024
Zinc		15.0		**509**	500.0	0	101.7	80	120	08/02/2024

Batch 226897 **SampType:** MBLK Units **µg/L**

SampID: MBLK-226897

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	08/09/2024
Cadmium	*	1.0		**< 1.0**	0.1340	0	0	-100	100	08/09/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	08/09/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	08/09/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	08/09/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	08/09/2024

Batch 226897 **SampType:** LCS Units **µg/L**

SampID: LCS-226897

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		1.0		**488**	500.0	0	97.6	80	120	08/09/2024
Cadmium	*	1.0		**46.3**	50.00	0	92.6	80	120	08/09/2024
Iron		25.0		**1970**	2000	0	98.5	80	120	08/09/2024
Lead		1.0		**441**	500.0	0	88.2	80	120	08/09/2024
Manganese		2.0		**483**	500.0	0	96.7	80	120	08/09/2024
Zinc		15.0		**468**	500.0	0	93.5	80	120	08/09/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 226897 **SampType:** MS Units **µg/L**
SampID: 24080004-006DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		1.0		**493**	500.0	13.61	96.0	75	125	08/09/2024

Batch 226897 **SampType:** MSD Units **µg/L** RPD Limit: **20**
SampID: 24080004-006DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		1.0		**500**	500.0	13.61	97.4	493.5	1.41	08/09/2024

Batch 227702 **SampType:** MBLK Units **µg/L**
SampID: MBLK-227702

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	08/28/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	08/28/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	08/28/2024

Batch 227702 **SampType:** LCS Units **µg/L**
SampID: LCS-227702

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**439**	500.0	0	87.8	80	120	08/28/2024
Lead		1.0		**470**	500.0	0	94.1	80	120	08/28/2024
Manganese		2.0		**499**	500.0	0	99.8	80	120	08/28/2024

Batch 227702 **SampType:** MS Units **µg/L**
SampID: 24081635-001DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**525**	500.0	0	105.0	75	125	08/28/2024

Batch 227702 **SampType:** MSD Units **µg/L** RPD Limit: **20**
SampID: 24081635-001DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		1.0		**465**	500.0	0	93.1	525.1	12.07	08/28/2024

Batch 227702 **SampType:** MS Units **µg/L**
SampID: 24081635-010DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead		1.0		**452**	500.0	0	90.3	75	125	08/28/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 227702 **SampType:** MSD Units µg/L RPD Limit: 20

SampID: 24081635-010DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lead		1.0		**424**	500.0	0	84.8	451.7	6.35	08/28/2024

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 224960 **SampType:** MBLK Units µg/L

SampID: MBLK-224960

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	07/10/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	07/10/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	07/10/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	07/10/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	07/10/2024
Cadmium	*	1.0		**< 1.0**	0.1340	0	0	-100	100	07/10/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	07/10/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	07/10/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	07/10/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	07/10/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	07/10/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	07/10/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	07/10/2024

Batch 224960 **SampType:** LCS Units µg/L

SampID: LCS-224960

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**568**	500.0	0	113.7	80	120	07/10/2024
Arsenic		1.0		**540**	500.0	0	108.0	80	120	07/10/2024
Barium		1.0		**2200**	2000	0	109.9	80	120	07/10/2024
Beryllium		1.0		**50.0**	50.00	0	100.0	80	120	07/10/2024
Boron		25.0		**503**	500.0	0	100.7	80	120	07/10/2024
Cadmium	*	1.0		**51.5**	50.00	0	102.9	80	120	07/10/2024
Chromium		1.5		**215**	200.0	0	107.6	80	120	07/10/2024
Cobalt		1.0		**514**	500.0	0	102.9	80	120	07/10/2024
Lead		1.0		**523**	500.0	0	104.6	80	120	07/10/2024
Lithium	*	3.0		**512**	500.0	0	102.4	80	120	07/10/2024
Molybdenum		1.5		**486**	500.0	0	97.2	80	120	07/10/2024
Selenium		1.0		**545**	500.0	0	108.9	80	120	07/10/2024
Thallium		2.0		**238**	250.0	0	95.2	80	120	07/10/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 225284 **SampType:** MBLK Units µg/L

SampID: MBLK-225284

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	07/09/2024
Antimony		1.0	S	**1.7**	0.4500	0	371.3	-100	100	07/05/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	07/05/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	07/05/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	07/05/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	07/05/2024
Cadmium	*	1.0		**< 1.0**	0.1340	0	0	-100	100	07/05/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	07/05/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	07/05/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	07/05/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	07/05/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	07/08/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	07/05/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	07/05/2024

Batch 225284 **SampType:** LCS Units µg/L

SampID: LCS-225284

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0	B	**531**	500.0	0	106.2	80	120	07/05/2024
Arsenic		1.0		**488**	500.0	0	97.6	80	120	07/05/2024
Barium		1.0		**1940**	2000	0	96.9	80	120	07/05/2024
Beryllium		1.0		**49.1**	50.00	0	98.2	80	120	07/05/2024
Boron		25.0		**486**	500.0	0	97.2	80	120	07/05/2024
Cadmium	*	1.0		**55.3**	50.00	0	110.6	80	120	07/05/2024
Chromium		1.5		**196**	200.0	0	97.9	80	120	07/05/2024
Cobalt		1.0		**479**	500.0	0	95.9	80	120	07/05/2024
Lead		1.0		**486**	500.0	0	97.3	80	120	07/05/2024
Lithium	*	3.0		**495**	500.0	0	99.0	80	120	07/05/2024
Molybdenum		1.5		**411**	500.0	0	82.1	80	120	07/08/2024
Selenium		1.0		**477**	500.0	0	95.4	80	120	07/05/2024
Thallium		2.0		**227**	250.0	0	90.9	80	120	07/05/2024

Batch 225284 **SampType:** MS Units µg/L

SampID: 24061026-058CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		25.0		**597**	500.0	158.6	87.7	75	125	07/05/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 225284 **SampType:** MSD Units µg/L RPD Limit: 20

SampID: 24061026-058CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Boron		25.0		**582**	500.0	158.6	84.7	597.2	2.60	07/05/2024

Batch 225498 **SampType:** MBLK Units µg/L

SampID: MBLK-225498

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	07/11/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	07/11/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	07/11/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	07/11/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	07/11/2024
Cadmium	*	1.0		**< 1.0**	0.1340	0	0	-100	100	07/11/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	07/11/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	07/11/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	07/11/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	07/11/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	07/11/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	07/11/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	07/11/2024

Batch 225498 **SampType:** LCS Units µg/L

SampID: LCS-225498

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**556**	500.0	0	111.1	80	120	07/11/2024
Arsenic		1.0		**546**	500.0	0	109.2	80	120	07/11/2024
Barium		1.0		**2070**	2000	0	103.7	80	120	07/11/2024
Beryllium		1.0		**53.6**	50.00	0	107.2	80	120	07/11/2024
Boron		25.0		**523**	500.0	0	104.6	80	120	07/11/2024
Cadmium	*	1.0		**53.4**	50.00	0	106.8	80	120	07/11/2024
Chromium		1.5		**224**	200.0	0	111.9	80	120	07/11/2024
Cobalt		1.0		**544**	500.0	0	108.8	80	120	07/11/2024
Lead		1.0		**539**	500.0	0	107.9	80	120	07/11/2024
Lithium	*	3.0		**571**	500.0	0	114.2	80	120	07/11/2024
Molybdenum		1.5		**504**	500.0	0	100.8	80	120	07/11/2024
Selenium		1.0		**517**	500.0	0	103.5	80	120	07/11/2024
Thallium		2.0		**246**	250.0	0	98.3	80	120	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 225498 **SampType:** MS Units **µg/L**

SampID: 24061026-017BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**504**	500.0	0	100.8	75	125	07/11/2024
Arsenic		1.0		**500**	500.0	8.134	98.3	75	125	07/11/2024
Barium		1.0		**1960**	2000	52.73	95.3	75	125	07/11/2024
Beryllium		1.0		**51.1**	50.00	0	102.2	75	125	07/11/2024
Boron		25.0		**612**	500.0	111.0	100.3	75	125	07/11/2024
Cadmium	*	1.0		**45.8**	50.00	0	91.6	75	125	07/11/2024
Chromium		1.5		**187**	200.0	1.332	92.9	75	125	07/11/2024
Cobalt		1.0		**464**	500.0	0	92.7	75	125	07/11/2024
Lead		1.0		**492**	500.0	0	98.4	75	125	07/11/2024
Lithium	*	3.0		**570**	500.0	19.81	110.0	75	125	07/11/2024
Molybdenum		1.5		**457**	500.0	4.975	90.4	75	125	07/12/2024
Selenium		1.0		**475**	500.0	0	94.9	75	125	07/11/2024
Thallium		2.0		**245**	250.0	0	97.9	75	125	07/11/2024

Batch 225498 **SampType:** MSD Units **µg/L** RPD Limit: **20**

SampID: 24061026-017BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		1.0		**514**	500.0	0	102.7	504.0	1.88	07/11/2024
Arsenic		1.0		**504**	500.0	8.134	99.2	499.7	0.92	07/11/2024
Barium		1.0		**1940**	2000	52.73	94.1	1958	1.19	07/11/2024
Beryllium		1.0		**50.1**	50.00	0	100.2	51.12	1.98	07/11/2024
Boron		25.0		**609**	500.0	111.0	99.6	612.3	0.51	07/11/2024
Cadmium	*	1.0		**47.2**	50.00	0	94.3	45.79	2.94	07/11/2024
Chromium		1.5		**198**	200.0	1.332	98.1	187.2	5.39	07/11/2024
Cobalt		1.0		**467**	500.0	0	93.3	463.5	0.65	07/11/2024
Lead		1.0		**517**	500.0	0	103.4	491.9	4.93	07/11/2024
Lithium	*	3.0		**568**	500.0	19.81	109.6	569.6	0.34	07/11/2024
Molybdenum		1.5		**451**	500.0	4.975	89.3	456.9	1.22	07/12/2024
Selenium		1.0		**479**	500.0	0	95.9	474.7	0.96	07/11/2024
Thallium		2.0		**243**	250.0	0	97.3	244.8	0.64	07/11/2024

Batch 225498 **SampType:** MS Units **µg/L**

SampID: 24061026-060CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		25.0		**624**	500.0	107.0	103.4	75	125	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 225498 **SampType:** MSD Units µg/L RPD Limit: 20

SampID: 24061026-060CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Boron		25.0		**629**	500.0	107.0	104.3	623.8	0.76	07/11/2024

Batch 225566 **SampType:** MBLK Units µg/L

SampID: MBLK-225566

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	07/12/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	07/12/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	07/12/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	07/12/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	07/15/2024
Cadmium	*	1.0		**< 1.0**	0.1340	0	0	-100	100	07/12/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	07/12/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	07/12/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	07/12/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	07/12/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	07/12/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	07/12/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	07/12/2024

Batch 225566 **SampType:** LCS Units µg/L

SampID: LCS-225566

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**536**	500.0	0	107.2	80	120	07/12/2024
Arsenic		1.0		**495**	500.0	0	99.1	80	120	07/12/2024
Barium		1.0		**2000**	2000	0	100.0	80	120	07/12/2024
Beryllium		1.0		**48.6**	50.00	0	97.2	80	120	07/12/2024
Boron		25.0		**512**	500.0	0	102.5	80	120	07/15/2024
Cadmium	*	1.0		**49.4**	50.00	0	98.8	80	120	07/12/2024
Chromium		1.5		**210**	200.0	0	104.8	80	120	07/12/2024
Cobalt		1.0		**488**	500.0	0	97.7	80	120	07/12/2024
Lead		1.0		**510**	500.0	0	101.9	80	120	07/12/2024
Lithium	*	3.0		**509**	500.0	0	101.8	80	120	07/12/2024
Molybdenum		1.5		**462**	500.0	0	92.4	80	120	07/12/2024
Selenium		1.0		**500**	500.0	0	100.0	80	120	07/12/2024
Thallium		2.0		**241**	250.0	0	96.3	80	120	07/12/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 225566 **SampType:** MS Units **µg/L**

SampID: 24061026-022BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		25.0		**678**	500.0	174.9	100.6	75	125	07/15/2024

Batch 225566 **SampType:** MSD Units **µg/L** RPD Limit: **20**

SampID: 24061026-022BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Boron		25.0		**657**	500.0	174.9	96.4	677.9	3.12	07/15/2024

Batch 225659 **SampType:** MBLK Units **µg/L**

SampID: MBLK-225659

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	07/15/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	07/15/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	07/15/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	07/15/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	07/15/2024
Cadmium	*	1.0		**< 1.0**	0.1340	0	0	-100	100	07/15/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	07/15/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	07/15/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	07/15/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	07/15/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	07/15/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	07/15/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	07/15/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 225659 **SampType:** LCS Units µg/L

SampID: LCS-225659

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**563**	500.0	0	112.7	80	120	07/15/2024
Arsenic		1.0		**532**	500.0	0	106.3	80	120	07/15/2024
Barium		1.0		**2170**	2000	0	108.5	80	120	07/15/2024
Beryllium		1.0		**48.4**	50.00	0	96.8	80	120	07/15/2024
Boron		25.0		**470**	500.0	0	94.1	80	120	07/15/2024
Cadmium	*	1.0		**52.4**	50.00	0	104.7	80	120	07/15/2024
Chromium		1.5		**213**	200.0	0	106.7	80	120	07/15/2024
Cobalt		1.0		**524**	500.0	0	104.9	80	120	07/15/2024
Lead		1.0		**518**	500.0	0	103.6	80	120	07/15/2024
Lithium	*	3.0		**509**	500.0	0	101.7	80	120	07/15/2024
Molybdenum		1.5		**489**	500.0	0	97.7	80	120	07/15/2024
Selenium		1.0		**540**	500.0	0	107.9	80	120	07/15/2024
Thallium		2.0		**235**	250.0	0	93.9	80	120	07/15/2024

Batch 226569 **SampType:** MBLK Units µg/L

SampID: MBLK-226569

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	08/05/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	08/05/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	08/05/2024
Cadmium	*	1.0		**< 1.0**	0.1340	0	0	-100	100	08/05/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	08/05/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	08/05/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	08/05/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	08/05/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	08/05/2024
Silver		1.0		**< 1.0**	0.1110	0	0	-100	100	08/05/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	08/05/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 226569 **SampType:** LCS Units **µg/L**

SampID: LCS-226569

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**587**	500.0	0	117.5	80	120	08/05/2024
Arsenic		1.0		**523**	500.0	0	104.7	80	120	08/05/2024
Barium		1.0		**2150**	2000	0	107.6	80	120	08/05/2024
Cadmium	*	1.0		**52.7**	50.00	0	105.4	80	120	08/05/2024
Chromium		1.5		**211**	200.0	0	105.3	80	120	08/05/2024
Cobalt		1.0		**528**	500.0	0	105.5	80	120	08/05/2024
Lead		1.0	S	**600**	500.0	0	120.1	80	120	08/05/2024
Molybdenum		1.5		**467**	500.0	0	93.3	80	120	08/05/2024
Selenium		1.0		**551**	500.0	0	110.1	80	120	08/05/2024
Silver		1.0		**49.4**	50.00	0	98.9	80	120	08/05/2024
Thallium		2.0		**211**	250.0	0	84.2	80	120	08/05/2024

Batch 226569 **SampType:** MS Units **µg/L**

SampID: 24071451-035CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**537**	500.0	0	107.5	75	125	08/06/2024
Arsenic		1.0		**511**	500.0	0	102.3	75	125	08/06/2024
Barium		1.0		**2060**	2000	52.07	100.2	75	125	08/06/2024
Beryllium		1.0		**52.4**	50.00	0	104.8	75	125	08/06/2024
Boron		25.0		**541**	500.0	0	108.1	75	125	08/06/2024
Cadmium	*	1.0		**51.0**	50.00	0	102.0	75	125	08/06/2024
Chromium		1.5		**207**	200.0	0	103.5	75	125	08/06/2024
Cobalt		1.0		**493**	500.0	0	98.5	75	125	08/06/2024
Lead		1.0		**546**	500.0	0	109.2	75	125	08/06/2024
Lithium	*	3.0		**541**	500.0	1.655	108.0	75	125	08/06/2024
Molybdenum		1.5		**469**	500.0	0	93.9	75	125	08/06/2024
Selenium		1.0		**528**	500.0	0	105.5	75	125	08/06/2024
Silver		1.0		**48.1**	50.00	0	96.2	75	125	08/06/2024
Thallium		2.0		**221**	250.0	0	88.3	75	125	08/06/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 226569 **SampType:** MSD Units **µg/L** RPD Limit: **20**

SampID: 24071451-035CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		1.0		**556**	500.0	0	111.2	537.3	3.41	08/06/2024
Arsenic		1.0		**507**	500.0	0	101.4	511.4	0.82	08/06/2024
Barium		1.0		**2110**	2000	52.07	103.0	2055	2.75	08/06/2024
Beryllium		1.0		**52.0**	50.00	0	104.1	52.38	0.65	08/06/2024
Boron		25.0		**531**	500.0	0	106.3	540.5	1.71	08/06/2024
Cadmium	*	1.0		**52.0**	50.00	0	104.0	51.01	1.93	08/06/2024
Chromium		1.5		**195**	200.0	0	97.7	207.0	5.73	08/06/2024
Cobalt		1.0		**479**	500.0	0	95.7	492.5	2.84	08/06/2024
Lead		1.0		**519**	500.0	0	103.8	545.8	5.04	08/06/2024
Lithium	*	3.0		**535**	500.0	1.655	106.6	541.4	1.26	08/06/2024
Molybdenum		1.5		**472**	500.0	0	94.5	469.5	0.60	08/06/2024
Selenium		1.0		**529**	500.0	0	105.7	527.7	0.16	08/06/2024
Silver		1.0		**51.3**	50.00	0	102.6	48.08	6.45	08/06/2024
Thallium		2.0		**211**	250.0	0	84.4	220.7	4.50	08/06/2024

Batch 226925 **SampType:** MBLK Units **µg/L**

SampID: MBLK-226925

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	08/12/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	08/12/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	08/12/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	08/12/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	08/12/2024
Cadmium	*	1.0		**< 1.0**	0.1340	0	0	-100	100	08/12/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	08/12/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	08/12/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	08/12/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	08/12/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	08/12/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	08/12/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	08/12/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 226925 **SampType:** LCS Units µg/L

SampID: LCS-226925

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**514**	500.0	0	102.8	80	120	08/12/2024
Arsenic		1.0		**487**	500.0	0	97.4	80	120	08/12/2024
Barium		1.0		**1920**	2000	0	95.9	80	120	08/12/2024
Beryllium		1.0		**48.6**	50.00	0	97.1	80	120	08/12/2024
Boron		25.0		**477**	500.0	0	95.3	80	120	08/12/2024
Cadmium	*	1.0		**47.7**	50.00	0	95.4	80	120	08/12/2024
Chromium		1.5		**200**	200.0	0	100.1	80	120	08/12/2024
Cobalt		1.0		**488**	500.0	0	97.7	80	120	08/12/2024
Lead		1.0		**511**	500.0	0	102.3	80	120	08/12/2024
Lithium	*	3.0		**506**	500.0	0	101.2	80	120	08/12/2024
Molybdenum		1.5		**439**	500.0	0	87.9	80	120	08/12/2024
Selenium		1.0		**489**	500.0	0	97.9	80	120	08/12/2024
Thallium		2.0		**222**	250.0	0	88.8	80	120	08/12/2024

Batch 226933 **SampType:** MBLK Units µg/L

SampID: MBLK-226933

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	08/12/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	08/12/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	08/12/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	08/12/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	08/14/2024
Cadmium	*	1.0		**< 1.0**	0.1340	0	0	-100	100	08/12/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	08/12/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	08/12/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	08/12/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	08/12/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	08/12/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	08/12/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	08/12/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 226933 **SampType:** LCS Units µg/L

SampID: LCS-226933

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**547**	500.0	0	109.5	80	120	08/12/2024
Arsenic		1.0		**525**	500.0	0	104.9	80	120	08/12/2024
Barium		1.0		**2160**	2000	0	108.1	80	120	08/12/2024
Beryllium		1.0		**50.5**	50.00	0	100.9	80	120	08/12/2024
Boron		25.0		**515**	500.0	0	103.1	80	120	08/14/2024
Cadmium	*	1.0		**50.9**	50.00	0	101.8	80	120	08/12/2024
Chromium		1.5		**209**	200.0	0	104.3	80	120	08/12/2024
Cobalt		1.0		**530**	500.0	0	106.0	80	120	08/12/2024
Lead		1.0		**506**	500.0	0	101.2	80	120	08/12/2024
Lithium	*	3.0		**510**	500.0	0	102.0	80	120	08/12/2024
Molybdenum		1.5		**480**	500.0	0	96.0	80	120	08/12/2024
Selenium		1.0		**509**	500.0	0	101.9	80	120	08/12/2024
Thallium		2.0		**246**	250.0	0	98.4	80	120	08/12/2024

Batch 227698 **SampType:** MBLK Units µg/L

SampID: MBLK-227698

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	08/28/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	08/28/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	08/29/2024
Cadmium	*	1.0		**< 1.0**	0.1340	0	0	-100	100	08/28/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	08/28/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	08/28/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	08/28/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	08/28/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	08/28/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	08/29/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 227698 **SampType:** LCS Units **µg/L**

SampID: LCS-227698

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**536**	500.0	0	107.2	80	120	08/28/2024
Arsenic		1.0		**536**	500.0	0	107.1	80	120	08/28/2024
Barium		1.0		**2110**	2000	0	105.6	80	120	08/29/2024
Cadmium	*	1.0		**50.1**	50.00	0	100.3	80	120	08/28/2024
Chromium		1.5		**196**	200.0	0	97.9	80	120	08/28/2024
Cobalt		1.0		**502**	500.0	0	100.3	80	120	08/28/2024
Lead		1.0		**493**	500.0	0	98.5	80	120	08/28/2024
Molybdenum		1.5		**477**	500.0	0	95.4	80	120	08/28/2024
Selenium		1.0		**488**	500.0	0	97.7	80	120	08/28/2024
Thallium		2.0		**281**	250.0	0	112.3	80	120	08/30/2024

SW-846 7470A (DISSOLVED)

Batch 225289 **SampType:** MS Units **µg/L**

SampID: 24061026-003CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.25**	5.000	0	105.0	75	125	07/08/2024

Batch 225289 **SampType:** MSD Units **µg/L** RPD Limit: **15**

SampID: 24061026-003CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**5.18**	5.000	0	103.6	5.248	1.28	07/08/2024

Batch 225289 **SampType:** MS Units **µg/L**

SampID: 24061026-053CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.09**	5.000	0	101.7	75	125	07/08/2024

Batch 225289 **SampType:** MSD Units **µg/L** RPD Limit: **15**

SampID: 24061026-053CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.87**	5.000	0	97.4	5.085	4.28	07/08/2024

Batch 225311 **SampType:** MBLK Units **µg/L**

SampID: MBLK-225311

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	07/08/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 7470A (DISSOLVED)

Batch 225311 **SampType:** LCS Units µg/L

SampID: LCS-225311

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.13**	5.000	0	102.5	85	115	07/08/2024

SW-846 7470A (TOTAL)

Batch 225289 **SampType:** MBLK Units µg/L

SampID: MBLK-225289

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	07/08/2024

Batch 225289 **SampType:** LCS Units µg/L

SampID: LCS-225289

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.14**	5.000	0	102.7	85	115	07/08/2024

Batch 225412 **SampType:** MBLK Units µg/L

SampID: MBLK-225412

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	07/09/2024

Batch 225412 **SampType:** LCS Units µg/L

SampID: LCS-225412

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.08**	5.000	0	101.7	85	115	07/09/2024

Batch 225501 **SampType:** MBLK Units µg/L

SampID: MBLK-225501

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	07/10/2024

Batch 225501 **SampType:** LCS Units µg/L

SampID: LCS-225501

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.56**	5.000	0	111.3	85	115	07/10/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 7470A (TOTAL)

Batch 225501 **SampType:** MS Units µg/L
SampID: 24061026-004CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.64**	5.000	0	112.8	75	125	07/10/2024

Batch 225501 **SampType:** MSD Units µg/L RPD Limit: **15**
SampID: 24061026-004CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**5.52**	5.000	0	110.5	5.641	2.09	07/10/2024

Batch 225501 **SampType:** MS Units µg/L
SampID: 24061026-021BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.51**	5.000	0	110.2	75	125	07/10/2024

Batch 225501 **SampType:** MSD Units µg/L RPD Limit: **15**
SampID: 24061026-021BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**5.32**	5.000	0	106.5	5.508	3.39	07/10/2024

Batch 225565 **SampType:** MBLK Units µg/L
SampID: MBLK-225565

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	07/11/2024

Batch 225565 **SampType:** LCS Units µg/L
SampID: LCS-225565

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.12**	5.000	0	102.3	85	115	07/11/2024

Batch 225565 **SampType:** MS Units µg/L
SampID: 24061026-020BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.46**	5.000	0	109.1	75	125	07/11/2024

Batch 225565 **SampType:** MSD Units µg/L RPD Limit: **15**
SampID: 24061026-020BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**5.09**	5.000	0	101.9	5.456	6.85	07/11/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 7470A (TOTAL)

Batch 225717 **SampType:** MBLK Units µg/L
SampID: MBLK-225717

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	07/16/2024

Batch 225717 **SampType:** LCS Units µg/L
SampID: LCS-225717

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.60**	5.000	0	92.0	85	115	07/16/2024

Batch 226926 **SampType:** MBLK Units µg/L
SampID: MBLK-226926

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	08/13/2024

Batch 226926 **SampType:** LCS Units µg/L
SampID: LCS-226926

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.34**	5.000	0	106.7	85	115	08/13/2024

Batch 226926 **SampType:** MS Units µg/L
SampID: 24061026-094BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.58**	5.000	0	111.7	75	125	08/13/2024

Batch 226926 **SampType:** MSD Units µg/L RPD Limit: **15**
SampID: 24061026-094BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**5.44**	5.000	0	108.8	5.583	2.59	08/13/2024

Batch 226941 **SampType:** MBLK Units µg/L
SampID: MBLK-226941

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	08/13/2024

Batch 226941 **SampType:** LCS Units µg/L
SampID: LCS-226941

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.75**	5.000	0	114.9	85	115	08/13/2024

Client: Ramboll **Work Order:** 24061026

Client Project: NEW-24Q3 **Report Date:** 06-Sep-24

SW-846 7470A (TOTAL)

Batch 226941 **SampType:** MS Units **µg/L**

SampID: 24061026-103CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.60**	5.000	0	111.9	75	125	08/13/2024

Batch 226941 **SampType:** MSD Units **µg/L** RPD Limit: **15**

SampID: 24061026-103CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**5.75**	5.000	0	115.0	5.596	2.68	08/13/2024

Batch 226941 **SampType:** MS Units **µg/L**

SampID: 24080002-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**5.59**	5.000	0	111.9	75	125	08/13/2024

Batch 226941 **SampType:** MSD Units **µg/L** RPD Limit: **15**

SampID: 24080002-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**5.57**	5.000	0	111.4	5.594	0.42	08/13/2024

Receiving Check List

http://www.teklabinc.com/

Client: Ramboll
Client Project: NEW-24Q3

Work Order: 24061026
Report Date: 06-Sep-24

Carrier: Tracy Carroll
Received By: NR

Completed by: Paul Schultz
On: 03-Jul-24

Reviewed by: Ellie Hopkins
On: 17-Jul-24

Pages to follow: Chain of custody 29 Extra pages included 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C 22.9
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☐	Lab ☐	NA ☑	
Container/Temp Blank temperature in compliance?	Yes ☐	No ☑		
When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.				
Water – at least one vial per sample has zero headspace?	Yes ☐	No ☐	No VOA vials ☑	
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑	
Water - pH acceptable upon receipt?	Yes ☐	No ☑	NA ☐	
NPDES/CWA TCN interferences checked/treated in the field?	Yes ☐	No ☐	NA ☑	

Any No responses must be detailed below or on the COC.

pH strip #96651/89660. - pschultz - 7/3/2024 8:10:20 AM

Additional Sodium Hydroxide (95443) was needed in A213, R217D and A213 Dup upon arrival at the laboratory. - pschultz - 7/3/2024 8:10:28 AM

Samples were received on 7/8/2024 at 15:15on ice [7.8 - LTG#7]. - pschultz - 7/8/2024 3:38:35 PM
pH strip #96651/89660. - pschultz - 7/8/2024 3:38:39 PM

Additional Sodium Hydroxide (95443) was needed in G104 and G104 Duplicate upon arrival at the laboratory. - pschultz - 7/8/2024 3:38:42 PM

Samples were received on 7/9/24 at 12.5 on ice. Additional Nitric Acid (98584) was needed in APW02, APW05S, APW14, APW15, APW18, G222, G224, G232, G233, and APW02 DUP and additional Sodium Hydroxide (95443) was needed in G106 upon arrival at the laboratory. pH strip #96651/89660. - nickreed - 7/9/2024 5:08:46 PM

Samples were received on 7/10/24 at 1525 on ice [3.5C - LTG#5]. - TM/ehopkins - 7/11/2024 8:47:26 AM

Samples were received on 7/11/2024 at 14:00 on ice [2.9C - LTG#7]. - pschultz - 7/11/2024 4:19:23 PM

pH strip #96651/89660. - pschultz - 7/11/2024 4:19:25 PM

Additional Nitric Acid (98584) was needed in L1R and XPWO1 upon arrival at the laboratory. - pschultz - 7/11/2024 4:19:30 PM

Additional Sodium Hydroxide (95443) was needed in G217S upon arrival at the laboratory. - pschultz - 7/11/2024 4:19:38 PM

Receiving Check List

http://www.teklabinc.com/

Client: Ramboll

Work Order: 24061026

Client Project: NEW-24Q3

Report Date: 06-Sep-24

Samples Field Blank and Equipment Blank 1 were filtered and preserved for the dissolved parameters upon arrival at the laboratory. - pschultz - 7/11/2024 4:19:43 PM

The samples collected on 7/8 and delivered on 7/9 were out of temperature compliance upon receipt. Applicable wells (APW02 with DUP, APW05S, APW14, APW15, G222, and G224) will be recollected per Chase Christenson's request. - ehurley - 7/17/2024 9:07:31 AM

APW10 was filtered and preserved with Nitric Acid (98581) for the dissolved parameters upon arrival at the laboratory. - amberdilallo - 7/19/2024 10:29:47 AM

Samples were received on 8/8/24 at 1424 on ice [1.5C - LTG#5]. Additional Nitric Acid (99172) was needed upon arrival at the laboratory for APW15, APW22S and G222. Field Blank 2, Equipment Blank 2 and Equipment Blank 3 were filtered and preserved with Nitric Acid (99172) for the dissolved parameters upon arrival at the laboratory. pH strip #96651. - amberdilallo - 8/8/2024 4:32:53 PM

CHAIN-OF-CUSTODY / Analytical Request Document

24061026

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 2

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Terry Hanratty
Address:	6725 N 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448		Sam Davies - samantha.davies@vistracorp.com	Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:		Profile #:	

REGULATORY AGENCY		
NPDES	GROUND WATER	DRINKING WATER
UST	RCRA	OTHER
Site Location STATE:	IL	

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	NEW-NE-501	Residual Chlorine (Y/N)	Project No./ Lab I.D.
																Requested Analysis Filtered (Y/N)										Resampling + new wells.
1	APW02	WT	G	8-7	1331		4	2		2								X				X	X		X		24061026-090
2	APW05S	WT	G	8-7	1008		3	1		2								X				X	X		X		24061026-091
3	APW14	WT	G	8-7	1238		3	1		2								X				X			X		24061026-092
4	APW15	WT	G	8-7	1155		3	1		2								X				X			X		24061026-093
5	APW19S	WT	G	8-7	1125		3	1		2															X		24061026-094
6	APW20S *	WT	G	8-7	1229		3	1		2															X		24061026-095
7	APW21S	WT	G	8-7	1148		3	1		2															X		24061026-096
8	APW22S	WT	G	8-8	0960		3	1		2															X		24061026-097
9	APW23S	WT	G	8-8	1025		3	1		2															X		24061026-098
10	APW23	WT	G	8-8	1055		3	1		2															X		24061026-099
11	G222	WT	G	8-7	1118		3	1		2									X	X							24061026-100
12	G224	WT	G	8-7	1051		3	1		2									X	X							24061026-101
13	Field Blank 2	WT	G	8-8	1105		4	3		1								X	X	X		X	X		X		24061026-102
14	APW02 Duplicate	WT	G	8-7	1331		4	2		2								X				X	X		X		24061026-103
15	APW19S Duplicate	WT	G	8-7	1125		3	1		2															X		24061026-104
16	Equipment Blank 2	WT	G	8-8	1113		4	3		1								X	X	X		X	X		X		24061026-105

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q3 Rev 2		8-8	1424		8/8/24	1424	1.5 #5

SAMPLER NAME AND SIGNATURE					
PRINT Name of SAMPLER:	Justin Colp				
SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY):	8-7-24		

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Y	N	

* went dry during reads

Added HNO3 (99172) to APW15, APW22S & G222.
pH < 2 @ 1551 on 8/8/24

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

24061026

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

Resampling + new wells.

ITEM #	Sample ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	NEW-NE-501	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	Equipment Blank 3	WT	G	8-7	1345		4	3		1							X	X	X		X	X		X		24061026-106
2																										
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										
13																										
14																										
15																										
16																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q3 Rev 2		8-8	1424		8/8/24	1424

SAMPLE CONDITIONS

	Y	N	
Temp in °C			
Received on Ice (Y/N)			
Custody Sealed Cooler (Y/N)			
Samples Intact (Y/N)			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Culp

SIGNATURE of SAMPLER:

DATE Signed (MM/DD/YY): 8-8-24

CHAIN-OF-CUSTODY / Analytical Request Document

24061026

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Terry Hanratty
Address:	6725 N 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448		Sam Davies - samantha.davies@vistracorp.com	Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:	2285	Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Valid Matrix Codes MATRIX / CODE: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N ↓ Analysis Test ↓	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A213		WT	G	7-2-24	0943		5	2		1		1						X						24061026-001
2	A214		WT	G	7/2/24	1029		5	2		1		1						X						24061026-002
3	A215		WT	G	7/2/24	1117		5	2		1		1						X						24061026-003
4	APW02		WT	G				4	2		2						X			X	X					24061026-004
5	APW03		WT	G				4	2		2						X			X	X					24061026-005
6	APW04		WT	G				4	2		2						X			X	X					24061026-006
7	APW05		WT	G	7/2/24	1013		3	1		2						X			X		X				24061026-007
8	APW05S		WT	G				2	1		1						X			X						24061026-008
9	APW06		WT	G	7.2.24	1226		2	1		1						X			X						24061026-009
10	APW07		WT	G	7.2.24	1327		3	1		2						X			X		X				24061026-010
11	APW08		WT	G				3	1		2						X			X		X				24061026-011
12	APW09		WT	G	7.2.24	1419		3	1		2						X			X		X				24061026-012
13	APW10		WT	G		1304		2	1		1						X			X						24061026-013
14	APW11		WT	G		1103		2	1		1						X			X						24061026-014
15	APW12		WT	G		1157		2	1		1						X			X						24061026-015
16	APW13		WT	G		1411		2	1		1						X			X						24061026-016

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q3 Rev 1		7/2	1649		7/2/24	1640

SAMPLE CONDITIONS: Temp in °C: 22 | Received on Ice (Y/N): Y | Custody Sealed Cooler (Y/N): N | Samples Intact (Y/N):

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tracy Carrel

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7/2/24

PM 9665/8966

Added NaOH(9543) to A213, R2717, R213 dup

PS 713

~~Dissolved container for~~ 080E (A213 dup) was mislabeled as unp.

TE on 7/3

CHAIN-OF-CUSTODY / Analytical Request Document

24061026

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW14	WT	G				2	1		1								X				X				24061026-017
2	APW15	WT	G				2	1		1								X				X				24061026-018
3	APW16	WT	G				2	1		1								X				X				24061026-019
4	APW17	WT	G				3	1		2								X				X		X		24061026-020
5	APW18	WT	G				2	1		1								X				X				24061026-021
6	G06D	WT	G				2	1		1									X							24061026-022
7	G104	WT	G				5	2	1	1		1									X					24061026-023
8	G104D	WT	G				0														X					24061026-024
9	G104S	WT	G				0														X					24061026-025
10	G105	WT	G				5	2	1	1		1									X					24061026-026
11	G106	WT	G				5	2	1	1		1									X					24061026-027
12	G109	WT	G				0														X					24061026-028
13	G111	WT	G				0														X					24061026-029
14	G112	WT	G				0														X					24061026-030
15	G113	WT	G				0														X					24061026-031
16	G114	WT	G				0														X					24061026-032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q3 Rev 1		7/2	1640	Nick Reed	7/2/24	1640	

SAMPLE CONDITIONS	Y	N	
Temp in °C			
Received on Ice (Y/N)			
Custody Sealed Cooler (Y/N)			
Samples Intact (Y/N)			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

CHAIN-OF-CUSTODY / Analytical Request Document

24061026

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000					Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G115	WT	G				0													X								24061026-033
2	G116	WT	G				5	2	1	1		1								X		X						24061026-034
3	G117	WT	G				0													X								24061026-035
4	G118	WT	G				0													X								24061026-036
5	G119	WT	G				0													X								24061026-037
6	G120	WT	G				0													X								24061026-038
7	G125	WT	G				5	2	1	1		1								X								24061026-039
8	G128	WT	G				5	2	1	1		1								X								24061026-040
9	G130	WT	G				5	2	1	1		1								X								24061026-041
10	G133	WT	G				5	2	1	1		1								X								24061026-042
11	G136	WT	G				5	2	1	1		1								X								24061026-043
12	G139	WT	G				5	2	1	1		1								X								24061026-044
13	G141	WT	G				5	2	1	1		1								X								24061026-045
14	G201	WT	G				2	1		1								X										24061026-046
15	G202	WT	G				2	1		1								X										24061026-047
16	G203	WT	G				2	1		1								X										24061026-048

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q3 Rev 1	[signature] CP	7/2	1640	[signature] Vistra Corp	7/2/24	1640	

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:			Y	N	
SIGNATURE of SAMPLER:	DATE Signed (MM/DD/YY):				

24061026

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N ↓ Analysis Test ↓	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G208	WT	G				2	1		1								X	X						24061026-049
2	G217S	WT	G				5	2	1	1		1							X						24061026-050
3	G218	WT	G				0												X						24061026-051
4	G220	WT	G				2	1		1								X	X						24061026-052
5	G221	WT	G	7-2-24	1248		5	2	1	1		1							X						24061026-053
6	G222	WT	G				2	1		1								X	X						24061026-054
7	G223	WT	G				2	1		1								X	X						24061026-055
8	G224	WT	G				2	1		1								X	X						24061026-056
9	G225	WT	G				5	2	1	1		1							X						24061026-057
10	G230	WT	G	7-2-24	1341		6	2	1	2		1						X	X						24061026-058
11	G231	WT	G				6	2	1	2		1						X	X						24061026-059
12	G232	WT	G				6	2	1	2		1						X	X						24061026-060
13	G233	WT	G				6	2	1	2		1						X	X						24061026-061
14	G234	WT	G				5	2	1	1		1							X						24061026-062
15	G48MG	WT	G				2	1		1								X							24061026-063
16	L1R	WT	G				2	1		1								X		X					24061026-064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Y	N	
NEW-24Q3 Rev 1		7/2	1640		7/2/24	1640				

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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24061026

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000					Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	L201	WT	G				0													X									24061026-065
2	L202	WT	G				0													X									24061026-066
3	L203	WT	G				0													X									24061026-067
4	L204	WT	G				0													X									24061026-068
5	L205	WT	G				0													X									24061026-069
6	L301	WT	G				2	1		1								X											24061026-070
7	R217D	WT	G	7-2-24	1134		6	2	1	2		1						X	X										24061026-071
8	R219	WT	G				5	2	1	1		1							X										24061026-072
9	SG02	WT	G				0										X				X								24061026-073
10	XPW01	WT	G				2	1		1											X								24061026-074
11	XPW02	WT	G				2	1		1											X								24061026-075
12	XPW03	WT	G				2	1		1											X								24061026-076
13	XPW04	WT	G				2	1		1											X								24061026-077
14	XSG01	WT	G				0										X				X								24061026-078
15	Field Blank	WT	G				6	4		1		1					X	X	X	X	X	X	X						24061026-079
16	A213 Duplicate	WT	G	7-2-24	0943		5	2	1	1		1							X										24061026-080

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q3 Rev 1		7/2	1640		7/2/24	1640	

SAMPLE CONDITIONS	Y	N	
Temp in °C			
Received on Ice (Y/N)			
Custody Sealed Cooler (Y/N)			
Samples Intact (Y/N)			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

24061026

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000					Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW02 Duplicate	WT	G				4	2		2							X				X	X							24061026-081
2	G104 Duplicate	WT	G				5	2	1	1		1								X									24061026-082
3	Equipment Blank 1	WT	G				6	4		1		1					X	X	X	X	X	X	X						24061026-083
4	Equipment Blank 2	WT	G				6	4		1		1					X	X	X	X	X	X	X						24061026-084
5	Equipment Blank 3	WT	G				6	4		1		1					X	X	X	X	X	X	X						24061026-085
6	LREP	WT	G				8	4		1	3								X										24061026-086
7																													
8																													
9																													
10																													
11																													
12																													
13																													
14																													
15																													
16																													

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q3 Rev 1		7/2	1640		7/2/24	1640	

SAMPLE CONDITIONS	Y	N	
Temp in °C			
Received on Ice (Y/N)			
Custody Sealed Cooler (Y/N)			
Samples Intact (Y/N)			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: (MM/DD/YY):

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CHAIN-OF-CUSTODY / Analytical Request Document

24061026

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Terry Hanratty
Address:	6725 N 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448		Sam Davies - samantha.davies@vistracorp.com	Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:	2285	Profile #:	

REGULATORY AGENCY		
NPDES	GROUND WATER	DRINKING WATER
UST	RCRA	OTHER
Site Location STATE:	IL	

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analysis Test: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A213	WT	G				5	2		1		1							X							24061026-001
2	A214	WT	G				5	2		1		1							X							24061026-002
3	A215	WT	G				5	2		1		1							X							24061026-003
4	APW02	WT	G				4	2		2							X				X	X				24061026-004
5	APW03	WT	G	7.8	1211		4	2		2							X				X	X				24061026-005
6	APW04	WT	G	7.8	1125		4	2		2							X				X	X				24061026-006
7	APW05	WT	G				3	1		2							X				X		X			24061026-007
8	APW05S	WT	G				2	1		1							X				X					24061026-008
9	APW06	WT	G				2	1		1							X				X					24061026-009
10	APW07	WT	G				3	1		2							X				X		X			24061026-010
11	APW08	WT	G				3	1		2							X				X		X			24061026-011
12	APW09	WT	G				3	1		2							X				X		X			24061026-012
13	APW10	WT	G				2	1		1							X				X					24061026-013
14	APW11	WT	G				2	1		1							X				X					24061026-014
15	APW12	WT	G				2	1		1							X				X					24061026-015
16	APW13	WT	G				2	1		1							X				X					24061026-016

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
NEW-24Q3 Rev 1	FB / Teklab	7.8	1515	Paul Seeley	7/8/24	1515		(Y)	N	
							2.3C	UG-7		

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Frank Barthol

SIGNATURE of SAMPLER: FB

DATE Signed (MM/DD/YY): 7.8.24

pH 9.66 / 9.96

Added NaOH (9593) to G104 & G104 dup

PS 7/8

Confidential

CHAIN-OF-CUSTODY / Analytical Request Document

24061026

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp-Newton	Report To: Brian Voelker	Attention: Terry Hanratty
Address: 6725 N 500th St	Copy To: Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name: Vistra Corp
Newton, IL 62448	Sam Davies - samantha.davies@vistracorp.com	Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000					Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW14	WT	G				2	1		1							X				X								24061026-017
2	APW15	WT	G				2	1		1							X				X								24061026-018
3	APW16	WT	G				2	1		1							X				X								24061026-019
4	APW17	WT	G				3	1		2							X				X		X						24061026-020
5	APW18	WT	G				2	1		1							X				X								24061026-021
6	G06D	WT	G				2	1		1								X											24061026-022
7	G104	WT	G	7.8	1146		5	2	1	1		1								X									24061026-023
8	G104D	WT	G				0													X									24061026-024
9	G104S	WT	G				0													X									24061026-025
10	G105	WT	G				5	2	1	1		1								X									24061026-026
11	G106	WT	G				5	2	1	1		1								X									24061026-027
12	G109	WT	G				0													X									24061026-028
13	G111	WT	G				0													X									24061026-029
14	G112	WT	G				0													X									24061026-030
15	G113	WT	G				0													X									24061026-031
16	G114	WT	G				0													X									24061026-032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q3 Rev 1	FB / TekLab	7.8	1515	[signature]	7/8/24	1515	

SAMPLER NAME AND SIGNATURE					
PRINT Name of SAMPLER:	Frank Barthol		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
SIGNATURE of SAMPLER:	FB	DATE Signed (MM/DD/YY): 7.8.24				

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp-Newton	Report To: Brian Voelker	Attention: Terry Hanratty
Address: 6725 N 500th St	Copy To: Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name: Vistra Corp
Newton, IL 62448	Sam Davies - samantha.davies@vistracorp.com	Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000					Residual Chlorine (Y/N)	Project No./ Lab I.D.
																Requested Analysis Filtered (Y/N)												
1	G208	WT	G				2	1		1								X	X									24061026-049
2	G217S	WT	G				5	2	1	1		1							X									24061026-050
3	G218	WT	G				0												X									24061026-051
4	G220	WT	G				2	1		1								X	X									24061026-052
5	G221	WT	G				5	2	1	1		1							X									24061026-053
6	G222	WT	G				2	1		1								X	X									24061026-054
7	G223	WT	G				2	1		1								X	X									24061026-055
8	G224	WT	G				2	1		1								X	X									24061026-056
9	G225	WT	G				5	2	1	1		1							X									24061026-057
10	G230	WT	G				6	2	1	2		1						X	X									24061026-058
11	G231	WT	G				6	2	1	2		1						X	X									24061026-059
12	G232	WT	G				6	2	1	2		1						X	X									24061026-060
13	G233	WT	G				6	2	1	2		1						X	X									24061026-061
14	G234	WT	G	7.8	1201		5	2	1	1		1							X									24061026-062
15	G48MG	WT	G				2	1		1								X										24061026-063
16	L1R	WT	G				2	1		1								X		X								24061026-064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Y	N	
NEW-24Q3 Rev 1	FB / TekLab	7.8	1515	Paul Deboy	7/8/24	1515				

SAMPLER NAME AND SIGNATURE					
PRINT Name of SAMPLER:	Frank Barthol		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
SIGNATURE of SAMPLER:	FB	DATE Signed (MM/DD/YY): 7.8.24				

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW02 Duplicate	WT	G				4	2		2							X				X	X			24061026-081
2	G104 Duplicate	WT	G	7.8	1146		5	2	1	1		1								X					24061026-082
3	Equipment Blank 1	WT	G				6	4		1		1					X	X	X	X	X	X	X		24061026-083
4	Equipment Blank 2	WT	G				6	4		1		1					X	X	X	X	X	X	X		24061026-084
5	Equipment Blank 3	WT	G				6	4		1		1					X	X	X	X	X	X	X		24061026-085
6	LREP	WT	G				8	4		1	3								X						24061026-086
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									
16																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Y	N	
NEW-24Q3 Rev 1	FB / TekLab	7.8	1515	[signature]	7/8/24	1515	Temp in °C	Received on ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: ~~FB~~ / ~~TekLab~~ Frank Barthel

SIGNATURE of SAMPLER: [signature] (MM/DD/YY): 7.8.24

CHAIN-OF-CUSTODY / Analytical Request Document

24061026

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A213	WT	G				5	2		1		1							X						24061026-001
2	A214	WT	G				5	2		1		1							X						24061026-002
3	A215	WT	G				5	2		1		1							X						24061026-003
* 4	APW02	WT	G	7-8-24	1452		4	2		2							X				X	X			24061026-004
5	APW03	WT	G				4	2		2							X				X	X			24061026-005
6	APW04	WT	G				4	2		2							X				X	X			24061026-006
7	APW05	WT	G				3	1		2							X				X		X		24061026-007
* 8	APW05S	WT	G	7-8-24	1411		2	1		1							X				X				24061026-008
9	APW06	WT	G				2	1		1							X				X				24061026-009
10	APW07	WT	G				3	1		2							X				X		X		24061026-010
11	APW08	WT	G				3	1		2							X				X		X		24061026-011
12	APW09	WT	G				3	1		2							X				X		X		24061026-012
13	APW10	WT	G				2	1		1							X				X				24061026-013
14	APW11	WT	G				2	1		1							X				X				24061026-014
15	APW12	WT	G				2	1		1							X				X				24061026-015
16	APW13	WT	G				2	1		1							X				X				24061026-016

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Y	N	
NEW-24Q3 Rev 1		7/9/24	1415		7/9/24	1415				
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tracy Carroll

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7/9/24

PHW 96651/89660
Added HNO3(98584)
added NaOH(95443) to G106)
LH 7/9/24

Temp 12.5 CG5
On ice

Confidential

CHAIN-OF-CUSTODY / Analytical Request Document

24061026

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Terry Hanratty
Address:	6725 N 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448		Sam Davies - samantha.davies@vistracorp.com	Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:	2285	Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW14	WT	G	7.8.24	1347		2	1		1							X				X				24061026-017
2	APW15	WT	G	7.8.24	1444		2	1		1							X				X				24061026-018
3	APW16	WT	G				2	1		1							X				X				24061026-019
4	APW17	WT	G				3	1		2							X				X		X		24061026-020
5	APW18	WT	G	7-9-24	1102		2	1		1							X				X				24061026-021
6	G06D	WT	G				2	1		1								X							24061026-022
7	G104	WT	G	7-8-24			5	2	1	1		1								X					24061026-023
8	G104D	WT	G				0													X					24061026-024
9	G104S	WT	G				0													X					24061026-025
10	G105	WT	G	7-9-24	1022		5	2	1	1		1								X					24061026-026
11	G106	WT	G	7-9-24	0950		5	2	1	1		1								X					24061026-027
12	G109	WT	G				0													X					24061026-028
13	G111	WT	G				0													X					24061026-029
14	G112	WT	G				0													X					24061026-030
15	G113	WT	G				0													X					24061026-031
16	G114	WT	G				0													X					24061026-032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q3 Rev 1	Wayne	7/9/24	1415		7/9/24	1415	

SAMPLE CONDITIONS: Y | N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Travis Ford

SIGNATURE of SAMPLER: Travis Ford DATE Signed (MM/DD/YY): 7/9/24

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Confidential

CHAIN-OF-CUSTODY / Analytical Request Document

24061026

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Terry Hanratty
Address:	6725 N 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448		Sam Davies - samantha.davies@vistracorp.com	Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:	2285	Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G115	WT	G				0													X					24061026-033
2	G116	WT	G				5	2	1	1		1								X		X			24061026-034
3	G117	WT	G				0													X					24061026-035
4	G118	WT	G				0													X					24061026-036
5	G119	WT	G				0													X					24061026-037
6	G120	WT	G				0													X					24061026-038
7	G125	WT	G				5	2	1	1		1								X					24061026-039
8	G128	WT	G				5	2	1	1		1								X					24061026-040
9	G130	WT	G				5	2	1	1		1								X					24061026-041
10	G133	WT	G				5	2	1	1		1								X					24061026-042
11	G136	WT	G				5	2	1	1		1								X					24061026-043
12	G139	WT	G				5	2	1	1		1								X					24061026-044
13	G141	WT	G	7-9-24	1118		5	2	1	1		1								X					24061026-045
14	G201	WT	G				2	1		1								X							24061026-046
15	G202	WT	G				2	1		1								X							24061026-047
16	G203	WT	G				2	1		1								X							24061026-048

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q3 Rev 1		7/9/24	1415		7/9/24	1405	

SAMPLE CONDITIONS: Y / N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 7/9/24

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Confidential

24061026

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G208	WT	G				2	1		1								X	X						24061026-049
2	G217S	WT	G				5	2	1	1		1							X						24061026-050
3	G218	WT	G				0												X						24061026-051
4	G220	WT	G				2	1		1								X	X						24061026-052
5	G221	WT	G				5	2	1	1		1							X						24061026-053
* 6	G222	WT	G	7-8-24	1435		2	1		1								X	X						24061026-054
7	G223	WT	G				2	1		1								X	X						24061026-055
* 8	G224	WT	G	7-8-24	1338		2	1		1								X	X						24061026-056
9	G225	WT	G	7-9-24	928		5	2	1	1		1							X						24061026-057
10	G230	WT	G				6	2	1	2		1						X	X						24061026-058
11	G231	WT	G				6	2	1	2		1						X	X						24061026-059
* 12	G232	WT	G	7.9.24	1127		6	2	1	2		1						X	X						24061026-060
* 13	G233	WT	G	7.9.24	941		6	2	1	2		1						X	X						24061026-061
14	G234	WT	G				5	2	1	1		1							X						24061026-062
15	G48MG	WT	G				2	1		1								X							24061026-063
16	L1R	WT	G				2	1		1								X		X					24061026-064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q3 Rev 1		7/9/24	1415		7/9/24	1415	

SAMPLE CONDITIONS: Y / N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tracy Cowch

SIGNATURE of SAMPLER: Tracy Cowch DATE Signed (MM/DD/YY): 7/9/24

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

24061026

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000					Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW02 Duplicate	WT	G	7-9-24	1454		4	2		2							X				X	X							24061026-081
2	G104 Duplicate	WT	G				5	2	1	1		1								X									24061026-082
3	Equipment Blank 1	WT	G				6	4		1		1					X	X	X	X	X	X	X						24061026-083
4	Equipment Blank 2	WT	G				6	4		1		1					X	X	X	X	X	X	X						24061026-084
5	Equipment Blank 3	WT	G				6	4		1		1					X	X	X	X	X	X	X						24061026-085
6	LREP	WT	G				8	4		1	3								X										24061026-086
7																													
8																													
9																													
10																													
11																													
12																													
13																													
14																													
15																													
16																													

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q3 Rev 1		7/9/24	1415		7/9/24	1415	

SAMPLER NAME AND SIGNATURE						
PRINT Name of SAMPLER:	Isaac Carver	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)	
SIGNATURE of SAMPLER:	(MM/DD/YY): 7/9/24		Y	N		

CHAIN-OF-CUSTODY / Analytical Request Document

24061026

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A213	WT	G				5	2		1		1							X							24061026-001
2	A214	WT	G				5	2		1		1							X							24061026-002
3	A215	WT	G				5	2		1		1							X							24061026-003
4	APW02	WT	G				4	2		2							X				X	X				24061026-004
5	APW03	WT	G				4	2		2							X				X	X				24061026-005
6	APW04	WT	G				4	2		2							X				X	X				24061026-006
7	APW05	WT	G				3	1		2							X				X		X			24061026-007
8	APW05S	WT	G				2	1		1							X				X					24061026-008
9	APW06	WT	G				2	1		1							X				X					24061026-009
10	APW07	WT	G				3	1		2							X				X		X			24061026-010
11	APW08	WT	G	7-9-24	1315		3	1		2							X				X		X			24061026-011
12	APW09	WT	G				3	1		2							X				X		X			24061026-012
13	APW10	WT	G				2	1		1							X				X					24061026-013
14	APW11	WT	G				2	1		1							X				X					24061026-014
15	APW12	WT	G				2	1		1							X				X					24061026-015
16	APW13	WT	G				2	1		1							X				X					24061026-016

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q3 Rev 1		7/10/24	1525		7/10/24	1525

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Y	N	
3.5	Y		

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: T Conrad

SIGNATURE of SAMPLER: T Conrad DATE Signed (MM/DD/YY): 7/10/24

CTG 5 on ice

CHAIN-OF-CUSTODY / Analytical Request Document

24061026

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Terry Hanratty
Address:	6725 N 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448		Sam Davies - samantha.davies@vistracorp.com	Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:	2285	Profile #:	

REGULATORY AGENCY		
NPDES	GROUND WATER	DRINKING WATER
UST	RCRA	OTHER
Site Location STATE:	IL	

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N ↓ Analysis Test ↓	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000						Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW14	WT	G				2	1		1							X				X								24061026-017
2	APW15	WT	G				2	1		1							X				X								24061026-018
3	APW16	WT	G	7-10-24	0903		2	1		1							X				X								24061026-019
4	APW17	WT	G	7.9.24	1138		3	1		2							X				X		X						24061026-020
5	APW18	WT	G				2	1		1							X				X								24061026-021
6	G06D	WT	G	7.10.24	1004		2	1		1								X											24061026-022
7	G104	WT	G				5	2	1	1		1								X									24061026-023
8	G104D	WT	G				0													X									24061026-024
9	G104S	WT	G				0													X									24061026-025
10	G105	WT	G				5	2	1	1		1								X									24061026-026
11	G106	WT	G				5	2	1	1		1								X									24061026-027
12	G109	WT	G				0													X									24061026-028
13	G111	WT	G				0													X									24061026-029
14	G112	WT	G				0													X									24061026-030
15	G113	WT	G				0													X									24061026-031
16	G114	WT	G				0													X									24061026-032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Y	N	
NEW-24Q3 Rev 1		7/10/24	1525		7/10/24	1525				
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: T Carroll

SIGNATURE of SAMPLER: Tracy Carroll

DATE Signed (MM/DD/YY): 7/10/24

CHAIN-OF-CUSTODY / Analytical Request Document

24061026

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G115	WT	G				0													X					24061026-033
2	G116	WT	G				5	2	1	1		1								X		X			24061026-034
3	G117	WT	G				0													X					24061026-035
4	G118	WT	G				0													X					24061026-036
5	G119	WT	G				0													X					24061026-037
6	G120	WT	G				0													X					24061026-038
7	G125	WT	G	7/10/24	0940		5	2	1	1		1								X					24061026-039
8	G128	WT	G	7-10-24	1236		5	2	1	1		1								X					24061026-040
9	G130	WT	G	7/10/24	1126		5	2	1	1		1								X					24061026-041
10	G133	WT	G	7/10/24	1052		5	2	1	1		1								X					24061026-042
11	G136	WT	G	7/10/24	1206		5	2	1	1		1								X					24061026-043
12	G139	WT	G	7/10/24	1237		5	2	1	1		1								X					24061026-044
13	G141	WT	G				5	2	1	1		1								X					24061026-045
14	G201	WT	G	7-10-24	1155		2	1		1								X							24061026-046
15	G202	WT	G	7.9.24	1256		2	1		1								X							24061026-047
16	G203	WT	G	7.9.24	1331		2	1		1								X							24061026-048

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Y	N	
NEW-24Q3 Rev 1		7/10/24	1525		7/10/24	1525				

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Trevor

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7/10/24

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Collection dates/times per field file for G125, G130, G133, G136, and G139. EAH 8/9/24

24061026

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G208	WT	G				2	1		1								X	X						24061026-049
2	G217S	WT	G				5	2	1	1		1							X						24061026-050
3	G218	WT	G				0												X						24061026-051
4	G220	WT	G	7.10.24	1059		2	1		1								X	X						24061026-052
5	G221	WT	G				5	2	1	1		1							X						24061026-053
6	G222	WT	G				2	1		1								X	X						24061026-054
7	G223	WT	G	7.10.24	1158		2	1		1								X	X						24061026-055
8	G224	WT	G				2	1		1								X	X						24061026-056
9	G225	WT	G				5	2	1	1		1							X						24061026-057
10	G230	WT	G		1119		6	2	1	2		1						X	X						24061026-058
11	G231	WT	G	7.10-24	~~1225~~ 1119		6	2	1	2		1						X	X						24061026-059
12	G232	WT	G				6	2	1	2		1						X	X						24061026-060
13	G233	WT	G				6	2	1	2		1						X	X						24061026-061
14	G234	WT	G				5	2	1	1		1							X						24061026-062
15	G48MG	WT	G				2	1		1								X							24061026-063
16	L1R	WT	G				2	1		1								X		X					24061026-064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q3 Rev 1		7/10/24	1525		7/10/24	1525	

SAMPLE CONDITIONS	Y	N	
Temp in °C			
Received on Ice (Y/N)			
Custody Sealed Cooler (Y/N)			
Samples Intact (Y/N)			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Linnenbrink

SIGNATURE of SAMPLER: David Linnenbrink

DATE Signed (MM/DD/YY): 7/10/24

24061026

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Vistra Corp-Newton	Report To: Brian Voelker	Attention: Terry Hanratty
Address: 6725 N 500th St	Copy To: Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name: Vistra Corp
Newton, IL 62448	Sam Davies - samantha.davies@vistracorp.com	Address: see Section A
Email To: Brian.Voelker@VistraCorp.com	Purchase Order No.:	Quote Reference:
Phone: (217) 753-8911 Fax:	Project Name:	Project Manager:
Requested Due Date/TAT: 10 day	Project Number: 2285	Profile #:

REGULATORY AGENCY: NPDES GROUND WATER DRINKING WATER; UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	L201	WT	G				0													X					24061026-065
2	L202	WT	G				0													X					24061026-066
3	L203	WT	G				0													X					24061026-067
4	L204	WT	G				0													X					24061026-068
5	L205	WT	G				0													X					24061026-069
6	L301	WT	G				2	1		1								X							24061026-070
7	R217D	WT	G				6	2	1	2		1						X	X						24061026-071
8	R219	WT	G				5	2	1	1		1							X						24061026-072
9	SG02	WT	G				0										X					X			24061026-073
10	XPW01	WT	G				2	1		1												X			24061026-074
11	XPW02	WT	G				2	1		1												X			24061026-075
12	XPW03	WT	G				2	1		1												X			24061026-076
13	XPW04	WT	G				2	1		1												X			24061026-077
14	XSG01	WT	G				0										X					X			24061026-078
15	Field Blank	WT	G				6	4		1		1					X	X	X	X	X	X	X		24061026-079
16	A213 Duplicate	WT	G				5	2	1	1		1							X						24061026-080

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q3 Rev 1		7/10/24	1525		7/10/24	1525	

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER: T Carroll			Y	N	
SIGNATURE of SAMPLER:	DATE Signed (MM/DD/YY): 7/10/24				

24061026

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000					Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW02 Duplicate	WT	G				4	2		2							X				X	X						24061026-081
2	G104 Duplicate	WT	G				5	2	1	1		1								X								24061026-082
3	Equipment Blank 1	WT	G				6	4		1		1					X	X	X	X	X	X	X						24061026-083
4	Equipment Blank 2	WT	G				6	4		1		1					X	X	X	X	X	X	X						24061026-084
5	Equipment Blank 3	WT	G				6	4		1		1					X	X	X	X	X	X	X						24061026-085
6	LREP	WT	G				8	4		1	3								X									24061026-086
7	RZND RSample			7-10-24	0932																							
8	G230 RSample			↓	1002																							
9	G121 RSample				1025																							
10																												
11																												
12																												
13																												
14																												
15																												
16																												

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q3 Rev 1		7/10/24	1525		7/10/24	1525	

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:				Y	N	
SIGNATURE of SAMPLER:	(MM/DD/YY): 7/10/24					

CHAIN-OF-CUSTODY / Analytical Request Document

24061026

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Terry Hanratty
Address:	6725 N 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448		Sam Davies - samantha.davies@vistracorp.com	Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:	2285	Profile #:	

REGULATORY AGENCY		
NPDES	GROUND WATER	DRINKING WATER
UST	RCRA	OTHER
Site Location STATE:	IL	

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G115	WT	G				0													X					24061026-033
2	G116	WT	G	7-11-24	924		5	2	1	1		1								X		X			24061026-034
3	G117	WT	G				0													X					24061026-035
4	G118	WT	G				0													X					24061026-036
5	G119	WT	G				0													X					24061026-037
6	G120	WT	G				0													X					24061026-038
7	G125	WT	G				5	2	1	1		1								X					24061026-039
8	G128	WT	G				5	2	1	1		1								X					24061026-040
9	G130	WT	G				5	2	1	1		1								X					24061026-041
10	G133	WT	G				5	2	1	1		1								X					24061026-042
11	G136	WT	G				5	2	1	1		1								X					24061026-043
12	G139	WT	G				5	2	1	1		1								X					24061026-044
13	G141	WT	G				5	2	1	1		1								X					24061026-045
14	G201	WT	G				2	1		1								X							24061026-046
15	G202	WT	G				2	1		1								X							24061026-047
16	G203	WT	G				2	1		1								X							24061026-048

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q3 Rev 1		7-11-24	1400		7/11/24	1400

SAMPLE CONDITIONS				
	Y	N		
2.9	ice			
Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brett Gillihan

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7-11-24

UG7

PhV906651/896060

added HNO3 (98584) to L1R, XPW01

added NAOH (95443) to G215 11a 7/11

Confidential

24061026

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
								Requested Analysis Filtered (Y/N)																		
1	G208	WT	G				2	1		1								X	X						24061026-049
2	G217S	WT	G	7/10/24	13:40		5	2	1	1		1							X						24061026-050
3	G218	WT	G				0												X						24061026-051
4	G220	WT	G				2	1		1								X	X						24061026-052
5	G221	WT	G				5	2	1	1		1							X						24061026-053
6	G222	WT	G				2	1		1								X	X						24061026-054
7	G223	WT	G				2	1		1								X	X						24061026-055
8	G224	WT	G				2	1		1								X	X						24061026-056
9	G225	WT	G				5	2	1	1		1							X						24061026-057
10	G230	WT	G				6	2	1	2		1						X	X						24061026-058
11	G231	WT	G				6	2	1	2		1						X	X						24061026-059
12	G232	WT	G				6	2	1	2		1						X	X						24061026-060
13	G233	WT	G				6	2	1	2		1						X	X						24061026-061
14	G234	WT	G				5	2	1	1		1							X						24061026-062
15	G48MG	WT	G	7-11-24	0857		2	1		1								X							24061026-063
16	L1R	WT	G	7-11-24	1020		2	1		1								X		X					24061026-064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q3 Rev 1	[signature]	7-11-24	1400	[signature]	7/11/24	1400

SAMPLE CONDITIONS	Y	N	
Temp in °C	2.9		
Received on Ice (Y/N)	Y		
Custody Sealed Cooler (Y/N)		N	
Samples Intact (Y/N)			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brett Gillihan

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7-11-24

CTG7

24061026

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	2285

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	L201	WT	G				0													X					24061026-065
2	L202	WT	G				0													X					24061026-066
3	L203	WT	G				0													X					24061026-067
4	L204	WT	G				0													X					24061026-068
5	L205	WT	G				0													X					24061026-069
6	L301	WT	G	7-10-24	1002		2	1		1								X							24061026-070
7	R217D S	WT	G	~~7-10-24~~	~~1340~~ TE		6	2	1	2		1						X	X						24061026-071
8	R219	WT	G	7-10-24	1341 BG 7/11		5	2	1	1		1							X						24061026-072
9	SG02	WT	G				0										X				X				24061026-073
10	XPW01	WT	G	7.10.24	1344		2	1		1											X				24061026-074
11	XPW02	WT	G	7.11.24	0925		2	1		1											X				24061026-075
12	XPW03	WT	G	7.11.24	1004		2	1		1											X				24061026-076
13	XPW04	WT	G	7.11.24	922		2	1		1											X				24061026-077
14	XSG01	WT	G				0										X				X				24061026-078
15	Field Blank	WT	G	7-11-24	1005		6	4		1		1					X	X	X	X	X	X	X		24061026-079
16	A213 Duplicate	WT	G				5	2	1	1		1							X						24061026-080

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q3 Rev 1	[signature]	7-11-24	1410	[signature]	7/11/24	1400

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
2.9 Ice	Y		

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brett Gilliam

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7-11-24

LTG7

24061026

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 6 of 6

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Terry Hanratty
Address:	6725 N 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448		Sam Davies - samantha.davies@vistracorp.com	Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:	2285	Profile #:	

REGULATORY AGENCY		
NPDES	GROUND WATER	DRINKING WATER
UST	RCRA	OTHER

Site Location STATE: IL

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW02 Duplicate	WT	G				4	2		2							X				X	X				24061026-081
2	G104 Duplicate	WT	G				5	2	1	1		1								X						24061026-082
3	Equipment Blank 1	WT	G	7-11-24	1015		6	4		1		1					X	X	X	X	X	X	X			24061026-083
4	Equipment Blank 2	WT	G				6	4		1		1					X	X	X	X	X	X	X			24061026-084
5	Equipment Blank 3	WT	G				6	4		1		1					X	X	X	X	X	X	X			24061026-085
6	LREP	WT	G	~~7-11-24~~	~~1020~~		8	4		1	3								X							24061026-086
7																										
8																										
9																										
10																										
11																										
12																										
13																										
14																										
15																										
16																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q3 Rev 1		7-11-24	1400		7/11/24	1450

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
2.9	Y		
	N		

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: [illegible]

SIGNATURE of SAMPLER: [signature] (MM/DD/YY): 7-11-24

DTG7

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

24061026

Page: 1 of 2

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Terry Hanratty
Address:	6725 N 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448		Sam Davies - samantha.davies@vistracorp.com	Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:		Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

Resampling + new wells.

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	NEW-NE-501	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW02	WT	G	8-7	1331		4	2		2							X				X	X		X			24061026-090
2	APW05S	WT	G	8-7	1008		3	1		2							X				X	X		X			24061026-091
3	APW14	WT	G	8-7	1238		3	1		2							X				X			X			24061026-092
4	APW15	WT	G	8-7	1155		3	1		2							X				X			X			24061026-093
5	APW19S	WT	G	8-7	1125		3	1		2														X			24061026-094
6	APW20S *	WT	G	8-7	1229		3	1		2														X			24061026-095
7	APW21S	WT	G	8-7	1148		3	1		2														X			24061026-096
8	APW22S	WT	G	8-8	0940		3	1		2														X			24061026-097
9	APW23S	WT	G	8-8	1025		3	1		2														X			24061026-098
10	APW23	WT	G	8-8	1055		3	1		2														X			24061026-099
11	G222	WT	G	8-7	1118		3	1		2								X	X								24061026-100
12	G224	WT	G	8-7	1051		3	1		2								X	X								24061026-101
13	Field Blank 2	WT	G	8-8	1105		4	3		1							X	X	X		X	X		X			24061026-102
14	APW02 Duplicate	WT	G	8-7	1331		4	2		2							X				X	X		X			24061026-103
15	APW19S Duplicate	WT	G	8-7	1125		3	1		2														X			24061026-104
16	Equipment Blank 2	WT	G	8-8	1113		4	3		1							X	X	X		X	X		X			24061026-105

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q3 Rev 2		8-8	1424		8/8/24	1424

SAMPLE CONDITIONS			
1.5 #5	Y	N	
Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Colp

SIGNATURE of SAMPLER: Justin Colp DATE Signed (MM/DD/YY): 8-7-24

* went dry during reads

Added HNO_3 (99172) to APW15, APW22S & G222.

pH < 2 (es) QM 8/8/24

CHAIN-OF-CUSTODY / Analytical Request Document

24061026

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 2 of 2

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
	Sam Davies - samantha.davies@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	

Section C Invoice Information:

Attention:	Terry Hanratty
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

Resampling + new wells.

ITEM #	Sample ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-257-502	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NPDES-501	NEW-SUP-000	NEW-NE-501					Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	Equipment Blank 3	WT	G	8-7	1345		4	3		1							X	X	X		X	X		X						24061026-106
2																														
3																														
4																														
5																														
6																														
7																														
8																														
9																														
10																														
11																														
12																														
13																														
14																														
15																														
16																														

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q3 Rev 2		8-8	1424		8/8/24	1424	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Culp

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 8-8-24

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Y	N	

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW02
Project Location:	Netwon, IL	**Sample ID:**	004
W.O. Number (s):	24091272	**Date (s):**	10/2/2024

Field Team Members

Name: Justin Colp — Affiliation: TekLab, Inc.

Name: Danny Crump — Affiliation: TekLab, Inc.

Weather Conditions

Temp: 61 °F — Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy — Sky: ☐ Clear ☐ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/2/2024 10:22

Static Water Level: 7.12 feet below TOC

Total Depth: 23.70 feet below TOC

Water Column: 16.58 feet

Purging Activities

Purged By: JC — Purge Date: 10/2/2024

Purge Method: Peristaltic Pump — Well Diameter: 2"

Purge Volume Calculation (L): 16.58 ft. x 16.58 = 0.36 L x 3 Vol. = 1.08 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 6.00 L

Physical appearance of purge water: Clear — Odor: None — Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
10:22	0.0	222	purge start time						
10:28	1.3	↓	6.18	5,033.30	17.79	3.59	7.60	75.04	
10:31	2.0		6.09	5,020.80	17.96	2.96	18.60	72.64	
10:34	2.7		6.10	4,996.20	18.02	2.55	2.80	69.71	
10:37	3.3		6.04	4,988.10	18.28	2.29	7.40	63.50	
10:40	4.0		6.08	4,964.20	18.41	2.08	16.80	59.06	
10:43	4.7		6.13	4,917.60	18.42	1.88	20.90	56.62	
10:46	5.3		6.09	4,862.20	18.54	1.75	20.40	58.85	
10:49	6.0		6.11	4,815.80	18.52	1.62	19.40	65.30	

Sampling Activities

Sampled By: JC — Sample Date/Time: 10/2/2024 10:49

Sample Method: Low Flow — Sample Equipment: Peristaltic Pump

Sample Parameters: 6.11 pH — 4,815.80 Spec. Cond. — 18.52 Temp

Field Filtered: Yes — Filter Type: In line disposable

Water Level: 11.31 feet below TOC — Drawdown: 4.19 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp — **Date:** 10/2/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW03
Project Location:	Netwon, IL	**Sample ID:**	005
W.O. Number (s):	24091272	**Date (s):**	10/7/2024

Field Team Members

Name: Brett Gillihan Affiliation: TekLab, Inc.

Name: Tracy Carroll Affiliation: TekLab, Inc.

Weather Conditions

Temp: 64 °F Wind Direction: ☐ N ☐ S ☐ E ☐ EW ☑ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy Sky: ☑ Clear ☐ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/7/2024 11:08

Static Water Level: 7.83 feet below TOC

Total Depth: 24.00 feet below TOC

Water Column: 16.17 feet

Purging Activities

Purged By: BG Purge Date: 10/7/2024

Purge Method: Peristaltic Pump Well Diameter: 2"

Purge Volume Calculation (L): 16.17 ft. x 16.17 = 0.36 L x 3 Vol. = 1.08 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 2.00 L

Physical appearance of purge water: Clear Odor: None Color: None

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
11:09	0.0	143	purge start time						
11:14	0.8	↓	6.50	1,225.00	19.45	1.53	-30.00	6.06	
11:17	1.3		6.49	1,224.70	19.81	1.58	-18.90	6.26	
11:20	1.7		6.49	1,221.90	19.89	1.53	-11.10	6.98	
11:23	2.1		6.49	1,221.00	19.83	1.49	-5.00	5.31	

Sampling Activities

Sampled By: TC Sample Date/Time: 10/7/2024 11:23

Sample Method: Low Flow Sample Equipment: Peristaltic Pump

Sample Parameters: 6.49 pH 1,221.00 Spec. Cond. 19.83 Temp

Field Filtered: Yes Filter Type: In line disposable

Water Level: 10.12 feet below TOC Drawdown: 2.29 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 46868

Form Completed By: Tracy Carroll **Date:** 10/7/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW04
Project Location:	Netwon, IL	**Sample ID:**	006
W.O. Number (s):	24091272	**Date (s):**	10/7/2024

Field Team Members

Name: Brett Gillihan Affiliation: TekLab, Inc.

Name: Tracy Carroll Affiliation: TekLab, Inc.

Weather Conditions

Temp: 65 °F Wind Direction: ☐ N ☐ S ☐ E ☐ EW ☑ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy Sky: ☑ Clear ☐ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/7/2024 11:41

Static Water Level: 5.55 feet below TOC

Total Depth: 21.60 feet below TOC

Water Column: 16.05 feet

Purging Activities

Purged By: BG Purge Date: 10/7/2024

Purge Method: Peristaltic Pump Well Diameter: 2"

Purge Volume Calculation (L): 16.05 ft. x 16.05 = 0.35 L x 3 Vol. = 1.05 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 4.50 L

Physical appearance of purge water: Clear Odor: None Color: None

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
11:42	0.0	110	purge start time						
12:08	2.9	↓	6.41	2,656.50	18.27	1.95	68.20	3.21	
12:11	3.2		6.41	2,658.40	18.32	1.86	67.30	1.51	
12:14	3.5		6.41	2,661.90	18.49	1.72	66.90	1.05	
12:17	3.9		6.41	2,665.00	18.71	1.65	67.20	1.17	
12:20	4.2		6.41	2,665.30	18.85	1.60	67.20	0.79	
12:23	4.5		6.41	2,668.50	18.72	1.55	67.40	5.89	

Sampling Activities

Sampled By: TC Sample Date/Time: 10/7/2024 12:23

Sample Method: Low Flow Sample Equipment: Peristaltic Pump

Sample Parameters: 6.41 pH 2,668.50 Spec. Cond. 18.72 Temp

Field Filtered: Yes Filter Type: In line disposable

Water Level: 9.82 feet below TOC Drawdown: 4.27 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 46868

Form Completed By: Brett Gillihan **Date:** 10/7/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW05
Project Location:	Netwon, IL	**Sample ID:**	007
W.O. Number (s):	24091272	**Date (s):**	10/2/2024

Field Team Members

Name: Justin Colp Affiliation: TekLab, Inc.

Name: Danny Crump Affiliation: TekLab, Inc.

Weather Conditions

Temp: 65 °F Wind Direction: ☐ N ☐ S ☐ E ☑ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy Sky: ☑ Clear ☐ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/2/2024 11:27

Static Water Level: 14.40 feet below TOC

Total Depth: 70.80 feet below TOC

Water Column: 56.40 feet

Purging Activities

Purged By: JC Purge Date: 10/2/2024

Purge Method: Bladder Pump Well Diameter: 2"

Purge Volume Calculation (L): 56.4 ft. x 56.4 = 1.24 L x 3 Vol. = 3.72 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 4.00 L

Physical appearance of purge water: Clear Odor: None Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
11:28	0.0	222	purge start time						
11:34	1.5	↓	7.05	917.80	15.66	1.54	-139.40	7.34	
11:37	2.1		6.85	920.10	15.62	1.02	-164.30	4.94	
11:40	2.8		6.61	919.20	15.61	0.89	-171.20	12.08	
11:43	3.5		6.54	916.50	15.62	0.83	-171.80	15.79	
11:46	4.1		6.48	915.90	15.70	0.80	-170.20	19.98	

Sampling Activities

Sampled By: JC Sample Date/Time: 10/2/2024 11:46

Sample Method: Low Flow Sample Equipment: Bladder Pump

Sample Parameters: 6.48 pH 915.90 Spec. Cond. 15.70 Temp

Field Filtered: Yes Filter Type: In line disposable

Water Level: 14.49 feet below TOC Drawdown: 0.09 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp **Date:** 10/2/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW05S
Project Location:	Netwon, IL	**Sample ID:**	008
W.O. Number (s):	24091272	**Date (s):**	10/2/2024

Field Team Members

Name: Justin Colp — Affiliation: TekLab, Inc.

Name: Danny Crump — Affiliation: TekLab, Inc.

Weather Conditions

Temp: 66 °F — Wind Direction: ☐ N ☐ S ☐ E ☐ EW ☑ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy — Sky: ☑ Clear ☐ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/2/2024 11:43

Static Water Level: 13.50 feet below TOC

Total Depth: 22.90 feet below TOC

Water Column: 9.40 feet

Purging Activities

Purged By: JC — Purge Date: 10/2/2024

Purge Method: Peristaltic Pump — Well Diameter: 2"

Purge Volume Calculation (L): 9.4 ft. x 9.4 = 0.21 L x 3 Vol. = 0.63 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 6.00 L

Physical appearance of purge water: Clear — Odor: None — Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
11:43	0.0	171	purge start time						
11:51	1.5	↓	5.87	3,702.20	18.08	2.36	-18.40	4.53	
11:54	2.0		6.00	3,733.60	18.41	2.23	-10.70	4.54	
11:57	2.6		6.05	3,726.60	18.33	2.09	-7.30	4.24	
12:00	3.1		6.08	3,706.30	18.26	1.90	-5.10	31.67	
12:03	3.6		6.05	3,672.30	18.25	1.77	-3.00	43.01	
12:06	4.1		6.00	3,678.50	18.32	1.69	-0.20	176.77	
12:09	4.6		5.94	3,667.70	18.41	1.57	2.80	55.43	
12:12	5.1		5.93	3,662.00	18.27	1.48	6.80	1.80	
12:15	5.6		5.98	3,668.70	18.40	1.40	11.20	1.18	
12:18	6.2		6.13	3,665.90	18.54	1.37	15.30	1.27	

Sampling Activities

Sampled By: JC — Sample Date/Time: 10/2/2024 12:18

Sample Method: Low Flow — Sample Equipment: Peristaltic Pump

Sample Parameters: 6.13 pH — 3,665.90 Spec. Cond. — 18.54 Temp

Field Filtered: Yes — Filter Type: In line disposable

Water Level: 14.19 feet below TOC — Drawdown: 0.69 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp — **Date:** 10/2/2024

Field Data Sheet

Project Name: NEW- 24Q4 | **Monitoring Point:** APW06
Project Location: Netwon, IL | **Sample ID:** 009
W.O. Number (s): 24091272 | **Date (s):** 10/8/2024

Field Team Members

Name: Justin Colp | Affiliation: TekLab, Inc.
Name: Danny Crump | Affiliation: TekLab, Inc.

Weather Conditions

Temp: 53 °F | Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy | Sky: ☑ Clear ☐ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/8/2024 9:12
Static Water Level: 19.51 feet below TOC
Total Depth: 76.10 feet below TOC
Water Column: 56.59 feet

Purging Activities

Purged By: JC | Purge Date: 10/8/2024
Purge Method: Submersible Pump | Well Diameter: 2"
Purge Volume Calculation (L): 56.59 ft. x 56.59 = 1.24 L x 3 Vol. = 3.72 L **Based on Low-Flow (3/8" discharge)*
Actual Purge Volume (L): 4.00 L
Physical appearance of purge water: Clear | Odor: None | Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
9:16	0.0	235	purge start time						
9:21	1.2	↓	7.43	699.00	14.23	1.88	-107.80	5.11	
9:24	1.9		7.46	698.50	14.68	1.15	-127.40	5.53	
9:27	2.6		7.47	699.00	14.89	0.92	-135.70	4.27	
9:30	3.3		7.48	699.00	15.19	0.85	-139.80	3.52	
9:33	4.0		7.48	698.80	15.57	0.78	-142.30	2.96	

Sampling Activities

Sampled By: JC | Sample Date/Time: 10/8/2024 9:33
Sample Method: Low Flow | Sample Equipment: Submersible Pump
Sample Parameters: 7.48 pH | 698.80 Spec. Cond. | 15.57 Temp
Field Filtered: Yes | Filter Type: In line disposable
Water Level: 21.00 feet below TOC | Drawdown: 1.49 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp | **Date:** 10/8/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW07
Project Location:	Netwon, IL	**Sample ID:**	010
W.O. Number (s):	24091272	**Date (s):**	10/8/2024

Field Team Members

Name: Justin Colp Affiliation: TekLab, Inc.

Name: Danny Crump Affiliation: TekLab, Inc.

Weather Conditions

Temp: 57 °F Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy Sky: ☑ Clear ☐ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/8/2024 9:47

Static Water Level: 47.60 feet below TOC

Total Depth: 85.80 feet below TOC

Water Column: 38.20 feet

Purging Activities

Purged By: JC Purge Date: 10/8/2024

Purge Method: Submersible Pump Well Diameter: 2"

Purge Volume Calculation (L): 38.2 ft. x 38.2 = 0.84 L x 3 Vol. = 2.52 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 3.50 L

Physical appearance of purge water: Clear Odor: None Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
9:51	0.0	250	purge start time						
9:56	1.3	↓	7.18	859.60	14.40	1.52	-123.70	42.53	
9:59	2.0		7.17	860.10	14.90	1.19	-128.70	49.13	
10:02	2.8		7.17	860.40	15.14	1.05	-130.80	52.45	
10:05	3.5		7.17	861.50	15.52	0.98	-131.40	59.33	

Sampling Activities

Sampled By: JC Sample Date/Time: 10/8/2024 10:05

Sample Method: Low Flow Sample Equipment: Submersible Pump

Sample Parameters: 7.17 pH 861.50 Spec. Cond. 15.52 Temp

Field Filtered: Yes Filter Type: In line disposable

Water Level: 48.01 feet below TOC Drawdown: 0.41 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp **Date:** 10/8/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW08
Project Location:	Netwon, IL	**Sample ID:**	011
W.O. Number (s):	24091272	**Date (s):**	10/2/2024

Field Team Members

Name: Justin Colp Affiliation: TekLab, Inc.

Name: Danny Crump Affiliation: TekLab, Inc.

Weather Conditions

Temp: 56 °F Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy Sky: ☐ Clear ☑ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/2/2024 9:10

Static Water Level: 32.84 feet below TOC

Total Depth: 84.20 feet below TOC

Water Column: 51.36 feet

Purging Activities

Purged By: JC Purge Date: 10/2/2024

Purge Method: Bladder Pump Well Diameter: 2"

Purge Volume Calculation (L): 51.36 ft. x 51.36 = 1.13 L x 3 Vol. = 3.39 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 5.00 L

Physical appearance of purge water: Clear Odor: None Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
9:12	0.0	217	purge start time						
9:20	1.9	↓	7.69	1,067.70	15.04	1.44	-34.00	3.23	
9:23	2.5		7.64	1,069.90	14.96	1.09	-24.50	2.97	
9:26	3.2		7.59	1,070.90	14.98	0.96	-31.50	2.72	
9:29	3.8		7.55	1,071.40	14.97	0.89	-49.00	2.33	
9:32	4.5		7.49	1,071.70	14.99	0.86	-70.90	2.19	
9:35	5.1		7.46	1,072.20	14.99	0.84	-87.80	3.42	

Sampling Activities

Sampled By: JC Sample Date/Time: 10/2/2024 9:35

Sample Method: Low Flow Sample Equipment: Bladder Pump

Sample Parameters: 7.46 pH 1,072.20 Spec. Cond. 14.99 Temp

Field Filtered: Yes Filter Type: In line disposable

Water Level: 32.89 feet below TOC Drawdown: 0.05 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp **Date:** 10/2/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW09
Project Location:	Netwon, IL	**Sample ID:**	012
W.O. Number (s):	24091272	**Date (s):**	10/8/2024

Field Team Members

Name: Justin Colp Affiliation: TekLab, Inc.

Name: Danny Crump Affiliation: TekLab, Inc.

Weather Conditions

Temp: 65 °F Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy Sky: ☑ Clear ☐ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/8/2024 11:33

Static Water Level: 27.71 feet below TOC

Total Depth: 65.00 feet below TOC

Water Column: 37.29 feet

Purging Activities

Purged By: JC Purge Date: 10/8/2024

Purge Method: Submersible Pump Well Diameter: 2"

Purge Volume Calculation (L): 37.29 ft. x 37.29 = 0.82 L x 3 Vol. = 2.46 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 4.00 L

Physical appearance of purge water: Clear Odor: None Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
11:35	0.0	250	purge start time						
11:39	1.0	↓	7.35	1,144.60	16.96	1.74	-12.90	26.38	
11:42	1.8		7.34	1,146.80	17.60	1.03	-24.00	24.24	
11:45	2.5		7.33	1,151.20	18.22	0.79	-30.30	23.26	
11:48	3.3		7.32	1,152.60	18.29	0.67	-36.10	23.72	
11:51	4.0		7.32	1,152.50	18.13	0.58	-48.20	23.93	

Sampling Activities

Sampled By: JC Sample Date/Time: 10/8/2024 11:51

Sample Method: Low Flow Sample Equipment: Submersible Pump

Sample Parameters: 7.32 pH 1,152.50 Spec. Cond. 18.13 Temp

Field Filtered: Yes Filter Type: In line disposable

Water Level: 27.96 feet below TOC Drawdown: 0.25 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp **Date:** 10/8/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW10
Project Location:	Netwon, IL	**Sample ID:**	013
W.O. Number (s):	24091272	**Date (s):**	10/1/2024

Field Team Members

Name: Justin Colp — Affiliation: TekLab, Inc.

Name: Danny Crump — Affiliation: TekLab, Inc.

Weather Conditions

Temp: 73 °F — Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy — Sky: ☐ Clear ☑ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/1/2024 11:23

Static Water Level: 18.86 feet below TOC

Total Depth: 48.70 feet below TOC

Water Column: 29.84 feet

Purging Activities

Purged By: JC — Purge Date: 10/1/2024

Purge Method: Bladder Pump — Well Diameter: 2"

Purge Volume Calculation (L): 29.84 ft. x 29.84 = 0.66 L x 3 Vol. = 1.98 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 4.50 L

Physical appearance of purge water: Clear — Odor: None — Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
11:24	0.0	132	purge start time						
11:31	1.0	↓	7.45	1,457.60	16.27	2.02	104.20	297.14	
11:34	1.4		7.45	1,460.10	16.44	1.10	103.00	360.98	
11:37	1.7		7.51	1,460.20	16.34	1.00	98.70	201.12	
11:40	2.1		7.48	1,458.60	16.38	1.00	91.20	120.14	
11:43	2.5		7.51	1,459.70	16.33	0.93	80.40	79.97	
11:46	2.9		7.47	1,460.10	16.25	0.88	70.60	64.05	
11:49	3.3		7.42	1,458.90	16.25	0.84	61.30	53.70	
11:52	3.7		7.48	1,458.80	16.17	0.81	53.70	44.01	
11:55	4.1		7.46	1,459.20	16.22	0.79	47.50	35.68	
11:58	4.5		7.46	1,458.00	16.32	0.78	42.30	28.41	

Sampling Activities

Sampled By: JC — Sample Date/Time: 10/1/2024 11:58

Sample Method: Low Flow — Sample Equipment: Bladder Pump

Sample Parameters: 7.46 pH — 1,458.00 Spec. Cond. — 16.32 Temp

Field Filtered: Yes — Filter Type: In line disposable

Water Level: 19.00 feet below TOC — Drawdown: 0.14 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp — **Date:** 10/1/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW11
Project Location:	Netwon, IL	**Sample ID:**	014
W.O. Number (s):	24091272	**Date (s):**	10/1/2024

Field Team Members

Name: Justin Colp — Affiliation: TekLab, Inc.

Name: Danny Crump — Affiliation: TekLab, Inc.

Weather Conditions

Temp: 71 °F — Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy — Sky: ☐ Clear ☑ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/1/2024 9:54

Static Water Level: 25.16 feet below TOC

Total Depth: 67.60 feet below TOC

Water Column: 42.44 feet

Purging Activities

Purged By: JC — Purge Date: 10/1/2024

Purge Method: Bladder Pump — Well Diameter: 2"

Purge Volume Calculation (L): 42.44 ft. x 42.44 = 0.93 L x 3 Vol. = 2.79 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 4.50 L

Physical appearance of purge water: Clear — Odor: None — Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
9:57	0.0	161	purge start time						
10:04	1.2	↓	7.67	1,218.60	17.01	1.87	148.80	121.39	
10:07	1.7		7.67	1,218.70	17.90	1.46	95.60	116.72	
10:10	2.2		7.68	1,217.30	18.35	1.38	66.80	125.91	
10:13	2.6		7.64	1,215.70	18.41	1.31	44.00	110.36	
10:16	3.1		7.67	1,213.80	17.94	1.25	27.10	104.52	
10:19	3.6		7.68	1,213.90	17.57	1.22	15.60	88.48	
10:22	4.1		7.68	1,211.50	17.94	1.19	8.40	80.25	
10:25	4.6		7.61	1,211.50	18.02	1.17	3.20	85.71	

Sampling Activities

Sampled By: JC — Sample Date/Time: 10/1/2024 10:25

Sample Method: Low Flow — Sample Equipment: Bladder Pump

Sample Parameters: 7.61 pH — 1,211.50 Spec. Cond. — 18.02 Temp

Field Filtered: Yes — Filter Type: In line disposable

Water Level: 25.23 feet below TOC — Drawdown: 0.07 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp — **Date:** 10/1/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW12
Project Location:	Netwon, IL	**Sample ID:**	015
W.O. Number (s):	24091272	**Date (s):**	10/1/2024

Field Team Members

Name: Justin Colp — Affiliation: TekLab, Inc.

Name: Danny Crump — Affiliation: TekLab, Inc.

Weather Conditions

Temp: 72 °F — Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy — Sky: ☐ Clear ☑ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/1/2024 10:45

Static Water Level: 16.38 feet below TOC

Total Depth: 33.00 feet below TOC

Water Column: 16.62 feet

Purging Activities

Purged By: JC — Purge Date: 10/1/2024

Purge Method: Bladder Pump — Well Diameter: 2"

Purge Volume Calculation (L): 16.62 ft. x 16.62 = 0.37 L x 3 Vol. = 1.11 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 4.00 L

Physical appearance of purge water: Clear — Odor: None — Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
10:45	0.0	222	purge start time						
10:48	0.8	↓	7.31	1,820.50	17.44	2.14	99.10	5.41	
10:51	1.5		7.32	1,917.30	17.87	1.55	96.10	5.18	
10:54	2.2		7.34	1,996.20	18.23	1.32	95.60	6.13	
10:57	2.8		7.37	2,033.20	18.28	1.19	96.20	5.95	
11:00	3.5		7.36	2,060.70	18.33	1.13	96.50	5.59	
11:03	4.2		7.36	2,080.10	18.12	1.07	96.90	5.38	

Sampling Activities

Sampled By: JC — Sample Date/Time: 10/1/2024 11:03

Sample Method: Low Flow — Sample Equipment: Bladder Pump

Sample Parameters: 7.36 pH — 2,080.10 Spec. Cond. — 18.12 Temp

Field Filtered: Yes — Filter Type: In line disposable

Water Level: 16.40 feet below TOC — Drawdown: 0.02 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp — **Date:** 10/1/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW13
Project Location:	Netwon, IL	**Sample ID:**	016
W.O. Number (s):	24091272	**Date (s):**	10/1/2024

Field Team Members

Name: Justin Colp — Affiliation: TekLab, Inc.

Name: Danny Crump — Affiliation: TekLab, Inc.

Weather Conditions

Temp: 75 °F — Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy — Sky: ☐ Clear ☐ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/1/2024 12:21

Static Water Level: 33.40 feet below TOC

Total Depth: 66.30 feet below TOC

Water Column: 32.90 feet

Purging Activities

Purged By: JC — Purge Date: 10/1/2024

Purge Method: Bladder Pump — Well Diameter: 2"

Purge Volume Calculation (L): 32.9 ft. x 32.9 = 0.72 L x 3 Vol. = 2.16 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 6.00 L

Physical appearance of purge water: Clear — Odor: None — Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
12:22	0.0	240	purge start time						
12:26	1.0	↓	7.66	1,354.50	15.72	2.07	48.90	9.20	
12:29	1.7		7.61	1,352.90	15.81	1.17	2.80	13.33	
12:32	2.4		7.65	1,351.90	15.72	0.94	-32.50	22.70	
12:35	3.1		7.69	1,350.60	15.51	0.86	-56.70	40.85	
12:38	3.8		7.65	1,348.20	15.28	0.81	-68.70	62.97	
12:41	4.6		7.65	1,344.80	16.23	0.78	-74.30	78.53	
12:44	5.3		7.51	1,349.70	17.56	0.78	-77.10	94.18	
12:47	6.0		7.53	1,350.70	17.82	0.81	-79.50	105.66	

Sampling Activities

Sampled By: JC — Sample Date/Time: 10/1/2024 12:47

Sample Method: Low Flow — Sample Equipment: Bladder Pump

Sample Parameters: 7.53 pH — 1,350.70 Spec. Cond. — 17.82 Temp

Field Filtered: Yes — Filter Type: In line disposable

Water Level: 33.62 feet below TOC — Drawdown: 0.22 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp — **Date:** 10/1/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW14
Project Location:	Netwon, IL	**Sample ID:**	017
W.O. Number (s):	24091272	**Date (s):**	10/1/2024

Field Team Members

Name: Justin Colp — Affiliation: TekLab, Inc.

Name: Danny Crump — Affiliation: TekLab, Inc.

Weather Conditions

Temp: 76 °F — Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy — Sky: ☐ Clear ☑ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/1/2024 13:03

Static Water Level: 22.01 feet below TOC

Total Depth: 57.40 feet below TOC

Water Column: 35.39 feet

Purging Activities

Purged By: JC — Purge Date: 10/1/2024

Purge Method: Bladder Pump — Well Diameter: 2"

Purge Volume Calculation (L): 35.39 ft. x 35.39 = 0.78 L x 3 Vol. = 2.34 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 7.00 L

Physical appearance of purge water: Clear — Odor: None — Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
13:04	0.0	241	purge start time						
13:09	1.3	↓	7.28	1,446.00	16.04	3.06	-29.90	100.71	
13:12	2.1		7.24	1,448.00	15.74	1.89	-67.80	13.59	
13:15	2.8		7.25	1,449.20	15.62	1.74	-87.70	48.08	
13:18	3.5		7.25	1,448.40	15.48	1.73	-98.20	88.64	
13:21	4.2		7.15	1,433.20	15.37	1.43	-104.70	145.64	
13:24	5.0		7.06	1,448.50	15.35	1.20	-107.90	101.12	
13:27	5.7		7.00	1,448.40	15.31	0.99	-111.10	90.03	
13:30	6.4		6.96	1,444.30	15.30	0.91	-112.80	92.70	
13:33	7.1		6.96	1,439.50	15.31	0.83	-114.40	95.10	

Sampling Activities

Sampled By: JC — Sample Date/Time: 10/1/2024 13:33

Sample Method: Low Flow — Sample Equipment: Bladder Pump

Sample Parameters: 6.96 pH — 1,439.50 Spec. Cond. — 15.31 Temp

Field Filtered: Yes — Filter Type: In line disposable

Water Level: 22.23 feet below TOC — Drawdown: 0.22 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp — **Date:** 10/1/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW15
Project Location:	Netwon, IL	**Sample ID:**	018
W.O. Number (s):	24091272	**Date (s):**	10/1/2024

Field Team Members

Name: Justin Colp — Affiliation: TekLab, Inc.

Name: Danny Crump — Affiliation: TekLab, Inc.

Weather Conditions

Temp: 75 °F — Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy — Sky: ☐ Clear ☑ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/1/2024 13:52

Static Water Level: 21.33 feet below TOC

Total Depth: 105.60 feet below TOC

Water Column: 84.27 feet

Purging Activities

Purged By: JC — Purge Date: 10/1/2024

Purge Method: Bladder Pump — Well Diameter: 2"

Purge Volume Calculation (L): 84.27 ft. x 84.27 = 1.85 L x 3 Vol. = 5.55 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 5.00 L

Physical appearance of purge water: Clear — Odor: None — Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
13:53	0.0	152	purge start time						
13:59	0.9	↓	7.28	1,917.00	17.38	1.11	-131.20	74.83	
14:02	1.4		7.31	1,910.50	17.97	1.06	-128.50	72.80	
14:05	1.8		7.25	1,902.70	18.08	1.02	-127.30	96.52	
14:08	2.3		7.24	1,918.20	18.06	0.95	-127.10	144.97	
14:11	2.7		7.32	1,903.00	18.06	0.89	-126.30	170.55	
14:14	3.2		7.29	1,923.20	18.05	0.86	-125.20	215.96	
14:17	3.6		7.32	1,912.80	18.01	0.83	-125.40	239.10	
14:20	4.1		7.28	1,898.50	18.05	0.81	-125.30	179.68	
14:23	4.5		7.27	1,908.90	17.96	0.79	-125.30	273.79	
14:26	5.0		7.27	1,911.00	17.95	0.77	-124.40	262.50	

Sampling Activities

Sampled By: JC — Sample Date/Time: 10/1/2024 14:26

Sample Method: Low Flow — Sample Equipment: Bladder Pump

Sample Parameters: 7.27 pH — 1,911.00 Spec. Cond. — 17.95 Temp

Field Filtered: Yes — Filter Type: In line disposable

Water Level: 22.10 feet below TOC — Drawdown: 0.77 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp — **Date:** 10/1/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW16
Project Location:	Netwon, IL	**Sample ID:**	019
W.O. Number (s):	24091272	**Date (s):**	10/2/2024

Field Team Members

Name: Justin Colp Affiliation: TekLab, Inc.

Name: Danny Crump Affiliation: TekLab, Inc.

Weather Conditions

Temp: 53 °F Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy Sky: ☐ Clear ☑ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/2/2024 8:41

Static Water Level: 40.74 feet below TOC

Total Depth: 87.50 feet below TOC

Water Column: 46.76 feet

Purging Activities

Purged By: JC Purge Date: 10/2/2024

Purge Method: Bladder Pump Well Diameter: 2"

Purge Volume Calculation (L): 46.76 ft. x 46.76 = 1.03 L x 3 Vol. = 3.09 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 5.00 L

Physical appearance of purge water: Clear Odor: None Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
8:41	0.0	208	purge start time						
8:50	1.9	↓	7.45	1,231.40	13.90	1.97	-77.40	14.22	
8:53	2.5		7.39	1,236.00	13.87	1.57	-105.10	12.95	
8:56	3.1		7.36	1,239.80	13.87	1.36	-116.20	12.05	
8:59	3.8		7.37	1,242.80	13.90	1.19	-123.80	10.20	
9:02	4.4		7.39	1,245.00	13.92	1.11	-128.40	9.82	
9:05	5.0		7.46	1,246.30	13.93	1.06	-131.00	7.86	

Sampling Activities

Sampled By: JC Sample Date/Time: 10/2/2024 9:05

Sample Method: Low Flow Sample Equipment: Bladder Pump

Sample Parameters: 7.46 pH 1,246.30 Spec. Cond. 13.93 Temp

Field Filtered: Yes Filter Type: In line disposable

Water Level: 40.82 feet below TOC Drawdown: 0.08 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp **Date:** 10/2/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW17
Project Location:	Netwon, IL	**Sample ID:**	020
W.O. Number (s):	24091272	**Date (s):**	10/2/2024

Field Team Members

Name: Justin Colp Affiliation: TekLab, Inc.

Name: Danny Crump Affiliation: TekLab, Inc.

Weather Conditions

Temp: 58 °F Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy Sky: ☐ Clear ☑ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/2/2024 9:40

Static Water Level: 41.90 feet below TOC

Total Depth: 94.70 feet below TOC

Water Column: 52.80 feet

Purging Activities

Purged By: JC Purge Date: 10/2/2024

Purge Method: Bladder Pump Well Diameter: 2"

Purge Volume Calculation (L): 52.8 ft. x 52.8 = 1.16 L x 3 Vol. = 3.48 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 4.00 L

Physical appearance of purge water: Clear Odor: None Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
10:00	0.0	222	purge start time						
10:03	0.7	↓	7.50	1,141.70	14.82	1.91	-72.70	9.05	
10:06	1.4		7.17	1,126.50	15.08	1.49	-99.80	9.76	
10:09	2.0		7.03	1,124.70	15.13	1.46	-106.80	13.73	
10:12	2.7		6.97	1,123.90	15.13	1.35	-110.30	18.39	
10:15	3.4		6.95	1,121.50	15.10	1.28	-112.80	22.96	
10:18	4.0		6.91	1,119.70	15.09	1.28	-113.00	26.73	

Sampling Activities

Sampled By: JC Sample Date/Time: 10/2/2024 10:18

Sample Method: Low Flow Sample Equipment: Bladder Pump

Sample Parameters: 6.91 pH 1,119.70 Spec. Cond. 15.09 Temp

Field Filtered: Yes Filter Type: In line disposable

Water Level: 41.90 feet below TOC Drawdown: 0.00 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp **Date:** 10/2/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW18
Project Location:	Netwon, IL	**Sample ID:**	021
W.O. Number (s):	24091272	**Date (s):**	10/2/2024

Field Team Members

Name: Justin Colp Affiliation: TekLab, Inc.

Name: Danny Crump Affiliation: TekLab, Inc.

Weather Conditions

Temp: 63 °F Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy Sky: ☐ Clear ☑ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/2/2024 10:55

Static Water Level: 52.36 feet below TOC

Total Depth: 82.70 feet below TOC

Water Column: 30.34 feet

Purging Activities

Purged By: JC Purge Date: 10/2/2024

Purge Method: Bladder Pump Well Diameter: 2"

Purge Volume Calculation (L): 30.34 ft. x 30.34 = 0.67 L x 3 Vol. = 2.01 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 6.00 L

Physical appearance of purge water: Clear Odor: None Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
10:56	0.0	240	purge start time						
11:03	1.7	↓	7.92	979.30	15.80	2.74	-120.20	5.73	
11:06	2.4		7.35	979.10	15.73	1.68	-144.60	11.54	
11:09	3.1		7.25	977.50	15.64	1.28	-162.40	25.18	
11:12	3.8		7.19	972.70	15.64	1.09	-173.10	40.97	
11:15	4.6		7.13	975.70	15.52	0.99	-181.00	59.02	
11:18	5.3		7.10	973.00	15.52	0.93	-185.60	91.02	
11:21	6.0		7.05	971.80	15.46	0.90	-187.80	122.64	

Sampling Activities

Sampled By: JC Sample Date/Time: 10/2/2024 11:21

Sample Method: Low Flow Sample Equipment: Bladder Pump

Sample Parameters: 7.05 pH 971.80 Spec. Cond. 15.46 Temp

Field Filtered: Yes Filter Type: In line disposable

Water Level: 52.49 feet below TOC Drawdown: 0.13 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp **Date:** 10/2/2024

Field Data Sheet

Project Name: NEW- 24Q4
Project Location: Netwon, IL
W.O. Number (s): 24091272
Monitoring Point: Field Blank
Sample ID: 077
Date (s):

Field Team Members

Name: Justin Colp Affiliation: TekLab, Inc.
Name: Danny Crump Affiliation: TekLab, Inc.

Weather Conditions

Temp: 60 °F Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy Sky: ☑ Clear ☐ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad
Casing
Protective Casing
Reference Mark/Identification

Locks	Yes	No
Protective Casing		X
Well		X

Groundwater Level Measurements

Date/Time Measured:
Static Water Level: feet below TOC
Total Depth: feet below TOC
Water Column: feet

Purging Activities

Purged By: Purge Date:
Purge Method: Direct Grab Well Diameter:
Purge Volume Calculation (L):
Actual Purge Volume (L): L
Physical appearance of purge water: Odor: Color:

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
	0.0		purge start time						

Sampling Activities

Sampled By: Sample Date/Time: 10/8/2024 12:06
Sample Method: Sample Equipment: Direct Grab
Sample Parameters: pH Spec. Cond. Temp
Field Filtered: Filter Type:
Water Level: feet below TOC Drawdown: feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter:
- QA/QC Sample

Form Completed By: Justin Colp **Date:** 10/8/2024

Field Data Sheet

Project Name:	NEW- 24Q4	**Monitoring Point:**	APW02 Duplicate
Project Location:	Netwon, IL	**Sample ID:**	079
W.O. Number (s):	24091272	**Date (s):**	10/2/2024

Field Team Members

Name: Justin Colp — Affiliation: TekLab, Inc.

Name: Danny Crump — Affiliation: TekLab, Inc.

Weather Conditions

Temp: 61 °F — Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy — Sky: ☐ Clear ☐ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad	Good
Casing	Good
Protective Casing	Good
Reference Mark/Identification	Yes

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/2/2024 10:22

Static Water Level: 7.12 feet below TOC

Total Depth: 23.70 feet below TOC

Water Column: 16.58 feet

Purging Activities

Purged By: JC — Purge Date: 10/2/2024

Purge Method: Peristaltic Pump — Well Diameter: 2"

Purge Volume Calculation (L): 16.58 ft. x 16.58 = 0.36 L x 3 Vol. = 1.08 L **Based on Low-Flow (3/8" discharge)*

Actual Purge Volume (L): 6.00 L

Physical appearance of purge water: Clear — Odor: None — Color: none

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
10:22	0.0	222	purge start time						
10:28	1.3	↓	6.18	5,033.30	17.79	3.59	7.60	75.04	
10:31	2.0		6.09	5,020.80	17.96	2.96	18.60	72.64	
10:34	2.7		6.10	4,996.20	18.02	2.55	2.80	69.71	
10:37	3.3		6.04	4,988.10	18.28	2.29	7.40	63.50	
10:40	4.0		6.08	4,964.20	18.41	2.08	16.80	59.06	
10:43	4.7		6.13	4,917.60	18.42	1.88	20.90	56.62	
10:46	5.3		6.09	4,862.20	18.54	1.75	20.40	58.85	
10:49	6.0		6.11	4,815.80	18.52	1.62	19.40	65.30	

Sampling Activities

Sampled By: JC — Sample Date/Time: 10/2/2024 10:49

Sample Method: Low Flow — Sample Equipment: Peristaltic Pump

Sample Parameters: 6.11 pH — 4,815.80 Spec. Cond. — 18.52 Temp

Field Filtered: Yes — Filter Type: In line disposable

Water Level: 11.31 feet below TOC — Drawdown: 4.19 feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter: 45985

Form Completed By: Justin Colp — **Date:** 10/2/2024

Field Data Sheet

Project Name: NEW- 24Q4
Project Location: Netwon, IL
W.O. Number (s): 24091272
Monitoring Point: Equipment Blank 1
Sample ID: 082
Date (s):

Field Team Members

Name: _____ Affiliation: _____
Name: _____ Affiliation: _____

Weather Conditions

Temp: _____ °F Wind Direction: ☐ N ☐ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☐ None ☐ Light ☐ Heavy Sky: ☐ Clear ☐ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad _____
Casing _____
Protective Casing _____
Reference Mark/Identification _____

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: _____
Static Water Level: _____ feet below TOC
Total Depth: - feet below TOC
Water Column: #VALUE! feet

Purging Activities

Purged By: _____ Purge Date: _____
Purge Method: _____ Well Diameter: _____
Purge Volume Calculation (L): _____
Actual Purge Volume (L): L
Physical appearance of purge water: _____ Odor: _____ Color: _____

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
	0.0		purge start time						
	0.0	↓							

Sampling Activities

Sampled By: _____ Sample Date/Time: _____
Sample Method: _____ Sample Equipment: _____
Sample Parameters: _____ pH _____ Spec. Cond. _____ Temp
Field Filtered: _____ Filter Type: _____
Water Level: _____ feet below TOC Drawdown: _____ feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter:
- Not used

Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: NEW- 24Q4
Project Location: Netwon, IL
W.O. Number (s): 24091272
Monitoring Point: Equipment Blank 2
Sample ID: 083
Date (s): 10/8/2024

Field Team Members

Name: Justin Colp Affiliation: TekLab, Inc.
Name: Danny Crump Affiliation: TekLab, Inc.

Weather Conditions

Temp: 62 °F Wind Direction: ☐ N ☑ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☑ None ☐ Light ☐ Heavy Sky: ☑ Clear ☐ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad
Casing
Protective Casing
Reference Mark/Identification

Locks	Yes	No
Protective Casing		X
Well		X

Groundwater Level Measurements

Date/Time Measured:
Static Water Level: feet below TOC
Total Depth: - feet below TOC
Water Column: #VALUE! feet

Purging Activities

Purged By: Purge Date:
Purge Method: Well Diameter:
Purge Volume Calculation (L): **Based on Low-Flow (3/8" discharge)*
Actual Purge Volume (L): L
Physical appearance of purge water: Odor: Color:

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
	0.0		purge start time						

Sampling Activities

Sampled By: Sample Date/Time: 10/8/2024 12:50
Sample Method: Direct Sample Sample Equipment:
Sample Parameters: pH Spec. Cond. Temp
Field Filtered: Filter Type:
Water Level: feet below TOC Drawdown: feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter:
- QA/QC Sample

Form Completed By: Justin Colp **Date:** 10/8/2024

Field Data Sheet

Project Name: NEW- 24Q4
Project Location: Netwon, IL
W.O. Number (s): 24091272
Monitoring Point: Equipment Blank 3
Sample ID: 084
Date (s):

Field Team Members

Name: _____ Affiliation: _____
Name: _____ Affiliation: _____

Weather Conditions

Temp: _____ °F Wind Direction: ☐ N ☐ S ☐ E ☐ EW ☐ SW ☐ NE ☐ NW

Precipitation: ☐ None ☐ Light ☐ Heavy Sky: ☐ Clear ☐ Partly Cloudy ☐ Cloudy

Well Observations

Well Pad _____
Casing _____
Protective Casing _____
Reference Mark/Identification _____

Locks	Yes	No
Protective Casing		X
Well		X

Groundwater Level Measurements

Date/Time Measured: _____
Static Water Level: _____ feet below TOC
Total Depth: - _____ feet below TOC
Water Column: _____ feet

Purging Activities

Purged By: _____ Purge Date: _____
Purge Method: _____ Well Diameter: _____
Purge Volume Calculation (L): _____
Actual Purge Volume (L): _____ L
Physical appearance of purge water: _____ Odor: _____ Color: _____

Purge Time	Cumulative Purge Vol.(L)	Purge Rate (mL/m)	pH (S.U.)	Specific Conductivity (µS/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Other
	0.0		purge start time						

Sampling Activities

Sampled By: _____ Sample Date/Time: _____
Sample Method: _____ Sample Equipment: _____
Sample Parameters: _____ pH _____ Spec. Cond. _____ Temp
Field Filtered: _____ Filter Type: _____
Water Level: _____ feet below TOC Drawdown: _____ feet

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

- Field Meter:
- Not used

Form Completed By: _____ **Date:** _____

Site Samping Event: NEW- 24Q4
LIMS Workorder: 24091272
Technician(s): JC, DC, TC, BG

Field Calibration Log(s)
Newton- 4Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 45985 Technician(s): justin colp Date: 10/1/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc240612a	4.00	10/1/24 9:36
7.0 Buffer	wc240913b	6.99	10/1/24 9:32
10.0 Buffer	wc240625b	9.98	10/1/24 9:40
LCS/CCV (7.0 Buffer)	wc240913c		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	100029	1412	10/1/24 9:46

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.48	10/1/24 9:46
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-1-JC	LCS	10/1/24 9:48	22.1	7.00	1,411	0.48		
CCV-M-1-JC	CCV	10/1/24 12:38	22.6	7.02	1,416	0.51		
CCV-1-JC	CCV	10/1/24 15:01	22.8	7.02	1,420	0.54		

Comments:

Field Meter ID: Pine 45985 Technician(s): justin colp Date: 10/2/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc240612a	4.01	10/2/24 8:25
7.0 Buffer	wc240913b	7.01	10/2/24 8:19
10.0 Buffer	wc240625b	10.02	10/2/24 8:30
LCS/CCV (7.0 Buffer)	wc240913c		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	10029	1410	10/2/24 8:36

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.51	10/2/24 8:36
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-2-JC	LCS	10/2/24 8:41	14.4	7.01	1,411	0.51		
CCV-2-JC	CCV	10/2/24 12:39	19.6	7.04	1,428	0.98		

Comments:

Site Samping Event: NEW- 24Q4
LIMS Workorder: 24091272
Technician(s): JC, DC, TC, BG

Field Calibration Log(s)
Newton- 4Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 43918 Technician(s): justin colp Date: 10/3/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc240612a	4.00	10/3/24 8:09
7.0 Buffer	wc240913b	7.00	10/3/24 8:02
10.0 Buffer	wc240625b	10.00	10/3/24 8:14
LCS/CCV (7.0 Buffer)	wc240913c		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	10029	1412	10/3/24 8:21

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.41	10/3/24 8:21
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-3-JC	LCS	10/3/24 8:23	15.2	7.02	1,411	0.41		
CCV-M-3-JC	CCV	10/3/24 11:22	17.9	7.02	1,418	0.56		
CCV-3-JC	CCV	10/3/24 13:35	21.4	7.06	1,419	0.47		

Comments:

Field Meter ID: Pine 43918 Technician(s): justin colp Date: 10/7/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc240612a	4.00	10/7/24 9:27
7.0 Buffer	wc240913b	7.00	10/7/24 9:23
10.0 Buffer	wc240625b	10.00	10/7/24 9:32
LCS/CCV (7.0 Buffer)	wc240913c		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	10029	1412	10/7/24 9:46

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.12	10/7/24 9:46
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-4-JC	LCS	10/7/24 9:51	17	7.02	1,410	0.12		
CCV-4-JC	CCV	10/7/24 14:11	22.1	7.05	1,428	0.13		

Comments:

Site Samping Event: NEW- 24Q4
LIMS Workorder: 24091272
Technician(s): JC, DC, TC, BG

Field Calibration Log(s)
Newton- 4Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 43918 Technician(s): justin colp Date: 10/8/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	wc240612a	4.00	10/8/24 8:49
7.0 Buffer	wc240913b	7.00	10/8/24 8:46
10.0 Buffer	wc240625b	10.00	10/8/24 8:53
LCS/CCV (7.0 Buffer)	wc240913c		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	10029	1412	10/8/24 8:58

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	0.14	10/8/24 8:58
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-5-JC	LCS	10/8/24 9:00	16.8	7.02	1,411	0.13		
CCV-5-JC	CCV	10/8/24 12:20	20.9	7.04	1,421	0.22		

Comments:

Site Samping Event: NEW- 24Q4
LIMS Workorder: 24091272
Technician(s): JC, DC, TC, BG

Field Calibration Log(s)
Newton- 4Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 46868 Technician(s): Tracy Carroll Date: 10/2/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC240612A	4.00	10/2/24 8:54
7.0 Buffer	WC240913B	7.00	10/2/24 8:51
10.0 Buffer	WC240625B	10.00	10/2/24 8:57
LCS/CCV (7.0 Buffer)	WC240913C		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	100029	1412	10/2/24 9:08

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1		
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-1_TC	LCS	10/2/24 9:14	14.9	7.08	1,410	0.04		
CCV-1-TC	CCV	10/2/24 13:51	20.3	7.10	1,342	1.2		

Comments:

Field Meter ID: Pine 46868 Technician(s): Tracy Carroll Date: 10/3/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC240612A	4.00	10/3/24 8:43
7.0 Buffer	WC240913B	7.00	10/3/24 8:38
10.0 Buffer	WC240625B	10.00	10/3/24 8:47
LCS/CCV (7.0 Buffer)	WC240913C		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	100029	1412	10/3/24 8:52

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1		
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-2-TC	LCS	10/3/24 8:58	16.2	7.10	1,413	1.21		
CCV-2-TC	CCV	10/3/24 13:34	19.4	7.09	1,420	1.99		

Comments:

Site Samping Event: NEW- 24Q4
LIMS Workorder: 24091272
Technician(s): JC, DC, TC, BG

Field Calibration Log(s)
Newton- 4Q 2024

Field Temp SOP 1156 - SM 2550 B
Field pH SOP 1152 - SW-846 9040B - SM 4500-H B
Field Cond. SOP 1155 - SW-846 9050A - SM 2510 B

Field Meter ID: Pine 46868 Technician(s): Tracy Carroll Date: 10/7/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC240612A	4.00	10/7/24 10:07
7.0 Buffer	WC240913B	7.00	10/7/24 10:05
10.0 Buffer	WC240625B	9.99	10/7/24 10:09
LCS/CCV (7.0 Buffer)	WC240913C		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	100029	1412	10/7/24 10:11

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1	1.01	10/7/24 10:05
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-3-TC	LCS	10/7/24 10:12	17.4	7.00	1,420	1.01		
CCV-3-TC	CCV	10/7/24 14:06	20.3	6.98	1,422	1.03		

Comments:

Field Meter ID: Pine 46868 Technician(s): Tracy Carroll Date: 10/8/2024

pH Standards	LIMS ID	Calibration reading	Date/Time
4.0 Buffer	WC240612A	4.00	10/8/24 9:33
7.0 Buffer	WC240913B	7.00	10/8/24 9:23
10.0 Buffer	WC240625B	10.00	10/8/24 9:52
LCS/CCV (7.0 Buffer)	WC240913C		

Conductivity Standard	LIMS ID	Reading	Date/Time
1,412 µS Std.	100029	1412	10/8/24 9:54

Turbidity Standard	LIMS ID	Reading	Date/Time
0 NTU (DI Water)	1		
124 NTU	95834		

ORP Standard	LIMS ID/Lot#	Reading	Date/Time

D.O. Saturation	LIMS ID/Lot#	Reading	Date/Time
100%	N/A		

Sample ID	Sample Type	Date/Time	Temp. °C	pH S.U.	Conductivity µS	Turbidity NTU	ORP mV	D.O. %
LCS-4-TC	LCS	10/8/24 9:57	16.8	7.08	1,413	0.56		
CCV-4-TC	CCV	10/8/24 12:55	17.5	7.10	1,423	1.5		

Comments:

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC
797 Cromwell Park Dr.
Suite Q
Glen Burnie, MD 21061

Pine Environmental Services, Inc.

Instrument ID 43918
Description YSI Pro DSS
Calibrated 9/30/2024 12:11:47PM

Group # 5
Group Name Disolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
100.0 / 100.0	%	100.0	%	96.6	100.0	0.00%	Pass

Test Instruments Used During the Calibration (As Of Cal Entry Date)

Test Standard ID	Description	Manufacturer	Model Number	Serial Number / Lot Number	Last Cal Date/ Opened Date	Next Cal Date / Expiration Date
MD COND 1.413 3GH1514	CA 1.413 COND (LOT# 4GB0749	GFS	31986	1.413 COND (LOT# 4GB0749		2/5/2025
MD ORP 240 4GE1370	MD ORP 240 4GE1370	AquaPhoenix Scientific	32001	4GE1370	6/24/2024	2/28/2025
MD PH10 2GI302	MD PH10 2GI302	AquaPhoenix Scientific	32034	2GI302		9/30/2024
MD PH4 3GI0465	MD PH4 3GI0465	AquaPhoenix Scientific	32017	3GI0465		9/30/2025
MD PH7 2GI0389	MD PH7 2GI0389	AquaPhoenix Scientific	32025	3GI0389	12/20/2024	9/30/2025
MD TURB 0 NTU 24007124	MD TURB 0 NTU 24007124	AMCOCLEAR	8483	24007124	2/1/2024	12/31/2024

Notes about this calibration

Calibration Result Calibration Successful
Who Calibrated Chuck Wallace

All instruments are calibrated by Pine Environmental Services LLC according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

Notify Pine Environmental Services LLC of any defect within 24 hours of receipt of equipment
Please call 800-301-9663 for Technical Assistance

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC
797 Cromwell Park Dr.
Suite Q
Glen Burnie, MD 21061

Pine Environmental Services, Inc.

Instrument ID 43918
Description YSI Pro DSS
Calibrated 9/30/2024 12:11:47PM

Manufacturer YSI
Model Number Pro DSS
Serial Number/ Lot Number 18K101874
Location Maryland
Department

State Certified
Status Pass
Temp °C 23
Humidity % 69

Calibration Specifications

Group # 1
Group Name PH
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
7.00 / 7.00	PH	7.00	PH	6.90	7.00	0.00%	Pass
4.00 / 4.00	PH	4.00	PH	3.94	4.00	0.00%	Pass
10.00 / 10.00	PH	10.00	PH	10.03	10.00	0.00%	Pass

Group # 2
Group Name Turbidity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
0.00 / 0.00	FNU	0.00	FNU	0.70	0.00	0.00%	Pass
124.00 / 124.00	FNU	124.00	FNU	130.54	124.00	0.00%	Pass

Group # 3
Group Name Conductivity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.000

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
1.413 / 1.413	ms/cm	1.413	ms/cm	1.323	1.413	0.00%	Pass

Group # 4
Group Name Redox (ORP)
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
240.00 / 240.00	mv	240.00	mv	247.60	240.00	0.00%	Pass

Group # 5
Group Name Disolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC
11669 Lilburn Park Rd.
St. Louis, MO 63146
Office: 314.344.1079

Pine Environmental Services, Inc.

Instrument ID 45985
Description YSI Pro DSS
Calibrated 9/30/2024 10:37:02AM

Group # 5
Group Name Disolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
100.0 / 100.0	%	100.0	%	103.2	99.8	-0.20%	Pass

Test Instruments Used During the Calibration (As Of Cal Entry Date)

Test Standard ID	Description	Manufacturer	Model Number	Serial Number / Lot Number	Last Cal Date/ Opened Date	Next Cal Date / Expiration Date
STL 126NTU L#24E24011653	STL 126 NTU L#24E24011653	YSI	126 NTU	24E24011653		5/25/2025
STL 1413 COND L#4GB0749	STL 1413 COND L#4GB0749	AquaPhoenix Scientific	31986	4GB0749		2/25/2025
STL AUTOCAL L#24009059	Auto Cal Solution 0 NTU/PH 4	GFS	8483	24009059		3/20/2025
STL ORP SOLUTION 240MV L#4GG0438	STL ORP SOLUTION 240MV L#4GG0438	AquaPhoenix Scientific	ORP Solution	4GG0438		4/25/2025
STL PH10 #4GB0253	STL PH10 #4GB0253	Absolute Accuracy	PH 10	4GB0253		2/25/2026
STL PH4 L#4GB0637	STL pH4 L#4GB0637	AquaPhoenix Scientific	pH 4	4GB0637		2/25/2026
STL PH7 L#4GG1129	STL PH7 L#4GG1129	AquaPhoenix Scientific	PH7	4GG1129		7/25/2026

Notes about this calibration

Calibration Result Calibration Successful
Who Calibrated Chris Harkins

All instruments are calibrated by Pine Environmental Services LLC according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

Notify Pine Environmental Services LLC of any defect within 24 hours of receipt of equipment
Please call 800-301-9663 for Technical Assistance

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC
11669 Lilburn Park Rd.
St. Louis, MO 63146
Office: 314.344.1079

Pine Environmental Services, Inc.

Instrument ID 45985
Description YSI Pro DSS
Calibrated 9/30/2024 10:37:02AM

Manufacturer YSI
Model Number Pro DSS
Serial Number/ Lot Number 19E101797
Location St. Louis
Department

State Certified
Status Pass
Temp °C 22.2
Humidity % 43

Calibration Specifications

Group # 1
Group Name PH
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
7.00 / 7.00	PH	7.00	PH	7.20	7.02	0.29%	Pass
4.00 / 4.00	PH	4.00	PH	4.17	4.00	0.00%	Pass
10.00 / 10.00	PH	10.00	PH	10.18	10.05	0.50%	Pass

Group # 2
Group Name Turbidity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
0.00 / 0.00	NTU	0.00	NTU	0.07	0.00	0.00%	Pass
124.00 / 124.00	NTU	124.00	NTU	64.07	124.00	0.00%	Pass

Group # 3
Group Name Conductivity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.000

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
1.413 / 1.413	ms/cm	1.413	ms/cm	1.481	1.413	0.00%	Pass

Group # 4
Group Name Redox (ORP)
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
240.0 / 240.0	mv	240.0	mv	216.0	240.0	0.00%	Pass

Group # 5
Group Name Disolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail

INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC

92 North Main St, Building 20
Windsor, NJ 08561
Toll-free: (800) 301-9663

Pine Environmental Services, Inc.

Instrument ID 46868
Description YSI Pro DSS Sonde
Calibrated 9/26/2024 8:31:10AM

Group # 5
Group Name Dissolved Oxygen Span
Stated Accy Pct of Reading

Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
100.00 / 100.00	%	100.00	%	99.10	100.30	0.30%	Pass

Test Instruments Used During the Calibration (As Of Cal Entry Date)

Test Standard ID	Description	Manufacturer	Model Number	Serial Number / Lot Number	Last Cal Date/ Opened Date	Next Cal Date / Expiration Date
NJ COND 1413: 4GC1194	1413 conductivity standard	AquaPhoenix Scientific	CS1413	4GC1194	5/20/2024	3/31/2025
NJ ORP 240MV: 4GD1716	ORP solution 240mv	AquaPhoenix Scientific	ORP 240mV	4GD1716	5/30/2024	1/31/2025
NJ PH 10: 4GC0600	BUFFER, PH10 BLUE	AquaPhoenix Scientific	PH10	4GC0600	5/23/2024	3/31/2026
NJ PH 4: 4GC0528	BUFFER, PH4 RED	AquaPhoenix Scientific	BU5004	4GC0528	5/23/2024	3/31/2026
NJ PH 7: 4GC0526	BUFFER, PH7 YELLOW	AquaPhoenix Scientific	BU5007	4GC0526	5/20/2024	3/31/2026
NJ TURB 0.0 NTU: 24010121	0.0 NTU STANDARD	GFS	8483	24010121	5/15/2024	3/31/2025
NJ TURB 124 NTU LOT: 24011758	124 NTU STANDARD	GFS	8172	24011758	5/24/2024	5/31/2025

Notes about this calibration

Calibration Result Calibration Successful
Who Calibrated James Stelle

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Please call 800-301-9663 for Technical Assistance

Pine Environmental Services LLC

92 North Main St, Building 20
Windsor, NJ 08561
Toll-free: (800) 301-9663

Pine Environmental Services, Inc.

Instrument ID 46868
Description YSI Pro DSS Sonde
Calibrated 9/26/2024 8:31:10AM

Manufacturer YSI
Model Number Pro DSS
Serial Number/ Lot Number 19K103392
Location New Jersey
Department

State Certified
Status Pass
Temp °C 22.5
Humidity % 62

Calibration Specifications

Group # 1
Group Name PH
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
7.00 / 7.00	PH	7.00	PH	7.11	7.02	0.29%	Pass
4.00 / 4.00	PH	4.00	PH	4.09	4.00	0.00%	Pass
10.00 / 10.00	PH	10.00	PH	9.84	10.03	0.30%	Pass

Group # 2
Group Name Turbidity (NTU)
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
0.00 / 0.00	NTU	0.00	NTU	4.20	0.00	0.00%	Pass
124.00 / 124.00	NTU	124.00	NTU	117.70	124.00	0.00%	Pass

Group # 3
Group Name Conductivity
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.000

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
1.413 / 1.413	ms/cm	1.413	ms/cm	1.453	1.413	0.00%	Pass

Group # 4
Group Name Redox (ORP)
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
240.00 / 240.00	mv	240.00	mv	235.80	240.00	0.00%	Pass

Group # 5
Group Name Dissolved Oxygen Span
Stated Accy Pct of Reading
Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail

November 12, 2024

Eric Bauer
Ramboll
234 W. Florida Street
Fifth Floor
Milwaukee, WI 53204
TEL: (414) 837-3607
FAX: (414) 837-3608

Illinois	100226
Illinois	1004652024-2
Kansas	E-10374
Louisiana	05002
Louisiana	05003
Oklahoma	9978

RE: NEW-24Q4 **WorkOrder:** 24091272

Dear Eric Bauer:

TEKLAB, INC received 11 samples for NEW_NE_501 on 10/8/2024 3:00:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report,Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Elizabeth A. Hurley
Director of Customer Service
(618)344-1004 ex 33
ehurley@teklabinc.com

Report Contents

Client: Ramboll
Work Order: 24091272
Client Project: NEW-24Q4
Report Date: 12-Nov-24

This reporting package includes the following:

Cover Letter	1
Report Contents	2
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Accreditations	6
Laboratory Results	7
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Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

Abbr	Definition
*	Analytes on report marked with an asterisk are not NELAP accredited
CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
CRQL	A Client Requested Quantitation Limit is a reporting limit that varies according to customer request. The CRQL may not be less than the MDL.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilution factors.
DNI	Did not ignite
DUP	Laboratory duplicate is a replicate aliquot prepared under the same laboratory conditions and independently analyzed to obtain a measure of precision.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample is a sample matrix, free from the analytes of interest,spiked with verified known amounts of analytes and analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system.
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MBLK	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	"The method detection limit is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results."
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
NC	Data is not acceptable for compliance purposes
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions.
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TIC	Tentatively identified compound: Analytes tentatively identified in the sample by using a library search. Only results not in the calibration standard will be reported as tentatively identified compounds. Results for tentatively identified compounds that are not present in the calibration standard, but are assigned a specific chemical name based upon the library search, are calculated using total peak areas from reconstructed ion chromatograms and a response factor of one. The nearest Internal Standard is used for the calculation. The results of any TICs must be considered estimated, and are flagged with a "T". If the estimated result is above the calibration range it is flagged "ET"
TNTC	Too numerous to count (> 200 CFU)

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

Qualifiers

- Unknown hydrocarbon

B - Analyte detected in associated Method Blank

C - RL shown is a Client Requested Quantitation Limit

E - Value above quantitation range

H - Holding times exceeded

I - Associated internal standard was outside method criteria

J - Analyte detected below quantitation limits

M - Manual Integration used to determine area response

ND - Not Detected at the Reporting Limit

R - RPD outside accepted recovery limits

S - Spike Recovery outside recovery limits

T - TIC(Tentatively identified compound)

X - Value exceeds Maximum Contaminant Level

Case Narrative

http://www.teklabinc.com/

Client: Ramboll
Client Project: NEW-24Q4

Work Order: 24091272
Report Date: 12-Nov-24

Cooler Receipt Temp: 1.9 °C

An employee of Teklab, Inc. collected the sample(s).

Equipment Blank 1 and Equipment Blank 3 were not used.

Per Eric Bauer's request, only NEW_NE_501 data is included in this report. EAH 11/12/24

Locations

Collinsville

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email jhriley@teklabinc.com

Springfield

Address 3920 Pintail Dr
Springfield, IL 62711-9415
Phone (217) 698-1004
Fax (217) 698-1005
Email KKlostermann@teklabinc.com

Kansas City

Address 8421 Nieman Road
Lenexa, KS 66214
Phone (913) 541-1998
Fax (913) 541-1998
Email jhriley@teklabinc.com

Collinsville Air

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email EHurley@teklabinc.com

Chicago

Address 1319 Butterfield Rd.
Downers Grove, IL 60515
Phone (630) 324-6855
Fax
Email arenner@teklabinc.com

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2025	Collinsville
Illinois	IEPA	1004652024-2	NELAP	4/30/2025	Collinsville
Kansas	KDHE	E-10374	NELAP	4/30/2025	Collinsville
Louisiana	LDEQ	05002	NELAP	6/30/2025	Collinsville
Louisiana	LDEQ	05003	NELAP	6/30/2025	Collinsville
Oklahoma	ODEQ	9978	NELAP	12/31/2024	Collinsville
Arkansas	ADEQ	88-0966		3/14/2025	Collinsville
Illinois	IDPH	17584		5/31/2025	Collinsville
Iowa	IDNR	430		6/1/2026	Collinsville
Kentucky	UST	0073		1/31/2025	Collinsville
Mississippi	MSDH			4/30/2025	Collinsville
Missouri	MDNR	930		1/31/2025	Collinsville
Missouri	MDNR	00930		10/31/2026	Collinsville

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

Lab ID: 24091272-007 **Client Sample ID:** APW05

Matrix: GROUNDWATER **Collection Date:** 10/02/2024 11:46

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**14.40**	ft	1	10/02/2024 11:46	R354753
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**20**	NTU	1	10/02/2024 11:46	R354753
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-2000	-2000		**-170**	mV	1	10/02/2024 11:46	R354753
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**916**	µS/cm	1	10/02/2024 11:46	R354753
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**15.7**	°C	1	10/02/2024 11:46	R354753
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.80**	mg/L	1	10/02/2024 11:46	R354753
SW-846 9040B FIELD									
pH	*	0	1.00		**6.48**		1	10/02/2024 11:46	R354753
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**478**	mg/L	1	10/07/2024 12:26	R354253
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	10/07/2024 12:26	R354253
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**500**	mg/L	2.5	10/08/2024 10:09	R354396
SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY									
Fluoride	NELAP	0.20	0.50	J	**0.41**	mg/L	10	10/05/2024 6:37	R354124
Chloride	NELAP	1.00	5.00		**45.7**	mg/L	10	10/05/2024 6:37	R354124
Sulfate	NELAP	3.0	10	J	**3.4**	mg/L	10	10/05/2024 6:37	R354124
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**58.4**	mg/L	1	10/07/2024 14:42	229297
Magnesium	NELAP	0.006	0.050		**29.6**	mg/L	1	10/07/2024 14:42	229297
Potassium	NELAP	0.040	0.100		**1.72**	mg/L	1	10/07/2024 14:42	229297
Sodium	NELAP	0.018	0.050		**137**	mg/L	1	10/07/2024 14:42	229297
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	10/08/2024 9:11	229297
Arsenic	NELAP	0.4	1.0		**28.0**	µg/L	5	10/07/2024 18:49	229297
Barium	NELAP	0.7	1.0		**281**	µg/L	5	10/07/2024 18:49	229297
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/07/2024 18:49	229297
Boron	NELAP	9.2	25.0		**101**	µg/L	5	10/07/2024 18:49	229297
Cadmium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/07/2024 18:49	229297
Chromium	NELAP	0.7	1.5	J	**0.9**	µg/L	5	10/07/2024 18:49	229297
Cobalt	NELAP	0.1	1.0	J	**0.3**	µg/L	5	10/07/2024 18:49	229297
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/07/2024 18:49	229297
Lithium	*	1.4	3.0		**9.5**	µg/L	5	10/07/2024 18:49	229297
Molybdenum	NELAP	0.6	1.5		**9.7**	µg/L	5	10/07/2024 18:49	229297
Selenium	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/07/2024 18:49	229297
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	10/07/2024 18:49	229297
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	10/08/2024 10:23	229358

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

Lab ID: 24091272-009 **Client Sample ID:** APW06

Matrix: GROUNDWATER **Collection Date:** 10/08/2024 9:33

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**19.51**	ft	1	10/08/2024 9:33	R354753
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**3.0**	NTU	1	10/08/2024 9:33	R354753
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-2000	-2000		**-142**	mV	1	10/08/2024 9:33	R354753
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**699**	µS/cm	1	10/08/2024 9:33	R354753
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**15.6**	°C	1	10/08/2024 9:33	R354753
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**0.78**	mg/L	1	10/08/2024 9:33	R354753
SW-846 9040B FIELD									
pH	*	0	1.00		**7.48**		1	10/08/2024 9:33	R354753
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**474**	mg/L	1	10/09/2024 9:59	R354395
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	10/09/2024 9:59	R354395
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**475**	mg/L	2.5	10/11/2024 10:37	R354573
SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY									
Fluoride	NELAP	0.20	0.50		**0.50**	mg/L	10	10/10/2024 1:58	R354345
Chloride	NELAP	1.00	5.00		**22.5**	mg/L	10	10/10/2024 1:58	R354345
Sulfate	NELAP	3.0	10	J	**3.3**	mg/L	10	10/10/2024 1:58	R354345
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**55.0**	mg/L	1	10/10/2024 16:04	229445
Magnesium	NELAP	0.006	0.050		**25.0**	mg/L	1	10/10/2024 16:04	229445
Potassium	NELAP	0.040	0.100		**1.40**	mg/L	1	10/10/2024 16:04	229445
Sodium	NELAP	0.018	0.050		**99.8**	mg/L	1	10/10/2024 16:04	229445
Sample result(s) for Na exceed 10 times the CCB. Data is reportable per the TNI Standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	10/10/2024 20:16	229445
Arsenic	NELAP	0.4	1.0		**6.9**	µg/L	5	10/14/2024 12:38	229445
Barium	NELAP	0.7	1.0		**331**	µg/L	5	10/15/2024 20:05	229445
Beryllium	NELAP	0.2	1.0	J	**0.3**	µg/L	5	10/15/2024 20:05	229445
Boron	NELAP	9.2	25.0		**117**	µg/L	5	10/15/2024 20:05	229445
Cadmium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/14/2024 12:38	229445
Chromium	NELAP	0.7	1.5	J	**1.1**	µg/L	5	10/15/2024 20:05	229445
Cobalt	NELAP	0.1	1.0	J	**0.5**	µg/L	5	10/15/2024 20:05	229445
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/14/2024 12:38	229445
Lithium	*	1.4	3.0		**15.1**	µg/L	5	10/15/2024 20:05	229445
Molybdenum	NELAP	0.6	1.5		**8.0**	µg/L	5	10/14/2024 12:38	229445
Selenium	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/14/2024 12:38	229445
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	10/10/2024 20:16	229445
CCV recovered outside the upper control limits for Cr. Sample results are below the reporting limit. Data is reportable per the TNI standard.									
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	10/10/2024 12:31	229476

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

Lab ID: 24091272-022 **Client Sample ID:** APW19S

Matrix: GROUNDWATER **Collection Date:** 10/07/2024 10:35

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**8.63**	ft	1	10/07/2024 10:35	R354753
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**8.0**	NTU	1	10/07/2024 10:35	R354753
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-2000	-2000		**-73**	mV	1	10/07/2024 10:35	R354753
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**5120**	µS/cm	1	10/07/2024 10:35	R354753
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**19.2**	°C	1	10/07/2024 10:35	R354753
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**2.02**	mg/L	1	10/07/2024 10:35	R354753
SW-846 9040B FIELD									
pH	*	0	1.00		**6.39**		1	10/07/2024 10:35	R354753
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**528**	mg/L	1	10/08/2024 10:30	R354312
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	10/08/2024 10:30	R354312
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**3780**	mg/L	1	10/08/2024 11:19	R354396
SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY									
Fluoride	NELAP	0.20	0.50		**0.70**	mg/L	10	10/08/2024 17:59	R354259
Chloride	NELAP	1.00	5.00		**64.9**	mg/L	10	10/08/2024 17:59	R354259
Sulfate	NELAP	3.00	10.0		**2440**	mg/L	10	10/08/2024 17:59	R354259
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**319**	mg/L	1	10/08/2024 17:54	229380
Magnesium	NELAP	0.006	0.050		**234**	mg/L	1	10/08/2024 17:54	229380
Potassium	NELAP	0.040	0.100		**5.48**	mg/L	1	10/08/2024 17:54	229380
Sodium	NELAP	0.180	0.500		**546**	mg/L	10	10/16/2024 15:12	229380
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**1.1**	µg/L	5	10/10/2024 18:45	229380
Arsenic	NELAP	0.4	1.0		**12.9**	µg/L	5	10/10/2024 18:45	229380
Barium	NELAP	0.7	1.0		**19.5**	µg/L	5	10/10/2024 18:45	229380
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/16/2024 22:30	229380
Boron	NELAP	9.2	25.0		**85.8**	µg/L	5	10/10/2024 18:45	229380
Cadmium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/10/2024 18:45	229380
Chromium	NELAP	0.7	1.5		**2.2**	µg/L	5	10/10/2024 18:45	229380
Cobalt	NELAP	0.1	1.0		**1.1**	µg/L	5	10/10/2024 18:45	229380
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/10/2024 18:45	229380
Lithium	*	1.4	3.0		**89.7**	µg/L	5	10/16/2024 22:30	229380
Molybdenum	NELAP	0.6	1.5		**118**	µg/L	5	10/11/2024 18:16	229380
Selenium	NELAP	0.6	1.0		**6.1**	µg/L	5	10/10/2024 18:45	229380
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	10/10/2024 18:45	229380
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	10/09/2024 12:40	229394

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

Lab ID: 24091272-023 **Client Sample ID:** APW20S

Matrix: GROUNDWATER **Collection Date:** 10/02/2024 13:47

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**19.33**	ft	1	10/02/2024 13:47	R354753
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**110**	NTU	1	10/02/2024 13:47	R354753
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-2000	-2000		**-77**	mV	1	10/02/2024 13:47	R354753
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**3250**	µS/cm	1	10/02/2024 13:47	R354753
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**21.3**	°C	1	10/02/2024 13:47	R354753
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**5.61**	mg/L	1	10/02/2024 13:47	R354753
SW-846 9040B FIELD									
pH	*	0	1.00		**6.87**		1	10/02/2024 13:47	R354753
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**570**	mg/L	1	10/07/2024 11:00	R354253
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	10/07/2024 11:00	R354253
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**3080**	mg/L	2.5	10/08/2024 11:19	R354396
SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY									
Fluoride	NELAP	0.20	0.50		**ND**	mg/L	10	10/05/2024 10:30	R354124
Chloride	NELAP	1.00	5.00		**48.9**	mg/L	10	10/05/2024 10:30	R354124
Sulfate	NELAP	3.00	10.0		**1920**	mg/L	10	10/05/2024 10:30	R354124
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**407**	mg/L	1	10/07/2024 15:39	229297
Magnesium	NELAP	0.006	0.050		**340**	mg/L	1	10/07/2024 15:39	229297
Potassium	NELAP	0.040	0.100		**9.71**	mg/L	1	10/07/2024 15:39	229297
Sodium	NELAP	0.018	0.050		**186**	mg/L	1	10/07/2024 15:39	229297
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	10/08/2024 11:08	229297
Arsenic	NELAP	0.4	1.0		**2.8**	µg/L	5	10/07/2024 20:38	229297
Barium	NELAP	0.7	1.0		**69.5**	µg/L	5	10/07/2024 20:38	229297
Beryllium	NELAP	0.2	1.0	J	**0.3**	µg/L	5	10/07/2024 20:38	229297
Boron	NELAP	9.2	25.0		**161**	µg/L	5	10/10/2024 11:54	229297
Cadmium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/07/2024 20:38	229297
Chromium	NELAP	0.7	1.5		**24.0**	µg/L	5	10/07/2024 20:38	229297
Cobalt	NELAP	0.1	1.0		**5.5**	µg/L	5	10/07/2024 20:38	229297
Lead	NELAP	0.6	1.0		**3.6**	µg/L	5	10/07/2024 20:38	229297
Lithium	*	1.4	3.0		**32.3**	µg/L	5	10/07/2024 20:38	229297
Molybdenum	NELAP	0.6	1.5		**10.0**	µg/L	5	10/07/2024 20:38	229297
Selenium	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/07/2024 20:38	229297
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	10/07/2024 20:38	229297
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	10/08/2024 11:22	229360

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

Lab ID: 24091272-024 **Client Sample ID:** APW21S

Matrix: GROUNDWATER **Collection Date:** 10/02/2024 12:48

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**13.30**	ft	1	10/02/2024 12:48	R354753
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**49**	NTU	1	10/02/2024 12:48	R354753
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-2000	-2000		**-13**	mV	1	10/02/2024 12:48	R354753
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**1230**	µS/cm	1	10/02/2024 12:48	R354753
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**18.4**	°C	1	10/02/2024 12:48	R354753
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**1.13**	mg/L	1	10/02/2024 12:48	R354753
SW-846 9040B FIELD									
pH	*	0	1.00		**7.01**		1	10/02/2024 12:48	R354753
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**323**	mg/L	1	10/07/2024 11:08	R354253
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	10/07/2024 11:08	R354253
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**996**	mg/L	1	10/08/2024 11:19	R354396
SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY									
Fluoride	NELAP	0.20	0.50		**ND**	mg/L	10	10/05/2024 10:42	R354124
Chloride	NELAP	1.00	5.00		**9.38**	mg/L	10	10/05/2024 10:42	R354124
Sulfate	NELAP	3.00	10.0		**437**	mg/L	10	10/05/2024 10:42	R354124
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**184**	mg/L	1	10/07/2024 15:41	229297
Magnesium	NELAP	0.006	0.050		**70.6**	mg/L	1	10/07/2024 15:41	229297
Potassium	NELAP	0.040	0.100		**1.18**	mg/L	1	10/07/2024 15:41	229297
Sodium	NELAP	0.018	0.050		**31.4**	mg/L	1	10/07/2024 15:41	229297
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	10/08/2024 11:14	229297
Arsenic	NELAP	0.4	1.0	J	**0.9**	µg/L	5	10/07/2024 20:44	229297
Barium	NELAP	0.7	1.0		**37.8**	µg/L	5	10/07/2024 20:44	229297
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/07/2024 20:44	229297
Boron	NELAP	9.2	25.0		**165**	µg/L	5	10/10/2024 12:00	229297
Cadmium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/07/2024 20:44	229297
Chromium	NELAP	0.7	1.5		**3.2**	µg/L	5	10/07/2024 20:44	229297
Cobalt	NELAP	0.1	1.0		**1.3**	µg/L	5	10/07/2024 20:44	229297
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/07/2024 20:44	229297
Lithium	*	1.4	3.0		**14.7**	µg/L	5	10/07/2024 20:44	229297
Molybdenum	NELAP	0.6	1.5	J	**1.5**	µg/L	5	10/07/2024 20:44	229297
Selenium	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/07/2024 20:44	229297
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	10/07/2024 20:44	229297
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	10/08/2024 11:33	229360

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

Lab ID: 24091272-025 **Client Sample ID:** APW22S

Matrix: GROUNDWATER **Collection Date:** 10/02/2024 11:54

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**9.26**	ft	1	10/02/2024 11:54	R354753
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**43**	NTU	1	10/02/2024 11:54	R354753
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-2000	-2000		**-20**	mV	1	10/02/2024 11:54	R354753
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**6820**	µS/cm	1	10/02/2024 11:54	R354753
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**18.3**	°C	1	10/02/2024 11:54	R354753
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**1.12**	mg/L	1	10/02/2024 11:54	R354753
SW-846 9040B FIELD									
pH	*	0	1.00		**6.12**		1	10/02/2024 11:54	R354753
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**643**	mg/L	1	10/07/2024 9:51	R354253
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	10/07/2024 9:51	R354253
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**1880**	mg/L	1	10/08/2024 11:42	R354396
SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY									
Fluoride	NELAP	0.20	0.50		**ND**	mg/L	10	10/05/2024 10:54	R354124
Chloride	NELAP	1.00	5.00		**1490**	mg/L	10	10/05/2024 10:54	R354124
Sulfate	NELAP	3.00	10.0		**2030**	mg/L	10	10/05/2024 10:54	R354124
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**611**	mg/L	1	10/07/2024 15:43	229297
Magnesium	NELAP	0.006	0.050		**469**	mg/L	1	10/07/2024 15:43	229297
Potassium	NELAP	0.040	0.100		**3.86**	mg/L	1	10/07/2024 15:43	229297
Sodium	NELAP	0.018	0.050		**713**	mg/L	1	10/07/2024 15:43	229297
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	10/09/2024 12:13	229297
Arsenic	NELAP	0.4	1.0		**1.6**	µg/L	5	10/07/2024 21:56	229297
Barium	NELAP	0.7	1.0		**32.0**	µg/L	5	10/07/2024 21:56	229297
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/07/2024 21:56	229297
Boron	NELAP	9.2	25.0		**137**	µg/L	5	10/10/2024 12:06	229297
Cadmium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/07/2024 21:56	229297
Chromium	NELAP	0.7	1.5		**< 1.5**	µg/L	5	10/07/2024 21:56	229297
Cobalt	NELAP	0.1	1.0		**49.7**	µg/L	5	10/07/2024 21:56	229297
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/07/2024 21:56	229297
Lithium	*	1.4	3.0		**21.9**	µg/L	5	10/07/2024 21:56	229297
Molybdenum	NELAP	0.6	1.5		**1.8**	µg/L	5	10/07/2024 21:56	229297
Selenium	NELAP	0.6	1.0	J	**1.0**	µg/L	5	10/07/2024 21:56	229297
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	10/07/2024 21:56	229297
Contamination present in the CCB for Sb. Sample results below the reporting limit are reportable per the TNI Standard.									
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	10/08/2024 11:35	229360

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

Lab ID: 24091272-026 **Client Sample ID:** APW23

Matrix: GROUNDWATER **Collection Date:** 10/02/2024 10:31

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**15.59**	ft	1	10/02/2024 10:31	R354753
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**4.5**	NTU	1	10/02/2024 10:31	R354753
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-2000	-2000		**-99**	mV	1	10/02/2024 10:31	R354753
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**1380**	µS/cm	1	10/02/2024 10:31	R354753
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**18.5**	°C	1	10/02/2024 10:31	R354753
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**5.85**	mg/L	1	10/02/2024 10:31	R354753
SW-846 9040B FIELD									
pH	*	0	1.00		**7.22**		1	10/02/2024 10:31	R354753
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**441**	mg/L	1	10/07/2024 9:59	R354253
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	10/07/2024 9:59	R354253
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	40	50		**935**	mg/L	2.5	10/08/2024 11:42	R354396
SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY									
Fluoride	NELAP	0.20	0.50	J	**0.29**	mg/L	10	10/05/2024 11:05	R354124
Chloride	NELAP	1.00	5.00		**50.4**	mg/L	10	10/05/2024 11:05	R354124
Sulfate	NELAP	3.00	10.0		**304**	mg/L	10	10/05/2024 11:05	R354124
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**126**	mg/L	1	10/08/2024 13:18	229350
Magnesium	NELAP	0.006	0.050		**70.7**	mg/L	1	10/08/2024 13:18	229350
Potassium	NELAP	0.040	0.100		**2.33**	mg/L	1	10/08/2024 13:18	229350
Sodium	NELAP	0.018	0.050		**143**	mg/L	1	10/08/2024 13:18	229350
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	10/08/2024 12:31	229350
Arsenic	NELAP	0.4	1.0		**6.1**	µg/L	5	10/09/2024 9:01	229350
Barium	NELAP	0.7	1.0		**50.2**	µg/L	5	10/08/2024 12:31	229350
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/10/2024 9:22	229350
Boron	NELAP	9.2	25.0		**73.7**	µg/L	5	10/10/2024 9:22	229350
Cadmium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/09/2024 9:01	229350
Chromium	NELAP	0.7	1.5		**< 1.5**	µg/L	5	10/10/2024 9:22	229350
Cobalt	NELAP	0.1	1.0		**< 1.0**	µg/L	5	10/10/2024 9:22	229350
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/08/2024 12:31	229350
Lithium	*	1.4	3.0		**20.2**	µg/L	5	10/10/2024 9:22	229350
Molybdenum	NELAP	0.6	1.5		**10.8**	µg/L	5	10/09/2024 9:01	229350
Selenium	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/09/2024 9:01	229350
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	10/08/2024 12:31	229350
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	10/08/2024 11:37	229360

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

Lab ID: 24091272-027 **Client Sample ID:** APW23S

Matrix: GROUNDWATER **Collection Date:** 10/02/2024 9:38

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**7.79**	ft	1	10/02/2024 9:38	R354753
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**5.8**	NTU	1	10/02/2024 9:38	R354753
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-2000	-2000		**-125**	mV	1	10/02/2024 9:38	R354753
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**2700**	µS/cm	1	10/02/2024 9:38	R354753
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**18.9**	°C	1	10/02/2024 9:38	R354753
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**2.06**	mg/L	1	10/02/2024 9:38	R354753
SW-846 9040B FIELD									
pH	*	0	1.00		**6.93**		1	10/02/2024 9:38	R354753
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**518**	mg/L	1	10/07/2024 10:08	R354253
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	10/07/2024 10:08	R354253
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**2270**	mg/L	1	10/08/2024 11:42	R354396
SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY									
Fluoride	NELAP	0.20	0.50	J	**0.20**	mg/L	10	10/05/2024 11:17	R354124
Chloride	NELAP	1.00	5.00		**40.9**	mg/L	10	10/05/2024 11:17	R354124
Sulfate	NELAP	3.00	10.0		**1240**	mg/L	10	10/05/2024 11:17	R354124
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**242**	mg/L	1	10/08/2024 13:19	229350
Magnesium	NELAP	0.006	0.050		**250**	mg/L	1	10/08/2024 13:19	229350
Potassium	NELAP	0.040	0.100		**0.598**	mg/L	1	10/08/2024 13:19	229350
Sodium	NELAP	0.018	0.050		**141**	mg/L	1	10/08/2024 13:19	229350
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	10/08/2024 12:37	229350
Arsenic	NELAP	0.4	1.0		**1.1**	µg/L	5	10/09/2024 9:07	229350
Barium	NELAP	0.7	1.0		**20.3**	µg/L	5	10/08/2024 12:37	229350
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/10/2024 9:28	229350
Boron	NELAP	9.2	25	J	**10**	µg/L	5	10/10/2024 9:28	229350
Cadmium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/09/2024 9:07	229350
Chromium	NELAP	0.7	1.5		**< 1.5**	µg/L	5	10/10/2024 9:28	229350
Cobalt	NELAP	0.1	1.0		**1.0**	µg/L	5	10/10/2024 9:28	229350
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/08/2024 12:37	229350
Lithium	*	1.4	3.0		**21.0**	µg/L	5	10/10/2024 9:28	229350
Molybdenum	NELAP	0.6	1.5		**2.0**	µg/L	5	10/09/2024 9:07	229350
Selenium	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/09/2024 9:07	229350
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	10/08/2024 12:37	229350
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	10/08/2024 11:40	229360

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

Lab ID: 24091272-077 **Client Sample ID:** Field Blank

Matrix: AQUEOUS **Collection Date:** 10/08/2024 12:06

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**5**	mg/L	1	10/09/2024 10:15	R354395
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	10/09/2024 10:15	R354395
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**< 20**	mg/L	1	10/11/2024 11:23	R354573
SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY									
Fluoride	NELAP	0.20	0.50		**ND**	mg/L	10	10/09/2024 23:38	R354345
Chloride	NELAP	1.00	5.00		**ND**	mg/L	10	10/09/2024 23:38	R354345
Sulfate	NELAP	3.00	10.0		**ND**	mg/L	10	10/09/2024 23:38	R354345
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.10	J	**0.047**	mg/L	1	10/10/2024 16:12	229445
Magnesium	NELAP	0.006	0.050	J	**0.008**	mg/L	1	10/10/2024 16:12	229445
Potassium	NELAP	0.040	0.100		**< 0.100**	mg/L	1	10/10/2024 16:12	229445
Sodium	NELAP	0.018	0.050	J	**0.036**	mg/L	1	10/10/2024 16:12	229445
Contamination present in the CCB for Na. Sample results below the reporting limit are reportable per the TNI Standard.									
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0		**< 1.0**	µg/L	5	10/10/2024 20:34	229445
Arsenic	NELAP	0.4	1.0	J	**0.5**	µg/L	5	10/15/2024 21:44	229445
Barium	NELAP	0.7	1.0		**< 1.0**	µg/L	5	10/10/2024 20:34	229445
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/15/2024 21:44	229445
Boron	NELAP	9.2	25.0		**< 25.0**	µg/L	5	10/15/2024 21:44	229445
Cadmium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/15/2024 21:44	229445
Chromium	NELAP	0.7	1.5		**< 1.5**	µg/L	5	10/10/2024 20:34	229445
Cobalt	NELAP	0.1	1.0		**< 1.0**	µg/L	5	10/15/2024 21:44	229445
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/14/2024 14:03	229445
Lithium	*	1.4	3.0		**< 3.0**	µg/L	5	10/15/2024 21:44	229445
Molybdenum	NELAP	0.6	1.5		**< 1.5**	µg/L	5	10/15/2024 21:44	229445
Selenium	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/10/2024 20:34	229445
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	10/10/2024 20:34	229445
Contamination present in the CCB for Mo. Sample results below the reporting limit are reportable per the TNI Standard.									
CCV recovered outside the upper control limits. Sample results are below the reporting limit. Data is reportable per the TNI standard.									
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	10/10/2024 13:00	229476

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

Lab ID: 24091272-081 **Client Sample ID:** APW19S Duplicate

Matrix: GROUNDWATER **Collection Date:** 10/07/2024 10:35

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
FIELD ELEVATION MEASUREMENTS									
Depth to water from measuring point	*	0	0		**8.63**	ft	1	10/07/2024 10:35	R354753
STANDARD METHODS 2130 B FIELD									
Turbidity	*	1.0	1.0		**8.0**	NTU	1	10/07/2024 10:35	R354753
STANDARD METHODS 18TH ED. 2580 B FIELD									
Oxidation-Reduction Potential	*	-2000	-2000		**-73**	mV	1	10/07/2024 10:35	R354753
STANDARD METHODS 2510 B FIELD									
Spec. Conductance, Field	*	0	0		**5120**	µS/cm	1	10/07/2024 10:35	R354753
STANDARD METHODS 2550 B FIELD									
Temperature	*	0	0		**19.2**	°C	1	10/07/2024 10:35	R354753
STANDARD METHODS 4500-O G FIELD									
Oxygen, Dissolved	*	0	0		**2.02**	mg/L	1	10/07/2024 10:35	R354753
SW-846 9040B FIELD									
pH	*	0	1.00		**6.39**		1	10/07/2024 10:35	R354753
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**518**	mg/L	1	10/08/2024 10:38	R354312
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	10/08/2024 10:38	R354312
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**3620**	mg/L	1	10/10/2024 10:54	R354508
SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY									
Fluoride	NELAP	0.20	0.50	J	**0.48**	mg/L	10	10/08/2024 18:11	R354259
Chloride	NELAP	1.00	5.00		**66.3**	mg/L	10	10/08/2024 18:11	R354259
Sulfate	NELAP	3.00	10.0		**2480**	mg/L	10	10/08/2024 18:11	R354259
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**421**	mg/L	1	10/08/2024 17:56	229380
Magnesium	NELAP	0.006	0.050		**307**	mg/L	1	10/08/2024 17:56	229380
Potassium	NELAP	0.040	0.100		**4.68**	mg/L	1	10/08/2024 17:56	229380
Sodium	NELAP	0.018	0.050		**357**	mg/L	1	10/08/2024 17:56	229380
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0	J	**0.6**	µg/L	5	10/10/2024 20:04	229380
Arsenic	NELAP	0.4	1.0		**7.4**	µg/L	5	10/15/2024 22:40	229380
Barium	NELAP	0.7	1.0		**21.5**	µg/L	5	10/10/2024 20:04	229380
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/16/2024 22:36	229380
Boron	NELAP	9.2	25.0		**66.3**	µg/L	5	10/16/2024 22:36	229380
Cadmium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/15/2024 22:40	229380
Chromium	NELAP	0.7	1.5		**1.9**	µg/L	5	10/10/2024 20:04	229380
Cobalt	NELAP	0.1	1.0		**2.0**	µg/L	5	10/15/2024 22:40	229380
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/15/2024 22:40	229380
Lithium	*	1.4	3.0		**72.4**	µg/L	5	10/16/2024 22:36	229380
Molybdenum	NELAP	0.6	1.5		**36.8**	µg/L	5	10/11/2024 18:23	229380
Selenium	NELAP	0.6	1.0		**3.6**	µg/L	5	10/15/2024 22:40	229380
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	10/10/2024 20:04	229380
CCV recovered outside the upper control limits for Pb. Sample results are below the reporting limit. Data is reportable per the TNI standard.									
SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	10/09/2024 12:20	229395

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

Lab ID: 24091272-083 **Client Sample ID:** Equipment Blank 2

Matrix: AQUEOUS **Collection Date:** 10/08/2024 12:50

Analyses	Certification	MDL	RL	Qual	Result	Units	DF	Date Analyzed	Batch
STANDARD METHODS 2320 B (TOTAL) 1997, 2011									
Alkalinity, Bicarbonate (as CaCO3)	NELAP	0	0		**5**	mg/L	1	10/09/2024 10:27	R354395
STANDARD METHODS 2320 B 1997, 2011									
Alkalinity, Carbonate (as CaCO3)	NELAP	0	0		**0**	mg/L	1	10/09/2024 10:27	R354395
STANDARD METHODS 2540 C (TOTAL) 1997, 2011									
Total Dissolved Solids	NELAP	16	20		**< 20**	mg/L	1	10/11/2024 11:24	R354573
SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY									
Fluoride	NELAP	0.20	0.50		**ND**	mg/L	10	10/10/2024 0:37	R354345
Chloride	NELAP	1.00	5.00		**ND**	mg/L	10	10/10/2024 0:37	R354345
Sulfate	NELAP	3.00	10.0		**ND**	mg/L	10	10/10/2024 0:37	R354345
SW-846 3005A, 6010B, METALS BY ICP (TOTAL)									
Calcium	NELAP	0.035	0.100		**1.30**	mg/L	1	10/10/2024 16:12	229445
Magnesium	NELAP	0.006	0.050		**0.485**	mg/L	1	10/10/2024 16:12	229445
Potassium	NELAP	0.040	0.10	J	**0.065**	mg/L	1	10/10/2024 16:12	229445
Sodium	NELAP	0.045	0.050		**0.193**	mg/L	1	10/11/2024 17:37	229445
SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)									
Antimony	NELAP	0.4	1.0	J	**0.7**	µg/L	5	10/21/2024 9:20	229445
Arsenic	NELAP	0.4	1.0		**< 1.0**	µg/L	5	10/15/2024 21:50	229445
Barium	NELAP	0.7	1.0		**4.8**	µg/L	5	10/15/2024 21:50	229445
Beryllium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/15/2024 21:50	229445
Boron	NELAP	9.2	25	J	**12**	µg/L	5	10/15/2024 21:50	229445
Cadmium	NELAP	0.2	1.0		**< 1.0**	µg/L	5	10/15/2024 21:50	229445
Chromium	NELAP	0.7	1.5		**< 1.5**	µg/L	5	10/31/2024 19:41	230351
Cobalt	NELAP	0.1	1.0	J	**0.2**	µg/L	5	10/15/2024 21:50	229445
Lead	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/14/2024 15:05	229445
Lithium	*	1.4	3.0		**< 3.0**	µg/L	5	10/15/2024 21:50	229445
Molybdenum	NELAP	0.6	1.5		**< 1.5**	µg/L	5	10/15/2024 21:50	229445
Selenium	NELAP	0.6	1.0		**< 1.0**	µg/L	5	10/15/2024 21:50	229445
Thallium	NELAP	1.0	2.0		**< 2.0**	µg/L	5	10/14/2024 15:05	229445

Contamination present in the CCB for Sb. Sample results below the reporting limit are reportable per the TNI Standard.

Contamination present in the CCB for Mo. Sample results below the reporting limit are reportable per the TNI Standard.

CCV recovered outside the upper control limits. Sample results are below the reporting limit. Data is reportable per the TNI standard.

SW-846 7470A (TOTAL)									
Mercury	NELAP	0.06	0.20		**< 0.20**	µg/L	1	10/10/2024 13:09	229476

Client: Ramboll
Client Project: NEW-24Q4

Work Order: 24091272
Report Date: 12-Nov-24

Lab Sample ID	Client Sample ID	Matrix	Fractions	Collection Date
24091272-007	APW05	Groundwater	3	10/02/2024 11:46
24091272-009	APW06	Groundwater	3	10/08/2024 9:33
24091272-022	APW19S	Groundwater	3	10/07/2024 10:35
24091272-023	APW20S	Groundwater	3	10/02/2024 13:47
24091272-024	APW21S	Groundwater	3	10/02/2024 12:48
24091272-025	APW22S	Groundwater	3	10/02/2024 11:54
24091272-026	APW23	Groundwater	3	10/02/2024 10:31
24091272-027	APW23S	Groundwater	3	10/02/2024 9:38
24091272-077	Field Blank	Aqueous	14	10/08/2024 12:06
24091272-081	APW19S Duplicate	Groundwater	3	10/07/2024 10:35
24091272-083	Equipment Blank 2	Aqueous	14	10/08/2024 12:50

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 2510 B FIELD

Batch R354753 **SampType:** LCS Units **µS/cm**
SampID: LCS-1-JC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	99.9	90	110	10/01/2024

Batch R354753 **SampType:** LCS Units **µS/cm**
SampID: LCS-1-TC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	99.9	90	110	10/02/2024

Batch R354753 **SampType:** LCS Units **µS/cm**
SampID: LCS-2-JC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	99.9	90	110	10/02/2024

Batch R354753 **SampType:** LCS Units **µS/cm**
SampID: LCS-2-TC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	100.1	90	110	10/03/2024

Batch R354753 **SampType:** LCS Units **µS/cm**
SampID: LCS-3-JC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	99.9	90	110	10/03/2024

Batch R354753 **SampType:** LCS Units **µS/cm**
SampID: LCS-3-TC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1420**	1412	0	100.6	90	110	10/07/2024

Batch R354753 **SampType:** LCS Units **µS/cm**
SampID: LCS-4-JC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	99.9	90	110	10/07/2024

Batch R354753 **SampType:** LCS Units **µS/cm**
SampID: LCS-4-TC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	100.1	90	110	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 2510 B FIELD

Batch R354753 **SampType:** LCS Units µS/cm

SampID: LCS-5-JC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Spec. Conductance, Field	*	0		**1410**	1412	0	99.9	90	110	10/08/2024

SW-846 9040B FIELD

Batch R354753 **SampType:** LCS Units

SampID: LCS-1-JC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.00**	7.000	0	100.0	98.57	101.4	10/01/2024

Batch R354753 **SampType:** LCS Units

SampID: LCS-1-TC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.08**	7.000	0	101.1	98.57	101.4	10/02/2024

Batch R354753 **SampType:** LCS Units

SampID: LCS-2-JC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.01**	7.000	0	100.1	98.57	101.4	10/02/2024

Batch R354753 **SampType:** LCS Units

SampID: LCS-2-TC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.10**	7.000	0	101.4	98.57	101.4	10/03/2024

Batch R354753 **SampType:** LCS Units

SampID: LCS-3-JC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.02**	7.000	0	100.3	98.57	101.4	10/03/2024

Batch R354753 **SampType:** LCS Units

SampID: LCS-3-TC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.00**	7.000	0	100.0	98.57	101.4	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 9040B FIELD

Batch R354753 **SampType:** LCS Units

SampID: LCS-4-JC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.02**	7.000	0	100.3	98.57	101.4	10/07/2024

Batch R354753 **SampType:** LCS Units

SampID: LCS-4-TC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.08**	7.000	0	101.1	98.57	101.4	10/08/2024

Batch R354753 **SampType:** LCS Units

SampID: LCS-5-JC

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
pH	*	1.00		**7.02**	7.000	0	100.3	98.57	101.4	10/08/2024

EPA 600 350.1 (DISSOLVED)

Batch R354239 **SampType:** MS Units **mg/L**

SampID: 24100354-006GMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.20		**3.66**	4.000	0	91.5	90	110	10/07/2024

Batch R354239 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 24100354-006GMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.20		**3.72**	4.000	0	93.0	3.660	1.60	10/07/2024

Batch R354377 **SampType:** MS Units **mg/L**

SampID: 24091272-066KMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		1.00		**26.4**	20.00	7.703	93.7	90	110	10/09/2024

Batch R354377 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 24091272-066KMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		1.00		**26.4**	20.00	7.703	93.6	26.44	0.09	10/09/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

EPA 600 350.1 (TOTAL)

Batch R354165 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**< 0.10**	0.0270	0	0	-100	100	10/04/2024

Batch R354165 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**0.98**	1.000	0	98.3	90	110	10/04/2024

Batch R354165 **SampType:** MS Units **mg/L**
SampID: 24100178-002CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.88**	2.000	0.05500	91.5	90	110	10/04/2024

Batch R354165 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100178-002CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.88**	2.000	0.05500	91.4	1.885	0.16	10/04/2024

Batch R354165 **SampType:** MS Units **mg/L**
SampID: 24100229-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		1.00		**21.6**	20.00	3.461	90.8	90	110	10/04/2024

Batch R354165 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100229-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		1.00		**22.0**	20.00	3.461	92.4	21.62	1.54	10/04/2024

Batch R354165 **SampType:** MS Units **mg/L**
SampID: 24100249-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.84**	2.000	0	92.0	90	110	10/04/2024

Batch R354165 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100249-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.83**	2.000	0	91.3	1.839	0.71	10/04/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

EPA 600 350.1 (TOTAL)

Batch R354165 **SampType:** MS Units **mg/L**
SampID: 24100277-001FMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10	S	**1.96**	2.000	0.3030	83.0	90	110	10/04/2024

Batch R354165 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100277-001FMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10	S	**2.01**	2.000	0.3030	85.4	1.963	2.47	10/04/2024

Batch R354165 **SampType:** MS Units **mg/L**
SampID: 24100361-002CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.86**	2.000	0.02800	91.5	90	110	10/04/2024

Batch R354165 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100361-002CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.88**	2.000	0.02800	92.4	1.858	0.96	10/04/2024

Batch R354165 **SampType:** MS Units **mg/L**
SampID: 24100369-002FMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10	S	**1.92**	2.000	0.2950	81.2	90	110	10/04/2024

Batch R354165 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100369-002FMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10	S	**1.97**	2.000	0.2950	83.9	1.920	2.72	10/04/2024

Batch R354165 **SampType:** MS Units **mg/L**
SampID: 24100371-001DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10	S	**2.04**	2.000	0.2480	89.4	90	110	10/04/2024

Batch R354165 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100371-001DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.06**	2.000	0.2480	90.4	2.036	0.98	10/04/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

EPA 600 350.1 (TOTAL)

Batch R354165 **SampType:** MS Units **mg/L**
SampID: 24100440-002EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10	S	**2.16**	2.000	0.3900	88.4	90	110	10/04/2024

Batch R354165 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100440-002EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10	S	**2.18**	2.000	0.3900	89.6	2.158	1.11	10/04/2024

Batch R354239 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**< 0.10**	0.0270	0	0	-100	100	10/07/2024

Batch R354239 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.01**	1.000	0	101.3	90	110	10/07/2024

Batch R354239 **SampType:** MS Units **mg/L**
SampID: 24100457-004AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.91**	2.000	0.03700	93.4	90	110	10/07/2024

Batch R354239 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100457-004AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.93**	2.000	0.03700	94.7	1.906	1.30	10/07/2024

Batch R354239 **SampType:** MS Units **mg/L**
SampID: 24100473-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.01**	2.000	0.1330	94.1	90	110	10/07/2024

Batch R354239 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100473-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.99**	2.000	0.1330	93.0	2.014	1.05	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

EPA 600 350.1 (TOTAL)

Batch R354239 **SampType:** MS Units **mg/L**
SampID: 24100473-005AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.98**	2.000	0.09900	94.1	90	110	10/07/2024

Batch R354239 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100473-005AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.98**	2.000	0.09900	94.0	1.981	0.10	10/07/2024

Batch R354239 **SampType:** MS Units **mg/L**
SampID: 24100474-003AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.93**	2.000	1.053	93.8	90	110	10/07/2024

Batch R354239 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100474-003AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.93**	2.000	1.053	94.0	2.929	0.17	10/07/2024

Batch R354239 **SampType:** MS Units **mg/L**
SampID: 24100474-005AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**3.08**	2.000	1.192	94.3	90	110	10/07/2024

Batch R354239 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100474-005AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**3.08**	2.000	1.192	94.6	3.078	0.23	10/07/2024

Batch R354239 **SampType:** MS Units **mg/L**
SampID: 24100480-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.90**	2.000	0	95.2	90	110	10/07/2024

Batch R354239 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100480-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.90**	2.000	0	95.1	1.903	0.05	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

EPA 600 350.1 (TOTAL)

Batch R354239 **SampType:** MS Units **mg/L**
SampID: 24100536-002DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.89**	2.000	0	94.6	90	110	10/07/2024

Batch R354239 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100536-002DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.91**	2.000	0	95.6	1.893	1.05	10/07/2024

Batch R354377 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**< 0.10**	0.0270	0	0	-100	100	10/09/2024

Batch R354377 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.07**	1.000	0	107.2	90	110	10/09/2024

Batch R354377 **SampType:** MS Units **mg/L**
SampID: 24092062-001IMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		200		**6480**	4000	2738	93.5	90	110	10/09/2024

Batch R354377 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24092062-001IMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		200		**6610**	4000	2738	96.9	6477	2.08	10/09/2024

Batch R354377 **SampType:** MS Units **mg/L**
SampID: 24100608-001EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.93**	2.000	0	96.7	90	110	10/09/2024

Batch R354377 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100608-001EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.90**	2.000	0	95.0	1.934	1.77	10/09/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

EPA 600 350.1 (TOTAL)

Batch R354377 **SampType:** MS Units **mg/L**
SampID: 24100632-002CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.21**	2.000	0.3220	94.4	90	110	10/09/2024

Batch R354377 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100632-002CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.20**	2.000	0.3220	93.9	2.210	0.45	10/09/2024

Batch R354377 **SampType:** MS Units **mg/L**
SampID: 24100655-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.11**	2.000	0.2280	93.9	90	110	10/09/2024

Batch R354377 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100655-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.12**	2.000	0.2280	94.7	2.106	0.76	10/09/2024

Batch R354377 **SampType:** MS Units **mg/L**
SampID: 24100661-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.23**	2.000	0.3570	93.8	90	110	10/09/2024

Batch R354377 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100661-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.17**	2.000	0.3570	90.8	2.234	2.72	10/09/2024

Batch R354377 **SampType:** MS Units **mg/L**
SampID: 24100732-007BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.89**	2.000	0.03100	92.8	90	110	10/09/2024

Batch R354377 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100732-007BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.89**	2.000	0.03100	92.8	1.887	0.05	10/09/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

EPA 600 350.1 (TOTAL)

Batch R354493 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**< 0.10**	0.0270	0	0	-100	100	10/11/2024

Batch R354493 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.03**	1.000	0	102.5	90	110	10/11/2024

Batch R354493 **SampType:** MS Units **mg/L**
SampID: 24100831-002CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.11**	2.000	0.2690	92.0	90	110	10/11/2024

Batch R354493 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100831-002CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.11**	2.000	0.2690	92.2	2.108	0.19	10/11/2024

Batch R354493 **SampType:** MS Units **mg/L**
SampID: 24100833-007BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.85**	2.000	0	92.5	90	110	10/11/2024

Batch R354493 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100833-007BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.83**	2.000	0	91.6	1.850	1.03	10/11/2024

Batch R354493 **SampType:** MS Units **mg/L**
SampID: 24100862-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.90**	2.000	0.02900	93.5	90	110	10/11/2024

Batch R354493 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100862-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.90**	2.000	0.02900	93.5	1.899	0.00	10/11/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

EPA 600 350.1 (TOTAL)

Batch R354493 **SampType:** MS Units **mg/L**
SampID: 24100933-002CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.87**	2.000	0	93.7	90	110	10/11/2024

Batch R354493 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100933-002CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.87**	2.000	0	93.4	1.874	0.27	10/11/2024

Batch R354493 **SampType:** MS Units **mg/L**
SampID: 24100940-001DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**4.64**	2.000	2.749	94.4	90	110	10/11/2024

Batch R354493 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100940-001DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**4.61**	2.000	2.749	93.2	4.637	0.54	10/11/2024

Batch R354493 **SampType:** MS Units **mg/L**
SampID: 24101024-004DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.92**	2.000	0	95.8	90	110	10/11/2024

Batch R354493 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24101024-004DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.89**	2.000	0	94.3	1.917	1.63	10/11/2024

Batch R354493 **SampType:** MS Units **mg/L**
SampID: 24101046-011BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.86**	2.000	0.03500	91.4	90	110	10/11/2024

Batch R354493 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24101046-011BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.87**	2.000	0.03500	91.6	1.863	0.16	10/11/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

EPA 600 350.1 (TOTAL)

Batch R354493 **SampType:** MS Units **mg/L**
SampID: 24101051-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.88**	2.000	0	94.2	90	110	10/11/2024

Batch R354493 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24101051-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**1.89**	2.000	0	94.4	1.884	0.16	10/11/2024

Batch R354493 **SampType:** MS Units **mg/L**
SampID: 24101075-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.16**	2.000	0.3040	92.8	90	110	10/11/2024

Batch R354493 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24101075-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Ammonia (as N)		0.10		**2.17**	2.000	0.3040	93.1	2.159	0.32	10/11/2024

STANDARD METHODS 2540 C (TOTAL) 1997, 2011

Batch R354396 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	10/08/2024
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	10/08/2024
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	10/08/2024

Batch R354396 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**958**	1000	0	95.8	90	110	10/08/2024
Total Dissolved Solids		20		**942**	1000	0	94.2	90	110	10/08/2024
Total Dissolved Solids		20		**950**	1000	0	95.0	90	110	10/08/2024

Batch R354396 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24091272-024ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20		**980**				996.0	1.62	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 2540 C (TOTAL) 1997, 2011

Batch R354396 **SampType:** DUP Units **mg/L** RPD Limit **10**

SampID: 24100454-001ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		100		**2580**				2530	1.96	10/08/2024

Batch R354452 **SampType:** MBLK Units **mg/L**

SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	10/09/2024

Batch R354452 **SampType:** LCS Units **mg/L**

SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**956**	1000	0	95.6	90	110	10/09/2024

Batch R354452 **SampType:** DUP Units **mg/L** RPD Limit **10**

SampID: 24100661-005ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		50		**370**				405.0	9.03	10/09/2024

Batch R354508 **SampType:** MBLK Units **mg/L**

SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	10/10/2024

Batch R354508 **SampType:** LCS Units **mg/L**

SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**964**	1000	0	96.4	90	110	10/10/2024

Batch R354508 **SampType:** DUP Units **mg/L** RPD Limit **10**

SampID: 24100661-001ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		50		**360**				380.0	5.41	10/10/2024

Batch R354573 **SampType:** MBLK Units **mg/L**

SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	10/11/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 2540 C (TOTAL) 1997, 2011

Batch R354573 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**978**	1000	0	97.8	90	110	10/11/2024

Batch R354573 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24100660-001ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		100		**3500**				3630	3.65	10/11/2024

Batch R355559 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	10/31/2024
Total Dissolved Solids		20		**< 20**	16.00	0	0	-100	100	10/31/2024

Batch R355559 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		**944**	1000	0	94.4	90	110	10/31/2024
Total Dissolved Solids		20		**954**	1000	0	95.4	90	110	10/31/2024

Batch R355559 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24101487-002BDUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		67	H	**972**				939.1	3.48	10/31/2024

Batch R355559 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24102240-004BDUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20	H	**508**				480.0	5.67	10/31/2024

Batch R355559 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24102290-001BDUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Dissolved Solids		20		**444**				488.0	9.44	10/31/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 4500-NO2 B (DISSOLVED) 2000, 2011

Batch R354181 **SampType:** MS Units **mg/L**
SampID: 24091272-001GMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.45**	0.5000	0	90.2	85	115	10/05/2024

Batch R354181 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24091272-001GMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.46**	0.5000	0	92.2	0.4510	2.19	10/05/2024

Batch R354181 **SampType:** MS Units **mg/L**
SampID: 24091272-056BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.50**	0.5000	0	99.0	85	115	10/04/2024

Batch R354181 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24091272-056BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.49**	0.5000	0	98.2	0.4950	0.81	10/04/2024

Batch R354181 **SampType:** MS Units **mg/L**
SampID: 24091272-070BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.50**	0.5000	0	100.0	85	115	10/04/2024

Batch R354181 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24091272-070BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.50**	0.5000	0	100.0	0.5000	0.00	10/04/2024

Batch R354242 **SampType:** MS Units **mg/L**
SampID: 24091272-028BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.45**	0.5000	0	90.8	85	115	10/07/2024

Batch R354242 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24091272-028BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.46**	0.5000	0	91.6	0.4540	0.88	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 4500-NO2 B (DISSOLVED) 2000, 2011

Batch R354242 **SampType:** MS Units **mg/L**
SampID: 24091272-080BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.46**	0.5000	0	92.2	85	115	10/07/2024

Batch R354242 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24091272-080BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.46**	0.5000	0	91.8	0.4610	0.43	10/07/2024

Batch R354322 **SampType:** MS Units **mg/L**
SampID: 24091272-039BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.50**	0.5000	0	100.2	85	115	10/08/2024

Batch R354322 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24091272-039BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.50**	0.5000	0	100.2	0.5010	0.00	10/08/2024

STANDARD METHODS 4500-NO2 B (TOTAL) 2000, 2011

Batch R354181 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	10/04/2024
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	10/05/2024

Batch R354181 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.30**	0.3045	0	97.2	90	110	10/04/2024
Nitrogen, Nitrite (as N)		0.05		**0.29**	0.3045	0	94.6	90	110	10/05/2024

Batch R354181 **SampType:** MS Units **mg/L**
SampID: 24100440-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.50**	0.5000	0	99.2	85	115	10/04/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 4500-NO2 B (TOTAL) 2000, 2011

Batch R354181 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 24100440-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.50**	0.5000	0	99.2	0.4960	0.00	10/04/2024

Batch R354242 **SampType:** MBLK Units **mg/L**

SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	10/07/2024
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	10/07/2024
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	10/07/2024

Batch R354242 **SampType:** LCS Units **mg/L**

SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.31**	0.3045	0	101.5	90	110	10/07/2024
Nitrogen, Nitrite (as N)		0.05		**0.30**	0.3045	0	98.9	90	110	10/07/2024
Nitrogen, Nitrite (as N)		0.05		**0.31**	0.3045	0	101.5	90	110	10/07/2024

Batch R354242 **SampType:** MS Units **mg/L**

SampID: 24100570-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.53**	0.5000	0.09600	87.6	85	115	10/07/2024

Batch R354242 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 24100570-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.52**	0.5000	0.09600	85.8	0.5340	1.70	10/07/2024

Batch R354242 **SampType:** MS Units **mg/L**

SampID: 24100599-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.47**	0.5000	0	94.6	85	115	10/07/2024

Batch R354242 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 24100599-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.47**	0.5000	0	94.4	0.4730	0.21	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 4500-NO2 B (TOTAL) 2000, 2011

Batch R354322 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	10/08/2024
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	10/08/2024

Batch R354322 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.30**	0.3045	0	97.2	90	110	10/08/2024
Nitrogen, Nitrite (as N)		0.05		**0.31**	0.3045	0	100.8	90	110	10/08/2024

Batch R354322 **SampType:** MS Units **mg/L**
SampID: 24091272-003EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.46**	0.5000	0	92.8	85	115	10/08/2024

Batch R354322 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24091272-003EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.46**	0.5000	0	93.0	0.4640	0.22	10/08/2024

Batch R354322 **SampType:** MS Units **mg/L**
SampID: 24100753-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.55**	0.5000	0.05300	99.4	85	115	10/08/2024

Batch R354322 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100753-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.55**	0.5000	0.05300	99.6	0.5500	0.18	10/08/2024

Batch R354393 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	10/09/2024
Nitrogen, Nitrite (as N)		0.05		**< 0.05**	0.0250	0	0	-100	100	10/09/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 4500-NO2 B (TOTAL) 2000, 2011

Batch R354393 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.32**	0.3045	0	104.1	90	110	10/09/2024
Nitrogen, Nitrite (as N)		0.05		**0.31**	0.3045	0	101.1	90	110	10/09/2024

Batch R354393 **SampType:** MS Units **mg/L**
SampID: 24100827-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.47**	0.5000	0.02000	90.2	85	115	10/09/2024

Batch R354393 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100827-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.47**	0.5000	0.02000	90.4	0.4710	0.21	10/09/2024

Batch R354393 **SampType:** MS Units **mg/L**
SampID: 24100891-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.44**	0.5000	0	87.8	85	115	10/09/2024

Batch R354393 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100891-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrite (as N)		0.05		**0.47**	0.5000	0	93.4	0.4390	6.18	10/09/2024

STANDARD METHODS 4500-NO3 F (DISSOLVED) 2000, 2011

Batch R354208 **SampType:** MS Units **mg/L**
SampID: 24091272-049BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.236**	0.2500	0	94.4	85	115	10/04/2024

Batch R354208 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24091272-049BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.239**	0.2500	0	95.6	0.2360	1.26	10/04/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011

Batch R354208 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						10/04/2024
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	10/04/2024

Batch R354208 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.519**	0.5000	0	103.8	90	110	10/04/2024

Batch R354208 **SampType:** MS Units **mg/L**
SampID: 24100440-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.580**	0.2500	0.3540	90.4	85	115	10/04/2024

Batch R354208 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100440-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.595**	0.2500	0.3540	96.4	0.5800	2.55	10/04/2024

Batch R354282 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						10/07/2024
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	10/07/2024

Batch R354282 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.497**	0.5000	0	99.4	90	110	10/07/2024

Batch R354282 **SampType:** MS Units **mg/L**
SampID: 24091272-078EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500	H	**4.40**	2.500	2.100	92.1	85	115	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011

Batch R354282 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 24091272-078EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500	H	**4.43**	2.500	2.100	93.2	4.402	0.63	10/07/2024

Batch R354282 **SampType:** MS Units **mg/L**

SampID: 24100475-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500	S	**4.92**	2.500	2.707	88.5	90	110	10/07/2024

Batch R354282 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 24100475-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500		**5.08**	2.500	2.707	94.8	4.920	3.12	10/07/2024

Batch R354282 **SampType:** MS Units **mg/L**

SampID: 24100475-003AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500		**5.99**	2.500	3.678	92.5	90	110	10/07/2024

Batch R354282 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 24100475-003AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.500		**5.94**	2.500	3.678	90.6	5.990	0.77	10/07/2024

Batch R354282 **SampType:** MS Units **mg/L**

SampID: 24100570-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		2.50		**44.8**	12.50	32.04	102.0	90	110	10/07/2024

Batch R354282 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 24100570-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		2.50		**44.1**	12.50	32.04	96.2	44.79	1.62	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011

Batch R354336 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						10/08/2024
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	10/08/2024

Batch R354336 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.521**	0.5000	0	104.2	90	110	10/08/2024

Batch R354336 **SampType:** MS Units **mg/L**
SampID: 24100183-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		1.00		**10.2**	5.000	5.217	99.9	90	110	10/08/2024

Batch R354336 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100183-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		1.00		**10.4**	5.000	5.217	103.3	10.21	1.64	10/08/2024

Batch R354410 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate (as N)		0.050		**< 0.050**						10/09/2024
Nitrogen, Nitrate-Nitrite (as N)		0.050		**< 0.050**	0.0090	0	0	-100	100	10/09/2024

Batch R354410 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.522**	0.5000	0	104.4	90	110	10/09/2024

Batch R354410 **SampType:** MS Units **mg/L**
SampID: 24100679-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		10.0		**65.9**	50.00	17.26	97.3	90	110	10/09/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 4500-NO3 F (TOTAL) 2000, 2011

Batch R354410 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 24100679-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		10.0		**66.0**	50.00	17.26	97.5	65.89	0.16	10/09/2024

Batch R354410 **SampType:** MS Units **mg/L**

SampID: 24100715-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		2.50		**33.9**	12.50	21.57	98.7	90	110	10/09/2024

Batch R354410 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 24100715-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		2.50		**34.9**	12.50	21.57	106.6	33.91	2.86	10/09/2024

Batch R354410 **SampType:** MS Units **mg/L**

SampID: 24100723-005AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.242**	0.2500	0.01400	91.2	90	110	10/09/2024

Batch R354410 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 24100723-005AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		0.050		**0.248**	0.2500	0.01400	93.6	0.2420	2.45	10/09/2024

Batch R354410 **SampType:** MS Units **mg/L**

SampID: 24100827-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		2.50		**42.8**	12.50	30.09	101.8	90	110	10/09/2024

Batch R354410 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 24100827-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Nitrogen, Nitrate-Nitrite (as N)		2.50		**42.5**	12.50	30.09	98.9	42.81	0.84	10/09/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 5220 D (TOTAL) 1997

Batch R354258 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chemical Oxygen Demand		50		**< 50**	17.00	0	0	-100	100	10/07/2024

Batch R354258 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chemical Oxygen Demand		50		**121**	112.0	0	107.9	90	110	10/07/2024

Batch R354258 **SampType:** MS Units **mg/L**
SampID: 24100061-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chemical Oxygen Demand		100		**1030**	1000	41.77	99.0	90	110	10/07/2024

Batch R354258 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100061-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chemical Oxygen Demand		100		**1050**	1000	41.77	100.4	1032	1.27	10/07/2024

Batch R354258 **SampType:** MS Units **mg/L**
SampID: 24100339-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chemical Oxygen Demand		100		**1100**	1000	0	109.8	90	110	10/07/2024

Batch R354258 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100339-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chemical Oxygen Demand		100		**1060**	1000	0	106.3	1098	3.25	10/07/2024

Batch R354258 **SampType:** MS Units **mg/L**
SampID: 24100500-002CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chemical Oxygen Demand		100		**1040**	1000	17.61	101.9	90	110	10/07/2024

Batch R354258 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100500-002CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chemical Oxygen Demand		100		**1010**	1000	17.61	99.7	1037	2.14	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 5220 D (TOTAL) 1997

Batch R354258 **SampType:** MS Units **mg/L**
SampID: 24100500-010CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chemical Oxygen Demand		100		**1020**	1000	24.20	99.5	90	110	10/07/2024

Batch R354258 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100500-010CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chemical Oxygen Demand		100		**1020**	1000	24.20	99.9	1019	0.43	10/07/2024

Batch R354318 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chemical Oxygen Demand		50		**< 50**	17.00	0	0	-100	100	10/08/2024

Batch R354318 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chemical Oxygen Demand		50		**108**	112.0	0	96.1	90	110	10/08/2024

Batch R354318 **SampType:** MS Units **mg/L**
SampID: 24100348-001KMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chemical Oxygen Demand		100		**1020**	1000	30.79	98.8	90	110	10/08/2024

Batch R354318 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100348-001KMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chemical Oxygen Demand		100		**1010**	1000	30.79	97.9	1019	0.87	10/08/2024

Batch R354318 **SampType:** MS Units **mg/L**
SampID: 24100568-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chemical Oxygen Demand		100		**1040**	1000	57.14	97.9	90	110	10/08/2024

Batch R354318 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100568-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chemical Oxygen Demand		100		**1030**	1000	57.14	97.1	1037	0.85	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 5220 D (TOTAL) 1997

Batch R354318 **SampType:** MS Units **mg/L**
SampID: 24100568-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chemical Oxygen Demand		100		**993**	1000	0	99.3	90	110	10/08/2024

Batch R354318 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100568-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chemical Oxygen Demand		100		**1010**	1000	0	100.6	992.6	1.32	10/08/2024

Batch R354318 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24092239-006CDUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chemical Oxygen Demand		50		**< 50**				0	0.00	10/08/2024

Batch R354400 **SampType:** MBLK Units **mg/L**
SampID: MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chemical Oxygen Demand		50		**< 50**	17.00	0	0	-100	100	10/09/2024

Batch R354400 **SampType:** LCS Units **mg/L**
SampID: LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chemical Oxygen Demand		50		**110**	112.0	0	98.1	90	110	10/09/2024

Batch R354400 **SampType:** MS Units **mg/L**
SampID: 24091272-083LMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chemical Oxygen Demand		100		**993**	1000	0	99.3	85	115	10/09/2024

Batch R354400 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24091272-083LMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chemical Oxygen Demand		100		**988**	1000	0	98.8	992.6	0.44	10/09/2024

Batch R354400 **SampType:** MS Units **mg/L**
SampID: 24100773-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chemical Oxygen Demand		100		**1020**	1000	30.79	98.8	90	110	10/09/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

STANDARD METHODS 5220 D (TOTAL) 1997

Batch R354400 **SampType:** MSD Units **mg/L** RPD Limit **10**

SampID: 24100773-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chemical Oxygen Demand		100		**1010**	1000	30.79	97.5	1019	1.30	10/09/2024

SW-846 9012A (TOTAL)

Batch 229355 **SampType:** MBLK Units **mg/L**

SampID: MBLK 241007 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	10/08/2024

Batch 229355 **SampType:** LCS Units **mg/L**

SampID: LCS 241007 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.026**	0.0250	0	103.4	90	110	10/08/2024

Batch 229355 **SampType:** MS Units **mg/L**

SampID: 24100349-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.023**	0.0250	0	90.1	90	110	10/08/2024

Batch 229355 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100349-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.005		**0.023**	0.0250	0	93.8	0.02254	3.98	10/08/2024

Batch 229355 **SampType:** MS Units **mg/L**

SampID: 24100465-001EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.025	S	**0.153**	0.0250	0.1182	138.7	90	110	10/08/2024

Batch 229355 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100465-001EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.025	SR	**0.195**	0.0250	0.1182	308.3	0.1529	24.35	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 9012A (TOTAL)

Batch 229355 **SampType:** MS Units **mg/L**
SampID: 24100606-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.026**	0.0250	0	104.9	90	110	10/08/2024

Batch 229355 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 24100606-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.005		**0.026**	0.0250	0	104.9	0.02624	0.08	10/08/2024

Batch 229413 **SampType:** MBLK Units **mg/L**
SampID: MBLK 241008 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	10/11/2024

Batch 229413 **SampType:** LCS Units **mg/L**
SampID: LCS 241008 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.026**	0.0250	0	102.2	90	110	10/11/2024

Batch 229413 **SampType:** MS Units **mg/L**
SampID: 24091272-053DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.026**	0.0250	0.001785	95.3	75	125	10/11/2024

Batch 229413 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 24091272-053DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0.001785	94.7	0.02562	0.59	10/11/2024

Batch 229413 **SampType:** MS Units **mg/L**
SampID: 24100572-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.025		**0.139**	0.1250	0.01412	100.1	90	110	10/11/2024

Batch 229413 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 24100572-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.025		**0.136**	0.1250	0.01412	97.9	0.1392	2.03	10/11/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 9012A (TOTAL)

Batch 229491 **SampType:** MBLK Units **mg/L**
SampID: MBLK 241009 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**< 0.005**	0.0015	0	0	-100	100	10/11/2024

Batch 229491 **SampType:** LCS Units **mg/L**
SampID: LCS 241009 TCN1

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.005		**0.025**	0.0250	0	99.4	90	110	10/11/2024

Batch 229491 **SampType:** MS Units **mg/L**
SampID: 24100722-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cyanide		0.050	S	**0.335**	0.0250	0.2786	226.1	90	110	10/13/2024

Batch 229491 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 24100722-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cyanide		0.050	S	**0.298**	0.0250	0.2786	77.2	0.3351	11.76	10/13/2024

SW846 9056A DISSOLVED ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY

Batch R354124 **SampType:** MS Units **mg/L**
SampID: 24091272-001GMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		5.00		**436**	200.0	214.5	110.6	80	120	10/04/2024
Sulfate		10.0		**1220**	200.0	1019	99.4	80	120	10/04/2024

Batch R354124 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 24091272-001GMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		5.00		**437**	200.0	214.5	111.2	435.6	0.31	10/04/2024
Sulfate		10.0		**1220**	200.0	1019	100.7	1218	0.22	10/04/2024

Batch R354124 **SampType:** MS Units **mg/L**
SampID: 24091272-046BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		2.50		**51.5**	50.00	0	103.0	80	120	10/05/2024
Chloride		25.0		**3420**	1000	2330	109.4	80	120	10/05/2024
Sulfate		50.0		**4680**	1000	3630	105.2	80	120	10/05/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW846 9056A DISSOLVED ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY

Batch R354124 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24091272-046BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		2.50		**52.1**	50.00	0	104.3	51.52	1.18	10/05/2024
Chloride		25.0		**3440**	1000	2330	111.0	3425	0.46	10/05/2024
Sulfate		50.0		**4690**	1000	3630	106.4	4682	0.25	10/05/2024

Batch R354124 **SampType:** MS Units **mg/L**

SampID: 24091272-079BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10.0		**3200**	200.0	3003	96.8	80	120	10/05/2024

Batch R354124 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24091272-079BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10.0		**3180**	200.0	3003	90.3	3196	0.41	10/05/2024

Batch R354124 **SampType:** MS Units **mg/L**

SampID: 24100354-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**10.4**	10.00	0	103.8	80	120	10/04/2024
Chloride		5.00		**223**	200.0	20.04	101.7	80	120	10/04/2024
Sulfate		10.0		**693**	200.0	495.3	98.7	80	120	10/04/2024

Batch R354124 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100354-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**10.5**	10.00	0	105.0	10.38	1.12	10/04/2024
Chloride		5.00		**225**	200.0	20.04	102.6	223.4	0.77	10/04/2024
Sulfate		10.0		**694**	200.0	495.3	99.2	692.6	0.14	10/04/2024

Batch R354124 **SampType:** MS Units **mg/L**

SampID: 24100354-002BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**10.5**	10.00	0	105.1	80	120	10/04/2024
Chloride		5.00		**216**	200.0	11.71	102.0	80	120	10/04/2024
Sulfate		10.0		**430**	200.0	234.2	98.0	80	120	10/04/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW846 9056A DISSOLVED ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY

Batch R354124 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100354-002BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**10.5**	10.00	0	105.3	10.51	0.18	10/04/2024
Chloride		5.00		**216**	200.0	11.71	102.2	215.7	0.20	10/04/2024
Sulfate		10.0		**429**	200.0	234.2	97.5	430.1	0.21	10/04/2024

Batch R354124 **SampType:** MS Units **mg/L**

SampID: 24100354-003BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**10.4**	10.00	0	103.9	80	120	10/04/2024
Chloride		5.00		**248**	200.0	39.84	103.9	80	120	10/04/2024
Sulfate		10.0		**610**	200.0	408.3	101.1	80	120	10/04/2024

Batch R354124 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100354-003BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**10.4**	10.00	0	103.7	10.39	0.20	10/04/2024
Chloride		5.00		**247**	200.0	39.84	103.8	247.7	0.09	10/04/2024
Sulfate		10.0		**607**	200.0	408.3	99.2	610.5	0.61	10/04/2024

Batch R354259 **SampType:** MS Units **mg/L**

SampID: 24091272-005BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10.0		**299**	200.0	109.6	94.6	80	120	10/08/2024

Batch R354259 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24091272-005BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		10.0		**300**	200.0	109.6	95.0	298.8	0.29	10/08/2024

Batch R354259 **SampType:** MS Units **mg/L**

SampID: 24091272-028BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**10.5**	10.00	0.2880	101.9	80	120	10/08/2024
Chloride		5.00		**258**	200.0	49.68	104.1	80	120	10/08/2024
Sulfate		10.0		**445**	200.0	249.9	97.4	80	120	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW846 9056A DISSOLVED ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY

Batch R354259 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24091272-028BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**10.4**	10.00	0.2880	101.5	10.48	0.35	10/08/2024
Chloride		5.00		**257**	200.0	49.68	103.9	257.9	0.16	10/08/2024
Sulfate		10.0		**444**	200.0	249.9	96.9	444.7	0.26	10/08/2024

Batch R354345 **SampType:** MS Units **mg/L**

SampID: 24091272-002GMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Chloride		5.00		**278**	200.0	67.83	105.2	80	120	10/09/2024
Sulfate		10.0		**285**	200.0	94.39	95.3	80	120	10/09/2024

Batch R354345 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24091272-002GMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Chloride		5.00		**280**	200.0	67.83	106.2	278.2	0.73	10/09/2024
Sulfate		10.0		**287**	200.0	94.39	96.4	285.1	0.73	10/09/2024

Batch R354345 **SampType:** MS Units **mg/L**

SampID: 24091272-039BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**11.0**	10.00	0.3580	106.0	80	120	10/09/2024
Chloride		5.00		**239**	200.0	32.49	103.1	80	120	10/09/2024
Sulfate		10.0		**216**	200.0	27.08	94.2	80	120	10/09/2024

Batch R354345 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24091272-039BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**11.0**	10.00	0.3580	106.5	10.96	0.50	10/09/2024
Chloride		5.00		**240**	200.0	32.49	104.0	238.6	0.75	10/09/2024
Sulfate		10.0		**217**	200.0	27.08	95.0	215.5	0.71	10/09/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY

Batch R354124 **SampType:** MBLK Units **mg/L**
SampID: MBLK/ICB

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.05		**ND**						10/04/2024
Chloride		0.50		**ND**						10/04/2024
Sulfate		1.00		**ND**						10/04/2024

Batch R354124 **SampType:** LCS Units **mg/L**
SampID: LCS/ICV/QCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.05		**1.01**	1.000	0	100.5	90	110	10/04/2024
Chloride		0.50		**20.1**	20.00	0	100.5	90	110	10/04/2024
Sulfate		1.00		**18.4**	20.00	0	91.9	90	110	10/04/2024

Batch R354124 **SampType:** MS Units **mg/L**
SampID: 24091272-008AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**10.7**	10.00	0.2690	104.4	80	120	10/05/2024
Chloride		5.00		**353**	200.0	134.2	109.4	80	120	10/05/2024
Sulfate		10.0		**2090**	200.0	1908	91.3	80	120	10/05/2024

Batch R354124 **SampType:** MSD Units **mg/L** RPD Limit **15**
SampID: 24091272-008AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**10.7**	10.00	0.2690	104.1	10.71	0.25	10/05/2024
Chloride		5.00		**352**	200.0	134.2	108.8	353.0	0.36	10/05/2024
Sulfate		10.0		**2080**	200.0	1908	84.3	2090	0.67	10/05/2024

Batch R354124 **SampType:** MS Units **mg/L**
SampID: 24100176-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.06		**1.89**	1.000	0.8095	108.1	80	120	10/04/2024
Chloride		0.55		**43.9**	20.00	21.41	112.7	80	120	10/04/2024
Sulfate		1.10		**51.3**	20.00	31.14	100.8	80	120	10/04/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY

Batch R354124 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100176-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.06		**1.89**	1.000	0.8095	107.9	1.891	0.09	10/04/2024
Chloride		0.55		**43.8**	20.00	21.41	112.2	43.95	0.24	10/04/2024
Sulfate		1.10		**51.3**	20.00	31.14	100.6	51.30	0.06	10/04/2024

Batch R354124 **SampType:** MS Units **mg/L**

SampID: 24100331-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**11.8**	10.00	1.509	103.1	80	120	10/04/2024
Chloride		5.00		**293**	200.0	81.52	105.6	80	120	10/04/2024
Sulfate		10.0		**389**	200.0	200.1	94.7	80	120	10/04/2024

Batch R354124 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100331-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**11.8**	10.00	1.509	103.3	11.82	0.18	10/04/2024
Chloride		5.00		**294**	200.0	81.52	106.2	292.6	0.43	10/04/2024
Sulfate		10.0		**390**	200.0	200.1	95.1	389.5	0.22	10/04/2024

Batch R354124 **SampType:** MS Units **mg/L**

SampID: 24100334-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.06		**1.63**	1.000	0.6668	96.4	80	120	10/04/2024
Chloride		0.55		**126**	20.00	105.1	105.8	80	120	10/04/2024
Sulfate		1.10		**131**	20.00	110.4	104.0	80	120	10/04/2024

Batch R354124 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100334-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.06		**1.65**	1.000	0.6668	98.0	1.631	0.94	10/04/2024
Chloride		0.55		**126**	20.00	105.1	105.2	126.2	0.09	10/04/2024
Sulfate		1.10		**131**	20.00	110.4	104.6	131.2	0.08	10/04/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY

Batch R354124 **SampType:** MS Units **mg/L**

SampID: 24100387-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**11.6**	10.00	1.139	104.8	80	120	10/05/2024
Chloride		5.00		**464**	200.0	241.6	111.3	80	120	10/05/2024
Sulfate		10.0		**378**	200.0	184.8	96.5	80	120	10/05/2024

Batch R354124 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100387-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**11.7**	10.00	1.139	105.1	11.62	0.32	10/05/2024
Chloride		5.00		**466**	200.0	241.6	111.9	464.2	0.28	10/05/2024
Sulfate		10.0		**379**	200.0	184.8	97.3	377.8	0.42	10/05/2024

Batch R354124 **SampType:** MS Units **mg/L**

SampID: 24100440-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**10.7**	10.00	0	106.8	80	120	10/05/2024
Chloride		5.00		**233**	200.0	24.82	104.0	80	120	10/05/2024
Sulfate		10.0		**235**	200.0	47.24	94.1	80	120	10/05/2024

Batch R354124 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100440-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**10.7**	10.00	0	106.8	10.68	0.01	10/05/2024
Chloride		5.00		**234**	200.0	24.82	104.5	232.8	0.43	10/05/2024
Sulfate		10.0		**236**	200.0	47.24	94.4	235.3	0.32	10/05/2024

Batch R354259 **SampType:** MBLK Units **mg/L**

SampID: MBLK/ICB

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.05		**ND**						10/08/2024
Chloride		0.50		**ND**						10/08/2024
Sulfate		1.00		**ND**						10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY

Batch R354259 **SampType:** LCS Units **mg/L**

SampID: LCS/ICV/QCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.05		**1.01**	1.000	0	101.0	90	110	10/08/2024
Chloride		0.50		**20.2**	20.00	0	100.8	90	110	10/08/2024
Sulfate		1.00		**18.8**	20.00	0	93.8	90	110	10/08/2024

Batch R354259 **SampType:** MS Units **mg/L**

SampID: 24091272-006AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**10.3**	10.00	0	103.2	80	120	10/08/2024
Chloride		5.00		**239**	200.0	33.34	103.1	80	120	10/08/2024
Sulfate		10.0		**1040**	200.0	832.2	101.6	80	120	10/08/2024

Batch R354259 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24091272-006AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**10.4**	10.00	0	103.9	10.32	0.73	10/08/2024
Chloride		5.00		**240**	200.0	33.34	103.5	239.5	0.40	10/08/2024
Sulfate		10.0		**1030**	200.0	832.2	99.2	1035	0.47	10/08/2024

Batch R354259 **SampType:** MS Units **mg/L**

SampID: 24100507-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**10.7**	10.00	0.4870	102.2	80	120	10/08/2024
Chloride		5.00		**235**	200.0	28.27	103.6	80	120	10/08/2024
Sulfate		10.0		**353**	200.0	157.8	97.7	80	120	10/08/2024

Batch R354259 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100507-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**10.7**	10.00	0.4870	101.8	10.71	0.36	10/08/2024
Chloride		5.00		**235**	200.0	28.27	103.3	235.4	0.21	10/08/2024
Sulfate		10.0		**352**	200.0	157.8	97.0	353.2	0.39	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY

Batch R354259 **SampType:** MS Units **mg/L**

SampID: 24100536-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**10.4**	10.00	0.3240	100.7	80	120	10/08/2024
Chloride		5.00		**320**	200.0	105.6	107.0	80	120	10/08/2024
Sulfate		10.0		**251**	200.0	61.48	94.8	80	120	10/08/2024

Batch R354259 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100536-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**10.5**	10.00	0.3240	101.5	10.40	0.76	10/08/2024
Chloride		5.00		**322**	200.0	105.6	108.1	319.7	0.64	10/08/2024
Sulfate		10.0		**253**	200.0	61.48	95.7	251.1	0.73	10/08/2024

Batch R354259 **SampType:** MS Units **mg/L**

SampID: 24100656-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**11.0**	10.00	0.5760	104.3	80	120	10/09/2024
Chloride		5.00		**224**	200.0	18.53	102.6	80	120	10/09/2024
Sulfate		10.0		**190**	200.0	0	95.0	80	120	10/09/2024

Batch R354259 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100656-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**11.1**	10.00	0.5760	105.7	11.01	1.23	10/09/2024
Chloride		5.00		**225**	200.0	18.53	103.1	223.7	0.41	10/09/2024
Sulfate		10.0		**191**	200.0	0	95.5	190.0	0.55	10/09/2024

Batch R354259 **SampType:** MS Units **mg/L**

SampID: 24100661-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.06		**2.08**	1.000	1.043	103.5	80	120	10/08/2024
Chloride		0.55		**26.1**	20.00	4.840	106.4	80	120	10/08/2024
Sulfate		1.10		**30.4**	20.00	10.62	99.0	80	120	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY

Batch R354259 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100661-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.06		**2.08**	1.000	1.043	104.1	2.078	0.30	10/08/2024
Chloride		0.55		**26.2**	20.00	4.840	106.8	26.12	0.34	10/08/2024
Sulfate		1.10		**30.5**	20.00	10.62	99.3	30.42	0.21	10/08/2024

Batch R354345 **SampType:** MBLK Units **mg/L**

SampID: MBLK/ICB

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.05		**ND**						10/09/2024
Chloride		0.50		**ND**						10/09/2024
Sulfate		1.00		**ND**						10/09/2024

Batch R354345 **SampType:** LCS Units **mg/L**

SampID: LCS/ICV/QCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.05		**1.04**	1.000	0	104.0	90	110	10/09/2024
Chloride		0.50		**20.2**	20.00	0	100.8	90	110	10/09/2024
Sulfate		1.00		**18.8**	20.00	0	93.9	90	110	10/09/2024

Batch R354345 **SampType:** MS Units **mg/L**

SampID: 24100715-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**11.4**	10.00	0.7490	106.3	80	120	10/09/2024
Chloride		5.00		**408**	200.0	185.3	111.2	80	120	10/09/2024
Sulfate		10.0		**231**	200.0	39.50	95.7	80	120	10/09/2024

Batch R354345 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100715-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**11.4**	10.00	0.7490	106.5	11.38	0.18	10/09/2024
Chloride		5.00		**406**	200.0	185.3	110.5	407.7	0.36	10/09/2024
Sulfate		10.0		**230**	200.0	39.50	95.4	230.9	0.24	10/09/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW846 9056A TOTAL ANIONIC COMPOUNDS BY ION CHROMATOGRAPHY

Batch R354345 **SampType:** MS Units **mg/L**

SampID: 24100728-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**11.1**	10.00	0.4490	106.5	80	120	10/09/2024
Chloride		5.00		**307**	200.0	91.10	108.1	80	120	10/09/2024
Sulfate		10.0		**222**	200.0	31.20	95.5	80	120	10/09/2024

Batch R354345 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100728-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**11.1**	10.00	0.4490	106.6	11.10	0.05	10/09/2024
Chloride		5.00		**306**	200.0	91.10	107.7	307.2	0.25	10/09/2024
Sulfate		10.0		**221**	200.0	31.20	95.1	222.3	0.37	10/09/2024

Batch R354345 **SampType:** MS Units **mg/L**

SampID: 24100804-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Fluoride		0.50		**10.8**	10.00	0.2050	105.5	80	120	10/10/2024
Chloride		5.00		**365**	200.0	144.2	110.1	80	120	10/10/2024
Sulfate		10.0		**211**	200.0	22.20	94.3	80	120	10/10/2024

Batch R354345 **SampType:** MSD Units **mg/L** RPD Limit **15**

SampID: 24100804-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Fluoride		0.50		**10.8**	10.00	0.2050	105.8	10.76	0.28	10/10/2024
Chloride		5.00		**362**	200.0	144.2	108.7	364.5	0.79	10/10/2024
Sulfate		10.0		**211**	200.0	22.20	94.2	210.9	0.12	10/10/2024

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Batch R354202 **SampType:** MBLK Units **mg/L**

SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		1.0		**< 1.0**	0.4500	0	0	-100	100	10/04/2024

Batch R354202 **SampType:** LCS Units **mg/L**

SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		1.0		**4.7**	5.000	0	94.4	90	110	10/04/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

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Batch R354202 **SampType:** MS Units **mg/L**
SampID: 24100348-001JMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		1.0		**10.0**	5.000	4.780	103.8	85	115	10/04/2024

Batch R354202 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24100348-001JMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		1.0		**10.0**	5.000	4.780	103.8	9.970	0.00	10/04/2024

Batch R354202 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24100348-001JDUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		1.0		**4.8**				4.780	0.21	10/04/2024

Batch R354202 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24100350-001JDUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		1.0		**7.7**				7.680	0.13	10/04/2024

Batch R354202 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24100391-007ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		20.0		**20.4**				20.47	0.44	10/04/2024

Batch R354202 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24100391-008ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		20.0		**63.4**				61.87	2.41	10/04/2024

Batch R354202 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24100391-009ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		20.0		**30.2**				29.95	0.96	10/04/2024

Batch R354202 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24100452-001CDUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		1.0		**2.2**				2.200	0.90	10/04/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

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Batch R354427 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		1.0		**< 1.0**	0.4500	0	0	-100	100	10/08/2024

Batch R354427 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		1.0		**4.8**	5.000	0	96.2	90	110	10/08/2024

Batch R354427 **SampType:** MS Units **mg/L**
SampID: 24091272-068EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		2.0		**17.8**	10.00	7.170	106.0	85	115	10/08/2024

Batch R354427 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24091272-068EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		2.0		**17.6**	10.00	7.170	103.9	17.77	1.19	10/08/2024

Batch R354519 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		1.0		**< 1.0**	0.4500	0	0	-100	100	10/10/2024

Batch R354519 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		1.0		**5.0**	5.000	0	99.6	90	110	10/10/2024

Batch R354519 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24100822-003BDUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		5.0		**14.3**				13.75	3.78	10/10/2024

Batch R354519 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24100936-004ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		1.0		**< 1.0**				0	0.00	10/10/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

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Batch R354519 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24100936-008ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		1.0		**1.4**				1.430	0.00	10/10/2024

Batch R354615 **SampType:** MBLK Units **mg/L**
SampID: ICB/MBLK

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		1.0		**< 1.0**	0.4500	0	0	-100	100	10/14/2024

Batch R354615 **SampType:** LCS Units **mg/L**
SampID: ICV/LCS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		1.0		**4.8**	5.000	0	96.4	90	110	10/14/2024

Batch R354615 **SampType:** MS Units **mg/L**
SampID: 24091272-059EMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		2.0	S	**8.0**	10.00	4.970	29.8	85	115	10/14/2024

Batch R354615 **SampType:** MSD Units **mg/L** RPD Limit **10**
SampID: 24091272-059EMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		2.0	S	**8.0**	10.00	4.970	30.8	7.950	1.25	10/14/2024

Batch R354615 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24100638-012ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		2.0		**11.2**				11.15	0.89	10/14/2024

Batch R354615 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24101114-006ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		10.0		**38.4**				40.15	4.59	10/14/2024

Batch R354615 **SampType:** DUP Units **mg/L** RPD Limit **10**
SampID: 24101114-007ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		10.0		**36.0**				37.66	4.65	10/14/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

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Batch R354615 **SampType:** DUP Units **mg/L** RPD Limit **10**

SampID: 24101114-008ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		10.0		**36.0**				36.72	1.84	10/14/2024

Batch R354615 **SampType:** DUP Units **mg/L** RPD Limit **10**

SampID: 24101114-009ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		10.0		**35.7**				35.23	1.30	10/14/2024

Batch R354615 **SampType:** DUP Units **mg/L** RPD Limit **10**

SampID: 24101114-010ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		10.0		**34.9**				36.76	5.31	10/14/2024

Batch R354615 **SampType:** DUP Units **mg/L** RPD Limit **10**

SampID: 24101114-011ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		10.0		**22.9**				23.41	2.12	10/14/2024

Batch R354615 **SampType:** DUP Units **mg/L** RPD Limit **10**

SampID: 24101114-012ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		10.0		**16.4**				16.52	0.97	10/14/2024

Batch R354615 **SampType:** DUP Units **mg/L** RPD Limit **10**

SampID: 24101114-013ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		10.0		**34.0**				35.65	4.80	10/14/2024

Batch R354615 **SampType:** DUP Units **mg/L** RPD Limit **10**

SampID: 24101114-014ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		10.0		**15.5**				16.07	3.48	10/14/2024

Batch R354615 **SampType:** DUP Units **mg/L** RPD Limit **10**

SampID: 24101114-015ADUP

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		10.0		**38.2**				40.13	4.80	10/14/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 229291 **SampType:** MBLK Units **mg/L**

SampID: MBLK-229291

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	10/07/2024
Magnesium		0.050	JS	**0.006**	0.0055	0	112.7	-100	100	10/07/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	10/07/2024
Sodium		0.050		**< 0.050**	0.0180	0	0	-100	100	10/07/2024

Batch 229291 **SampType:** LCS Units **mg/L**

SampID: LCS-229291

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.43**	2.500	0	97.1	85	115	10/07/2024
Magnesium		0.050	B	**2.36**	2.500	0	94.6	85	115	10/07/2024
Potassium		0.100		**2.68**	2.500	0	107.3	85	115	10/07/2024
Sodium		0.050		**2.34**	2.500	0	93.4	85	115	10/07/2024

Batch 229296 **SampType:** MBLK Units **mg/L**

SampID: MBLK-229296

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**< 0.0250**	0.0127	0	0	-100	100	10/07/2024
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	10/07/2024
Cadmium		0.0020		**< 0.0020**	0.0005	0	0	-100	100	10/07/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	10/07/2024
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	10/07/2024
Lead		0.0150		**< 0.0150**	0.0014	0	0	-100	100	10/07/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	10/07/2024
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	10/07/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	10/07/2024
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	10/07/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	10/07/2024
Zinc		0.0100		**< 0.0100**	0.0050	0	0	-100	100	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 229296 **SampType:** LCS Units **mg/L**

SampID: LCS-229296

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**1.96**	2.000	0	97.9	85	115	10/07/2024
Arsenic		0.0250		**0.477**	0.5000	0	95.5	85	115	10/07/2024
Cadmium		0.0020		**0.0483**	0.0500	0	96.6	85	115	10/07/2024
Calcium		0.100		**2.44**	2.500	0	97.6	85	115	10/07/2024
Iron		0.0400		**1.96**	2.000	0	98.2	85	115	10/07/2024
Lead		0.0150		**0.482**	0.5000	0	96.5	85	115	10/07/2024
Magnesium		0.0500		**2.47**	2.500	0	98.9	85	115	10/07/2024
Manganese		0.0070		**0.490**	0.5000	0	98.1	85	115	10/07/2024
Potassium		0.100		**2.74**	2.500	0	109.6	85	115	10/07/2024
Selenium		0.0400		**0.480**	0.5000	0	96.1	85	115	10/07/2024
Sodium		0.0500		**2.49**	2.500	0	99.8	85	115	10/07/2024
Zinc		0.0100		**0.489**	0.5000	0	97.8	85	115	10/07/2024

Batch 229296 **SampType:** MS Units **mg/L**

SampID: 24091272-049CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**612**	2.500	618.0	-254.0	75	125	10/07/2024
Magnesium		0.050	S	**384**	2.500	389.4	-210.8	75	125	10/07/2024
Potassium		0.100		**7.25**	2.500	4.166	123.5	75	125	10/07/2024
Sodium		0.500	S	**486**	2.500	489.3	-120.0	75	125	10/08/2024

Batch 229296 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24091272-049CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**612**	2.500	618.0	-237.2	611.6	0.07	10/07/2024
Magnesium		0.050	S	**388**	2.500	389.4	-54.8	384.1	1.01	10/07/2024
Potassium		0.100		**7.21**	2.500	4.166	121.6	7.252	0.63	10/07/2024
Sodium		0.500	S	**475**	2.500	489.3	-564.0	486.3	2.31	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 229296 **SampType:** MS Units **mg/L**

SampID: 24100440-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		0.0250		**3.83**	4.000	0	95.8	75	125	10/07/2024
Arsenic		0.0250		**0.950**	1.000	0	95.0	75	125	10/07/2024
Cadmium		0.0020		**0.0905**	0.1000	0	90.5	75	125	10/07/2024
Iron		0.0400		**6.13**	4.000	1.824	107.7	75	125	10/07/2024
Lead		0.0150		**0.902**	1.000	0	90.2	75	125	10/07/2024
Magnesium		0.0500		**35.7**	5.000	31.89	76.6	75	125	10/07/2024
Manganese		0.0070		**1.35**	1.000	0.4379	91.3	75	125	10/07/2024
Potassium		0.100		**7.06**	5.000	2.090	99.4	75	125	10/07/2024
Selenium		0.0400		**0.908**	1.000	0	90.8	75	125	10/07/2024
Sodium		0.0500		**18.6**	5.000	14.69	78.8	75	125	10/07/2024
Zinc		0.0100		**0.945**	1.000	0.01790	92.7	75	125	10/07/2024

Batch 229296 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24100440-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Aluminum		0.0250		**3.73**	4.000	0	93.2	3.830	2.65	10/07/2024
Arsenic		0.0250		**0.926**	1.000	0	92.6	0.9498	2.48	10/07/2024
Cadmium		0.0020		**0.0881**	0.1000	0	88.1	0.09050	2.69	10/07/2024
Iron		0.0400		**6.04**	4.000	1.824	105.4	6.130	1.48	10/07/2024
Lead		0.0150		**0.873**	1.000	0	87.3	0.9024	3.31	10/07/2024
Magnesium		0.0500		**35.9**	5.000	31.89	81.0	35.72	0.62	10/07/2024
Manganese		0.0070		**1.33**	1.000	0.4379	89.1	1.351	1.63	10/07/2024
Potassium		0.100		**6.94**	5.000	2.090	97.1	7.062	1.68	10/07/2024
Selenium		0.0400		**0.892**	1.000	0	89.2	0.9085	1.82	10/07/2024
Sodium		0.0500		**18.7**	5.000	14.69	79.4	18.63	0.16	10/07/2024
Zinc		0.0100		**0.925**	1.000	0.01790	90.7	0.9448	2.13	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 229389 **SampType:** MBLK Units **mg/L**

SampID: MBLK-229389

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**< 0.0500**	0.0068	0	0	-100	100	10/08/2024
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	10/08/2024
Cadmium		0.0020		**< 0.0020**	0.0005	0	0	-100	100	10/08/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	10/08/2024
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	10/08/2024
Lead		0.0150		**< 0.0150**	0.0014	0	0	-100	100	10/08/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	10/08/2024
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	10/08/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	10/08/2024
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	10/08/2024
Silicon	*	0.0500		**< 0.0500**	0.0122	0	0	-100	100	10/09/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	10/08/2024
Zinc		0.0100		**< 0.0100**	0.0050	0	0	-100	100	10/08/2024

Batch 229389 **SampType:** LCS Units **mg/L**

SampID: LCS-229389

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**0.462**	0.5000	0	92.5	85	115	10/08/2024
Arsenic		0.0250		**0.476**	0.5000	0	95.2	85	115	10/08/2024
Cadmium		0.0020		**0.0457**	0.0500	0	91.4	85	115	10/08/2024
Calcium		0.100		**2.45**	2.500	0	98.0	85	115	10/08/2024
Iron		0.0400		**1.92**	2.000	0	96.0	85	115	10/08/2024
Lead		0.0150		**0.470**	0.5000	0	94.0	85	115	10/08/2024
Magnesium		0.0500		**2.21**	2.500	0	88.4	85	115	10/08/2024
Manganese		0.0070		**0.497**	0.5000	0	99.4	85	115	10/08/2024
Potassium		0.100		**2.46**	2.500	0	98.4	85	115	10/08/2024
Selenium		0.0400		**0.453**	0.5000	0	90.5	85	115	10/08/2024
Silicon	*	0.0500		**0.468**	0.5000	0	93.6	85	115	10/09/2024
Sodium		0.0500		**2.42**	2.500	0	96.7	85	115	10/08/2024
Zinc		0.0100		**0.475**	0.5000	0	95.0	85	115	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 229389 **SampType:** MS Units **mg/L**
SampID: 24091272-031CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**183**	2.500	183.8	-46.8	75	125	10/08/2024
Magnesium		0.050	S	**142**	2.500	141.0	37.5	75	125	10/08/2024
Potassium		0.100		**5.05**	2.500	2.600	97.9	75	125	10/08/2024
Sodium		0.050	S	**96.0**	2.500	94.92	45.2	75	125	10/08/2024

Batch 229389 **SampType:** MSD Units **mg/L** RPD Limit **20**
SampID: 24091272-031CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**181**	2.500	183.8	-92.8	182.6	0.63	10/08/2024
Magnesium		0.050	S	**140**	2.500	141.0	-44.5	142.0	1.45	10/08/2024
Potassium		0.100		**5.02**	2.500	2.600	96.9	5.048	0.51	10/08/2024
Sodium		0.050	S	**95.1**	2.500	94.92	7.6	96.05	0.98	10/08/2024

Batch 229389 **SampType:** MS Units **mg/L**
SampID: 24100606-001DMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Iron		0.0400		**1.94**	2.000	0	97.0	75	125	10/08/2024

Batch 229389 **SampType:** MSD Units **mg/L** RPD Limit **20**
SampID: 24100606-001DMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Iron		0.0400		**1.91**	2.000	0	95.3	1.941	1.79	10/08/2024

Batch 229474 **SampType:** MBLK Units **mg/L**
SampID: MBLK-229474

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	10/10/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	10/10/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	10/10/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	10/10/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (DISSOLVED)

Batch 229474 **SampType:** LCS Units **mg/L**

SampID: LCS-229474

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.31**	2.500	0	92.5	85	115	10/10/2024
Magnesium		0.0500		**2.26**	2.500	0	90.3	85	115	10/10/2024
Potassium		0.100		**2.40**	2.500	0	96.0	85	115	10/10/2024
Sodium		0.0500		**2.36**	2.500	0	94.5	85	115	10/10/2024

Batch 229474 **SampType:** MS Units **mg/L**

SampID: 24091272-039CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**64.1**	2.500	62.68	55.2	75	125	10/10/2024
Magnesium		0.050		**26.0**	2.500	24.10	76.3	75	125	10/10/2024
Potassium		0.100		**2.67**	2.500	0.2130	98.4	75	125	10/10/2024
Sodium		0.050	S	**102**	2.500	102.3	-20.4	75	125	10/15/2024

Batch 229474 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24091272-039CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100		**65.1**	2.500	62.68	96.0	64.06	1.58	10/10/2024
Magnesium		0.050		**26.5**	2.500	24.10	94.2	26.01	1.70	10/10/2024
Potassium		0.100		**2.69**	2.500	0.2130	99.2	2.674	0.73	10/10/2024
Sodium		0.050	S	**103**	2.500	102.3	20.8	101.8	1.01	10/15/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 229297 **SampType:** MBLK Units **mg/L**

SampID: MBLK-229297

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**< 0.0500**	0.0068	0	0	-100	100	10/07/2024
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	10/07/2024
Barium		0.0025		**< 0.0025**	0.0007	0	0	-100	100	10/07/2024
Beryllium		0.0005		**< 0.0005**	0.0002	0	0	-100	100	10/07/2024
Boron		0.0200		**< 0.0200**	0.0090	0	0	-100	100	10/07/2024
Cadmium		0.0020		**< 0.0020**	0.0005	0	0	-100	100	10/07/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	10/07/2024
Chromium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	10/07/2024
Cobalt		0.0050		**< 0.0050**	0.0020	0	0	-100	100	10/07/2024
Copper		0.0050		**< 0.0050**	0.0013	0	0	-100	100	10/07/2024
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	10/07/2024
Lead		0.0150		**< 0.0150**	0.0014	0	0	-100	100	10/07/2024
Lithium		0.0500		**< 0.0500**	0.0019	0	0	-100	100	10/07/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	10/07/2024
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	10/07/2024
Molybdenum		0.0100		**< 0.0100**	0.0037	0	0	-100	100	10/07/2024
Nickel		0.0050		**< 0.0050**	0.0016	0	0	-100	100	10/07/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	10/07/2024
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	10/07/2024
Silver		0.0070		**< 0.0070**	0.0027	0	0	-100	100	10/07/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	10/07/2024
Thallium		0.0500		**< 0.0500**	0.0111	0	0	-100	100	10/07/2024
Vanadium		0.0100		**< 0.0100**	0.0009	0	0	-100	100	10/07/2024
Zinc		0.0100		**< 0.0100**	0.0050	0	0	-100	100	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 229297 **SampType:** LCS Units **mg/L**

SampID: LCS-229297

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**0.506**	0.5000	0	101.3	85	115	10/07/2024
Arsenic		0.0250		**0.504**	0.5000	0	100.7	85	115	10/07/2024
Barium		0.0025		**1.99**	2.000	0	99.5	85	115	10/07/2024
Beryllium		0.0005		**0.0501**	0.0500	0	100.2	85	115	10/07/2024
Boron		0.0200		**0.477**	0.5000	0	95.3	85	115	10/07/2024
Cadmium		0.0020		**0.0487**	0.0500	0	97.4	85	115	10/07/2024
Calcium		0.100		**2.53**	2.500	0	101.1	85	115	10/07/2024
Chromium		0.0050		**0.204**	0.2000	0	101.8	85	115	10/07/2024
Cobalt		0.0050		**0.524**	0.5000	0	104.8	85	115	10/07/2024
Copper		0.0050		**0.258**	0.2500	0	103.4	85	115	10/07/2024
Iron		0.0400		**2.00**	2.000	0	99.9	85	115	10/07/2024
Lead		0.0150		**0.498**	0.5000	0	99.5	85	115	10/07/2024
Lithium		0.0500		**0.502**	0.5000	0	100.4	85	115	10/07/2024
Magnesium		0.0500		**2.54**	2.500	0	101.6	85	115	10/07/2024
Manganese		0.0070		**0.504**	0.5000	0	100.7	85	115	10/07/2024
Molybdenum		0.0100		**0.500**	0.5000	0	100.1	85	115	10/07/2024
Nickel		0.0050		**0.516**	0.5000	0	103.1	85	115	10/07/2024
Potassium		0.100		**2.78**	2.500	0	111.2	85	115	10/07/2024
Selenium		0.0400		**0.496**	0.5000	0	99.2	85	115	10/07/2024
Silver		0.0070		**0.0482**	0.0500	0	96.4	85	115	10/07/2024
Sodium		0.0500		**2.48**	2.500	0	99.2	85	115	10/07/2024
Thallium		0.0500		**0.241**	0.2500	0	96.4	85	115	10/07/2024
Vanadium		0.0100		**0.512**	0.5000	0	102.3	85	115	10/07/2024
Zinc		0.0100		**0.500**	0.5000	0	100.0	85	115	10/07/2024

Batch 229297 **SampType:** MS Units **mg/L**

SampID: 24091272-013BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100	S	**157**	2.500	153.7	148.0	75	125	10/07/2024
Magnesium		0.050	S	**75.5**	2.500	72.26	127.8	75	125	10/07/2024
Potassium		0.100		**5.06**	2.500	2.142	116.7	75	125	10/07/2024
Sodium		0.050	S	**126**	2.500	123.1	131.6	75	125	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 229297 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24091272-013BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		0.100	S	**160**	2.500	153.7	246.4	157.4	1.55	10/07/2024
Magnesium		0.050	S	**76.6**	2.500	72.26	172.1	75.45	1.46	10/07/2024
Potassium		0.100		**5.08**	2.500	2.142	117.3	5.059	0.32	10/07/2024
Sodium		0.050	S	**128**	2.500	123.1	207.2	126.4	1.48	10/07/2024

Batch 229297 **SampType:** MS Units **mg/L**

SampID: 24100440-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**0.489**	0.5000	0	97.7	75	125	10/07/2024
Arsenic		0.0250		**0.482**	0.5000	0	96.5	75	125	10/07/2024
Barium		0.0025		**2.25**	2.000	0.4010	92.4	75	125	10/07/2024
Cadmium		0.0020		**0.0445**	0.0500	0	89.0	75	125	10/07/2024
Calcium		0.100	S	**104**	2.500	103.0	46.4	75	125	10/07/2024
Copper		0.0050		**0.247**	0.2500	0	98.9	75	125	10/07/2024
Iron		0.0400		**8.32**	2.000	6.290	101.5	75	125	10/07/2024
Lead		0.0150		**0.456**	0.5000	0	91.3	75	125	10/07/2024
Magnesium		0.0500	S	**34.9**	2.500	33.06	74.7	75	125	10/07/2024
Manganese		0.0070		**0.926**	0.5000	0.4560	94.1	75	125	10/07/2024
Selenium		0.0400		**0.463**	0.5000	0	92.5	75	125	10/07/2024
Zinc		0.0100		**0.501**	0.5000	0.02710	94.7	75	125	10/07/2024

Batch 229297 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24100440-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		0.0500		**0.488**	0.5000	0	97.7	0.4886	0.04	10/07/2024
Arsenic		0.0250		**0.493**	0.5000	0	98.5	0.4823	2.13	10/07/2024
Barium		0.0025		**2.25**	2.000	0.4010	92.4	2.250	0.00	10/07/2024
Cadmium		0.0020		**0.0446**	0.0500	0	89.2	0.04450	0.22	10/07/2024
Calcium		0.100	S	**104**	2.500	103.0	50.8	104.1	0.11	10/07/2024
Copper		0.0050		**0.249**	0.2500	0	99.6	0.2472	0.69	10/07/2024
Iron		0.0400		**8.36**	2.000	6.290	103.5	8.320	0.48	10/07/2024
Lead		0.0150		**0.462**	0.5000	0	92.3	0.4564	1.13	10/07/2024
Magnesium		0.0500		**35.0**	2.500	33.06	77.9	34.93	0.23	10/07/2024
Manganese		0.0070		**0.932**	0.5000	0.4560	95.2	0.9263	0.60	10/07/2024
Selenium		0.0400		**0.477**	0.5000	0	95.4	0.4626	3.04	10/07/2024
Zinc		0.0100		**0.503**	0.5000	0.02710	95.2	0.5005	0.54	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 229350 **SampType:** MBLK Units **mg/L**

SampID: MBLK-229350

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	10/08/2024
Barium		0.0025		**< 0.0025**	0.0007	0	0	-100	100	10/08/2024
Cadmium		0.0020		**< 0.0020**	0.0005	0	0	-100	100	10/08/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	10/08/2024
Chromium		0.0050		**< 0.0050**	0.0028	0	0	-100	100	10/08/2024
Lead		0.0150		**< 0.0150**	0.0040	0	0	-100	100	10/08/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	10/08/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	10/08/2024
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	10/08/2024
Silver		0.0070		**< 0.0070**	0.0027	0	0	-100	100	10/08/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	10/08/2024

Batch 229350 **SampType:** LCS Units **mg/L**

SampID: LCS-229350

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		0.0250		**0.538**	0.5000	0	107.6	85	115	10/08/2024
Barium		0.0025		**2.10**	2.000	0	105.0	85	115	10/08/2024
Cadmium		0.0020		**0.0519**	0.0500	0	103.8	85	115	10/08/2024
Calcium		0.100		**2.71**	2.500	0	108.2	85	115	10/08/2024
Chromium		0.0050		**0.215**	0.2000	0	107.6	85	115	10/08/2024
Lead		0.0150		**0.531**	0.5000	0	106.1	85	115	10/08/2024
Magnesium		0.0500		**2.50**	2.500	0	99.8	85	115	10/08/2024
Potassium		0.100		**2.69**	2.500	0	107.6	85	115	10/08/2024
Selenium		0.0400		**0.525**	0.5000	0	105.0	85	115	10/08/2024
Silver		0.0070		**0.0523**	0.0500	0	104.6	85	115	10/08/2024
Sodium		0.0500		**2.69**	2.500	0	107.7	85	115	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 229350 **SampType:** MS Units **mg/L**

SampID: 24100349-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		0.0250		**0.545**	0.5000	0	108.9	75	125	10/08/2024
Barium		0.0025		**2.13**	2.000	0.1180	100.6	75	125	10/08/2024
Cadmium		0.0020		**0.0479**	0.0500	0	95.8	75	125	10/08/2024
Calcium		0.100		**80.5**	2.500	78.49	81.6	75	125	10/08/2024
Chromium		0.0050		**0.216**	0.2000	0.003600	106.0	75	125	10/08/2024
Lead		0.0150		**0.516**	0.5000	0	103.3	75	125	10/08/2024
Magnesium		0.0500		**34.3**	2.500	32.04	90.8	75	125	10/08/2024
Silver		0.0070		**0.0543**	0.0500	0	108.6	75	125	10/08/2024
Sodium		0.0500	S	**172**	2.500	171.8	14.8	75	125	10/08/2024

Batch 229350 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24100349-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		0.0250		**0.543**	0.5000	0	108.6	0.5447	0.29	10/08/2024
Barium		0.0025		**2.13**	2.000	0.1180	100.6	2.130	0.00	10/08/2024
Cadmium		0.0020		**0.0478**	0.0500	0	95.6	0.04790	0.21	10/08/2024
Calcium		0.100		**80.6**	2.500	78.49	85.2	80.53	0.11	10/08/2024
Chromium		0.0050		**0.215**	0.2000	0.003600	105.8	0.2156	0.19	10/08/2024
Lead		0.0150		**0.517**	0.5000	0	103.3	0.5163	0.08	10/08/2024
Magnesium		0.0500		**34.5**	2.500	32.04	98.8	34.32	0.58	10/08/2024
Silver		0.0070		**0.0544**	0.0500	0	108.8	0.05430	0.18	10/08/2024
Sodium		0.0500		**175**	2.500	171.8	113.6	172.1	1.42	10/08/2024

Batch 229350 **SampType:** MS Units **mg/L**

SampID: 24100386-003BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		0.0250		**0.537**	0.5000	0	107.4	75	125	10/08/2024
Barium		0.0025		**2.15**	2.000	0.1324	100.9	75	125	10/08/2024
Cadmium		0.0020		**0.0488**	0.0500	0	97.6	75	125	10/08/2024
Chromium		0.0050		**0.212**	0.2000	0	106.2	75	125	10/08/2024
Lead		0.0150		**0.513**	0.5000	0	102.5	75	125	10/08/2024
Selenium		0.0400		**0.526**	0.5000	0	105.2	75	125	10/08/2024
Silver		0.0070		**0.0535**	0.0500	0	107.0	75	125	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 229350 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24100386-003BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		0.0250		**0.538**	0.5000	0	107.7	0.5371	0.22	10/08/2024
Barium		0.0025		**2.16**	2.000	0.1324	101.4	2.150	0.46	10/08/2024
Cadmium		0.0020		**0.0493**	0.0500	0	98.6	0.04880	1.02	10/08/2024
Chromium		0.0050		**0.215**	0.2000	0	107.4	0.2124	1.12	10/08/2024
Lead		0.0150		**0.515**	0.5000	0	103.1	0.5126	0.54	10/08/2024
Selenium		0.0400		**0.539**	0.5000	0	107.8	0.5258	2.52	10/08/2024
Silver		0.0070		**0.0540**	0.0500	0	108.0	0.05350	0.93	10/08/2024

Batch 229380 **SampType:** MBLK Units **mg/L**

SampID: MBLK-229380

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**< 0.0500**	0.0068	0	0	-100	100	10/08/2024
Arsenic		0.0250		**< 0.0250**	0.0087	0	0	-100	100	10/08/2024
Barium		0.0025		**< 0.0025**	0.0007	0	0	-100	100	10/08/2024
Cadmium		0.0020		**< 0.0020**	0.0005	0	0	-100	100	10/08/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	10/08/2024
Copper		0.0050		**< 0.0050**	0.0013	0	0	-100	100	10/08/2024
Iron		0.0400		**< 0.0400**	0.0200	0	0	-100	100	10/08/2024
Lead		0.0150		**< 0.0150**	0.0040	0	0	-100	100	10/08/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	10/08/2024
Manganese		0.0070		**< 0.0070**	0.0025	0	0	-100	100	10/08/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	10/08/2024
Selenium		0.0400		**< 0.0400**	0.0170	0	0	-100	100	10/08/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	10/08/2024
Zinc		0.0100		**< 0.0100**	0.0050	0	0	-100	100	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 229380 **SampType:** LCS Units **mg/L**

SampID: LCS-229380

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**0.506**	0.5000	0	101.1	85	115	10/08/2024
Arsenic		0.0250		**0.519**	0.5000	0	103.9	85	115	10/08/2024
Barium		0.0025		**2.06**	2.000	0	103.0	85	115	10/08/2024
Cadmium		0.0020		**0.0476**	0.0500	0	95.2	85	115	10/08/2024
Calcium		0.100		**2.63**	2.500	0	105.1	85	115	10/08/2024
Copper		0.0050		**0.268**	0.2500	0	107.1	85	115	10/08/2024
Iron		0.0400		**2.12**	2.000	0	106.0	85	115	10/08/2024
Lead		0.0150		**0.503**	0.5000	0	100.5	85	115	10/08/2024
Magnesium		0.0500		**2.35**	2.500	0	94.1	85	115	10/08/2024
Manganese		0.0070		**0.540**	0.5000	0	108.1	85	115	10/08/2024
Potassium		0.100		**2.58**	2.500	0	103.0	85	115	10/08/2024
Selenium		0.0400		**0.494**	0.5000	0	98.8	85	115	10/08/2024
Sodium		0.0500		**2.58**	2.500	0	103.4	85	115	10/08/2024
Zinc		0.0100		**0.508**	0.5000	0	101.7	85	115	10/08/2024

Batch 229380 **SampType:** MS Units **mg/L**

SampID: 24100277-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		0.0500		**1.01**	1.000	0	100.8	75	125	10/08/2024
Arsenic		0.0250		**1.02**	1.000	0	102.0	75	125	10/08/2024
Barium		0.0025		**4.30**	4.000	0.2460	101.4	75	125	10/08/2024
Cadmium		0.0020		**0.0928**	0.1000	0	92.8	75	125	10/08/2024
Calcium		0.100		**108**	5.000	103.4	98.8	75	125	10/08/2024
Copper		0.0050		**0.535**	0.5000	0.003500	106.3	75	125	10/08/2024
Iron		0.0400		**7.91**	4.000	3.690	105.5	75	125	10/08/2024
Lead		0.0150		**0.975**	1.000	0	97.5	75	125	10/08/2024
Magnesium		0.0500		**37.4**	5.000	32.63	95.6	75	125	10/08/2024
Manganese		0.0070		**1.80**	1.000	0.7400	105.8	75	125	10/08/2024
Selenium		0.0400		**0.938**	1.000	0	93.8	75	125	10/08/2024
Zinc		0.0100		**0.989**	1.000	0.006900	98.2	75	125	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 229380 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24100277-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		0.0500		**0.998**	1.000	0	99.8	1.008	0.96	10/08/2024
Arsenic		0.0250		**1.01**	1.000	0	101.0	1.020	0.97	10/08/2024
Barium		0.0025		**4.31**	4.000	0.2460	101.6	4.300	0.23	10/08/2024
Cadmium		0.0020		**0.0924**	0.1000	0	92.4	0.09280	0.43	10/08/2024
Calcium		0.100	S	**110**	5.000	103.4	143.0	108.3	2.02	10/08/2024
Copper		0.0050		**0.529**	0.5000	0.003500	105.2	0.5349	1.05	10/08/2024
Iron		0.0400		**7.97**	4.000	3.690	107.0	7.910	0.76	10/08/2024
Lead		0.0150		**0.973**	1.000	0	97.3	0.9746	0.20	10/08/2024
Magnesium		0.0500		**38.0**	5.000	32.63	106.7	37.41	1.48	10/08/2024
Manganese		0.0070		**1.81**	1.000	0.7400	106.8	1.798	0.55	10/08/2024
Selenium		0.0400		**0.933**	1.000	0	93.3	0.9377	0.49	10/08/2024
Zinc		0.0100		**0.987**	1.000	0.006900	98.0	0.9887	0.20	10/08/2024

Batch 229380 **SampType:** MS Units **mg/L**

SampID: 24100606-001CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Barium		0.0025		**2.12**	2.000	0.1049	100.8	75	125	10/08/2024
Cadmium		0.0020		**0.0471**	0.0500	0	94.2	75	125	10/08/2024
Copper		0.0050		**0.271**	0.2500	0.004000	106.6	75	125	10/08/2024
Lead		0.0150		**0.492**	0.5000	0	98.5	75	125	10/08/2024
Manganese		0.0070		**1.12**	0.5000	0.5914	105.8	75	125	10/08/2024
Zinc		0.0100		**0.522**	0.5000	0.01170	102.0	75	125	10/08/2024

Batch 229380 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24100606-001CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Barium		0.0025		**2.16**	2.000	0.1049	102.8	2.120	1.87	10/08/2024
Cadmium		0.0020		**0.0469**	0.0500	0	93.8	0.04710	0.43	10/08/2024
Copper		0.0050		**0.273**	0.2500	0.004000	107.6	0.2706	0.85	10/08/2024
Lead		0.0150		**0.493**	0.5000	0	98.7	0.4923	0.22	10/08/2024
Manganese		0.0070		**1.14**	0.5000	0.5914	109.5	1.120	1.61	10/08/2024
Zinc		0.0100		**0.526**	0.5000	0.01170	102.9	0.5216	0.86	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 229380 **SampType:** MS Units **mg/L**

SampID: 24100608-001BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		0.0250		**0.522**	0.5000	0	104.4	75	125	10/08/2024
Iron		0.0400		**2.15**	2.000	0.06610	104.2	75	125	10/08/2024

Batch 229380 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24100608-001BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		0.0250		**0.520**	0.5000	0	104.0	0.5218	0.38	10/08/2024
Iron		0.0400		**2.15**	2.000	0.06610	104.2	2.150	0.00	10/08/2024

Batch 229445 **SampType:** MBLK Units **mg/L**

SampID: MBLK-229445

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	10/10/2024
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	10/11/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	10/10/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	10/11/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	10/11/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	10/09/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	10/10/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	10/11/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	10/10/2024

Batch 229445 **SampType:** LCS Units **mg/L**

SampID: LCS-229445

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.41**	2.500	0	96.4	85	115	10/10/2024
Calcium		0.100		**2.59**	2.500	0	103.8	85	115	10/11/2024
Magnesium		0.0500		**2.34**	2.500	0	93.8	85	115	10/10/2024
Magnesium		0.0500		**2.39**	2.500	0	95.7	85	115	10/11/2024
Potassium		0.100		**2.47**	2.500	0	98.7	85	115	10/10/2024
Potassium		0.100		**2.63**	2.500	0	105.0	85	115	10/11/2024
Potassium		0.100		**2.63**	2.500	0	105.2	85	115	10/09/2024
Sodium		0.0500		**2.52**	2.500	0	100.7	85	115	10/10/2024
Sodium		0.0500		**2.67**	2.500	0	106.7	85	115	10/11/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6010B, METALS BY ICP (TOTAL)

Batch 229445 **SampType:** MS Units **mg/L**

SampID: 24091272-059CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		10.0	S	**849**	2.500	876.0	-1080	75	125	10/11/2024
Magnesium		5.00		**11.0**	2.500	8.960	80.0	75	125	10/11/2024
Potassium		50.0	S	**1810**	2.500	1764	1722	75	125	10/15/2024
Sodium		5.00	S	**13500**	2.500	13510	1680	75	125	10/11/2024

Batch 229445 **SampType:** MSD Units **mg/L** RPD Limit **20**

SampID: 24091272-059CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Calcium		10.0	S	**874**	2.500	876.0	-80.0	849.0	2.90	10/11/2024
Magnesium		5.00		**11.2**	2.500	8.960	88.4	10.96	1.90	10/11/2024
Potassium		50.0	S	**1770**	2.500	1764	186.0	1807	2.15	10/15/2024
Sodium		5.00	S	**13200**	2.500	13510	-13040	13550	2.75	10/11/2024

Batch 229478 **SampType:** MBLK Units **mg/L**

SampID: MBLK-229478

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**< 0.100**	0.0350	0	0	-100	100	10/10/2024
Magnesium		0.0500		**< 0.0500**	0.0055	0	0	-100	100	10/10/2024
Potassium		0.100		**< 0.100**	0.0400	0	0	-100	100	10/10/2024
Sodium		0.0500		**< 0.0500**	0.0180	0	0	-100	100	10/10/2024

Batch 229478 **SampType:** LCS Units **mg/L**

SampID: LCS-229478

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Calcium		0.100		**2.46**	2.500	0	98.5	85	115	10/10/2024
Magnesium		0.0500		**2.43**	2.500	0	97.0	85	115	10/10/2024
Potassium		0.100		**2.50**	2.500	0	99.9	85	115	10/10/2024
Sodium		0.0500		**2.53**	2.500	0	101.0	85	115	10/10/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 229291 **SampType:** MBLK Units µg/L

SampID: MBLK-229291

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		25.0		**< 25.0**	12.50	0	0	-100	100	10/10/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	10/09/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	10/10/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	10/09/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	10/10/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	10/10/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	10/07/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	10/10/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	10/10/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	10/09/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	10/10/2024

Batch 229291 **SampType:** LCS Units µg/L

SampID: LCS-229291

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		25.0		**2010**	2000	0	100.5	80	120	10/10/2024
Arsenic		1.0		**526**	500.0	0	105.2	80	120	10/09/2024
Boron		25.0		**441**	500.0	0	88.2	80	120	10/10/2024
Cadmium		1.0		**48.6**	50.00	0	97.2	80	120	10/09/2024
Chromium		1.5		**201**	200.0	0	100.4	80	120	10/10/2024
Iron		25.0		**1910**	2000	0	95.5	80	120	10/10/2024
Lead		1.0		**481**	500.0	0	96.2	80	120	10/07/2024
Lithium	*	3.0		**452**	500.0	0	90.4	80	120	10/10/2024
Manganese		2.0		**494**	500.0	0	98.8	80	120	10/10/2024
Selenium		1.0		**505**	500.0	0	100.9	80	120	10/09/2024
Zinc		15.0		**464**	500.0	0	92.8	80	120	10/10/2024

Batch 229291 **SampType:** MS Units µg/L

SampID: 24091272-011CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		25.0		**1830**	2000	0	91.4	75	125	10/14/2024
Arsenic		1.0		**489**	500.0	20.31	93.7	75	125	10/14/2024
Iron		25.0		**3860**	2000	2311	77.4	75	125	10/14/2024
Lithium	*	3.0		**432**	500.0	2.662	85.8	75	125	10/14/2024
Manganese		2.0		**498**	500.0	48.98	89.8	75	125	10/14/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 229291 **SampType:** MSD Units µg/L RPD Limit 20

SampID: 24091272-011CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Aluminum		25.0		**1890**	2000	0	94.3	1827	3.18	10/14/2024
Arsenic		1.0		**487**	500.0	20.31	93.4	488.6	0.28	10/14/2024
Iron		25.0		**3820**	2000	2311	75.7	3858	0.90	10/14/2024
Lithium	*	3.0		**441**	500.0	2.662	87.6	431.6	2.06	10/14/2024
Manganese		2.0		**498**	500.0	48.98	89.8	498.0	0.03	10/14/2024

Batch 229291 **SampType:** MS Units µg/L

SampID: 24091272-020CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		25.0		**1860**	2000	0	92.8	75	125	10/10/2024
Arsenic		1.0		**490**	500.0	20.58	93.8	75	125	10/10/2024
Iron		25.0		**3490**	2000	1614	94.0	75	125	10/10/2024
Lithium	*	3.0		**444**	500.0	2.209	88.4	75	125	10/10/2024
Manganese		2.0		**471**	500.0	17.03	90.8	75	125	10/10/2024

Batch 229291 **SampType:** MSD Units µg/L RPD Limit 20

SampID: 24091272-020CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Aluminum		25.0		**1900**	2000	0	94.8	1856	2.10	10/10/2024
Arsenic		1.0		**494**	500.0	20.58	94.6	489.7	0.84	10/10/2024
Iron		25.0		**3560**	2000	1614	97.3	3494	1.88	10/10/2024
Lithium	*	3.0		**448**	500.0	2.209	89.2	444.4	0.90	10/10/2024
Manganese		2.0		**475**	500.0	17.03	91.7	470.8	0.96	10/10/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 229296 **SampType:** MBLK Units µg/L

SampID: MBLK-229296

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		25.0		**< 25.0**	12.50	0	0	-100	100	10/07/2024
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	10/10/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	10/07/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	10/07/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	10/07/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	10/07/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	10/07/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	10/07/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	10/07/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	10/07/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	10/07/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	10/07/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	10/07/2024

Batch 229296 **SampType:** LCS Units µg/L

SampID: LCS-229296

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		25.0		**2100**	2000	0	105.1	80	120	10/07/2024
Antimony		1.0		**440**	500.0	0	88.0	80	120	10/11/2024
Arsenic		1.0		**489**	500.0	0	97.8	80	120	10/07/2024
Boron		25.0		**516**	500.0	0	103.2	80	120	10/07/2024
Cadmium		1.0		**46.2**	50.00	0	92.4	80	120	10/07/2024
Chromium		1.5		**197**	200.0	0	98.3	80	120	10/07/2024
Iron		25.0		**1880**	2000	0	94.1	80	120	10/07/2024
Lead		1.0		**470**	500.0	0	94.0	80	120	10/07/2024
Lithium	*	3.0		**524**	500.0	0	104.9	80	120	10/07/2024
Manganese		2.0		**499**	500.0	0	99.9	80	120	10/07/2024
Selenium		1.0		**494**	500.0	0	98.8	80	120	10/07/2024
Vanadium		5.0		**481**	500.0	0	96.2	80	120	10/07/2024
Zinc		15.0		**448**	500.0	0	89.6	80	120	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 229296 **SampType:** MS Units **µg/L**

SampID: 24091272-049CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		1.0		**501**	500.0	0.5180	100.1	75	125	10/07/2024
Boron		25.0		**944**	500.0	468.1	95.1	75	125	10/09/2024
Cadmium		1.0		**45.2**	50.00	0	90.4	75	125	10/07/2024
Chromium		1.5		**182**	200.0	0	91.2	75	125	10/07/2024
Iron		25.0		**1960**	2000	200.9	88.1	75	125	10/07/2024
Lead		1.0		**481**	500.0	0	96.3	75	125	10/07/2024
Manganese		10.0		**2050**	500.0	1570	96.9	75	125	10/09/2024
Selenium		1.0		**488**	500.0	0	97.6	75	125	10/07/2024
Zinc		15.0		**409**	500.0	0	81.7	75	125	10/07/2024

Batch 229296 **SampType:** MSD Units **µg/L** RPD Limit **20**

SampID: 24091272-049CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		1.0		**489**	500.0	0.5180	97.7	500.9	2.40	10/07/2024
Boron		25.0		**935**	500.0	468.1	93.4	943.5	0.89	10/09/2024
Cadmium		1.0		**43.2**	50.00	0	86.4	45.18	4.44	10/07/2024
Chromium		1.5		**177**	200.0	0	88.6	182.4	2.91	10/07/2024
Iron		25.0		**1910**	2000	200.9	85.6	1962	2.57	10/07/2024
Lead		1.0		**461**	500.0	0	92.3	481.3	4.25	10/07/2024
Manganese		10.0		**2050**	500.0	1570	95.2	2054	0.43	10/09/2024
Selenium		1.0		**474**	500.0	0	94.7	488.1	3.02	10/07/2024
Zinc		15.0		**396**	500.0	0	79.1	408.7	3.25	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 229389 **SampType:** MBLK Units µg/L

SampID: MBLK-229389

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		25.0		**< 25.0**	12.50	0	0	-100	100	10/08/2024
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	10/09/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	10/08/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	10/08/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	10/08/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	10/08/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	10/08/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	10/08/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	10/08/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	10/08/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	10/08/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	10/08/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	10/08/2024

Batch 229389 **SampType:** LCS Units µg/L

SampID: LCS-229389

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		25.0		**1950**	2000	0	97.5	80	120	10/08/2024
Antimony		1.0		**439**	500.0	0	87.8	80	120	10/09/2024
Arsenic		1.0		**478**	500.0	0	95.6	80	120	10/08/2024
Boron		25.0		**465**	500.0	0	92.9	80	120	10/08/2024
Cadmium		1.0		**45.5**	50.00	0	91.0	80	120	10/08/2024
Chromium		1.5		**196**	200.0	0	98.1	80	120	10/08/2024
Iron		25.0		**1880**	2000	0	94.0	80	120	10/08/2024
Lead		1.0		**464**	500.0	0	92.9	80	120	10/08/2024
Lithium	*	3.0		**465**	500.0	0	93.0	80	120	10/08/2024
Manganese		2.0		**481**	500.0	0	96.3	80	120	10/08/2024
Selenium		1.0		**475**	500.0	0	94.9	80	120	10/08/2024
Vanadium		5.0		**477**	500.0	0	95.4	80	120	10/08/2024
Zinc		15.0		**459**	500.0	0	91.8	80	120	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 229389 **SampType:** MS Units **µg/L**

SampID: 24091272-031CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		1.0		**458**	500.0	0.9231	91.5	75	125	10/09/2024
Boron		25.0		**683**	500.0	251.3	86.3	75	125	10/09/2024
Cadmium		1.0		**42.3**	50.00	0	84.7	75	125	10/09/2024
Chromium		1.5		**180**	200.0	0	90.0	75	125	10/09/2024
Iron		25.0		**2030**	2000	255.7	88.7	75	125	10/09/2024
Lead		1.0		**442**	500.0	0	88.4	75	125	10/09/2024
Manganese		2.0		**864**	500.0	423.9	88.1	75	125	10/09/2024
Selenium		1.0		**428**	500.0	0	85.5	75	125	10/09/2024
Zinc		15.0		**415**	500.0	0	83.0	75	125	10/09/2024

Batch 229389 **SampType:** MSD Units **µg/L** RPD Limit **20**

SampID: 24091272-031CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		1.0		**466**	500.0	0.9231	93.0	458.3	1.65	10/09/2024
Boron		25.0		**699**	500.0	251.3	89.5	682.9	2.30	10/09/2024
Cadmium		1.0		**43.4**	50.00	0	86.8	42.33	2.46	10/09/2024
Chromium		1.5		**184**	200.0	0	92.2	180.0	2.46	10/09/2024
Iron		25.0		**2060**	2000	255.7	90.4	2029	1.68	10/09/2024
Lead		1.0		**452**	500.0	0	90.4	442.2	2.22	10/09/2024
Manganese		2.0		**885**	500.0	423.9	92.2	864.4	2.32	10/09/2024
Selenium		1.0		**438**	500.0	0	87.6	427.6	2.44	10/09/2024
Zinc		15.0		**427**	500.0	0	85.4	415.2	2.77	10/09/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 229474 **SampType:** MBLK Units µg/L

SampID: MBLK-229474

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		25.0		**< 25.0**	12.50	0	0	-100	100	10/14/2024
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	10/14/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	10/14/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	10/14/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	10/14/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	10/14/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	10/14/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	10/14/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	10/14/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	10/14/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	10/14/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	10/14/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	10/14/2024

Batch 229474 **SampType:** LCS Units µg/L

SampID: LCS-229474

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Aluminum		25.0		**2240**	2000	0	111.9	80	120	10/14/2024
Antimony		1.0		**504**	500.0	0	100.8	80	120	10/14/2024
Arsenic		1.0		**537**	500.0	0	107.3	80	120	10/14/2024
Boron		25.0		**515**	500.0	0	103.0	80	120	10/14/2024
Cadmium		1.0	S	**60.6**	50.00	0	121.3	80	120	10/14/2024
Chromium		1.5		**213**	200.0	0	106.7	80	120	10/14/2024
Iron		25.0		**2140**	2000	0	106.9	80	120	10/14/2024
Lead		1.0		**531**	500.0	0	106.1	80	120	10/14/2024
Lithium	*	3.0		**511**	500.0	0	102.1	80	120	10/14/2024
Manganese		2.0		**557**	500.0	0	111.4	80	120	10/14/2024
Selenium		1.0		**541**	500.0	0	108.2	80	120	10/14/2024
Vanadium		5.0		**547**	500.0	0	109.4	80	120	10/14/2024
Zinc		15.0		**523**	500.0	0	104.6	80	120	10/14/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 229474 **SampType:** MS Units µg/L

SampID: 24091272-039CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Arsenic		1.0		**496**	500.0	0	99.2	75	125	10/14/2024
Boron		25.0		**512**	500.0	0	102.4	75	125	10/15/2024
Cadmium		1.0		**52.9**	50.00	0	105.8	75	125	10/14/2024
Chromium		1.5		**203**	200.0	3.561	99.8	75	125	10/15/2024
Iron		25.0	S	**1830**	2000	388.5	72.1	75	125	10/16/2024
Lead		1.0		**478**	500.0	0	95.6	75	125	10/14/2024
Selenium		1.0		**506**	500.0	0	101.2	75	125	10/14/2024
Zinc		15.0		**479**	500.0	0	95.7	75	125	10/15/2024

Batch 229474 **SampType:** MSD Units µg/L RPD Limit **20**

SampID: 24091272-039CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Arsenic		1.0		**490**	500.0	0	98.0	496.1	1.25	10/14/2024
Boron		25.0		**503**	500.0	0	100.5	512.1	1.85	10/15/2024
Cadmium		1.0		**52.3**	50.00	0	104.5	52.92	1.23	10/14/2024
Chromium		1.5		**199**	200.0	3.561	97.5	203.1	2.22	10/15/2024
Iron		25.0		**1900**	2000	388.5	75.6	1830	3.76	10/16/2024
Lead		1.0		**480**	500.0	0	95.9	477.9	0.36	10/14/2024
Selenium		1.0		**504**	500.0	0	100.9	506.2	0.38	10/14/2024
Zinc		15.0		**479**	500.0	0	95.8	478.6	0.11	10/15/2024

Batch 230354 **SampType:** MBLK Units µg/L

SampID: MBLK-230354

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	10/29/2024

Batch 230354 **SampType:** LCS Units µg/L

SampID: LCS-230354

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Manganese		2.0		**497**	500.0	0	99.4	80	120	10/29/2024

Batch 230462 **SampType:** MBLK Units µg/L

SampID: MBLK-230462

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	11/01/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (DISSOLVED)

Batch 230462 **SampType:** LCS Units µg/L

SampID: LCS-230462

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Iron		25.0		**1920**	2000	0	96.0	80	120	11/01/2024

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 229297 **SampType:** MBLK Units µg/L

SampID: MBLK-229297

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	10/08/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	10/07/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	10/07/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	10/07/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	10/07/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	10/07/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	10/07/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	10/07/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	10/07/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	10/07/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	10/07/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	10/07/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	10/07/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	10/07/2024
Silver		1.0		**< 1.0**	0.1110	0	0	-100	100	10/07/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	10/07/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	10/07/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 229297 **SampType:** LCS Units µg/L

SampID: LCS-229297

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**550**	500.0	0	110.1	80	120	10/08/2024
Arsenic		1.0		**509**	500.0	0	101.8	80	120	10/07/2024
Barium		1.0		**2080**	2000	0	104.0	80	120	10/07/2024
Beryllium		1.0		**46.7**	50.00	0	93.3	80	120	10/07/2024
Boron		25.0		**477**	500.0	0	95.4	80	120	10/07/2024
Cadmium		1.0		**55.2**	50.00	0	110.3	80	120	10/07/2024
Chromium		1.5		**203**	200.0	0	101.3	80	120	10/07/2024
Cobalt		1.0		**510**	500.0	0	102.0	80	120	10/07/2024
Iron		25.0		**1970**	2000	0	98.6	80	120	10/07/2024
Lead		1.0		**498**	500.0	0	99.6	80	120	10/07/2024
Lithium	*	3.0		**491**	500.0	0	98.2	80	120	10/07/2024
Manganese		2.0		**491**	500.0	0	98.3	80	120	10/07/2024
Molybdenum		1.5		**466**	500.0	0	93.2	80	120	10/07/2024
Selenium		1.0		**489**	500.0	0	97.8	80	120	10/07/2024
Silver		1.0		**57.7**	50.00	0	115.4	80	120	10/07/2024
Thallium		2.0		**238**	250.0	0	95.3	80	120	10/07/2024
Vanadium		5.0		**493**	500.0	0	98.6	80	120	10/07/2024
Zinc		15.0		**477**	500.0	0	95.4	80	120	10/07/2024

Batch 229297 **SampType:** MS Units µg/L

SampID: 24091272-013BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**556**	500.0	0	111.2	75	125	10/08/2024
Arsenic		1.0		**507**	500.0	9.929	99.4	75	125	10/07/2024
Barium		1.0		**2130**	2000	30.51	104.9	75	125	10/07/2024
Beryllium		1.0		**50.4**	50.00	0	100.8	75	125	10/07/2024
Boron		25.0		**594**	500.0	80.35	102.8	75	125	10/07/2024
Cadmium		1.0		**55.3**	50.00	0	110.5	75	125	10/07/2024
Chromium		1.5		**200**	200.0	2.018	98.9	75	125	10/07/2024
Cobalt		1.0		**470**	500.0	0.8831	93.8	75	125	10/07/2024
Lead		1.0		**501**	500.0	0.7010	100.1	75	125	10/07/2024
Lithium	*	3.0		**532**	500.0	23.59	101.6	75	125	10/07/2024
Molybdenum		1.5		**479**	500.0	6.480	94.5	75	125	10/07/2024
Selenium		1.0		**483**	500.0	0	96.6	75	125	10/07/2024
Thallium		2.0		**243**	250.0	0	97.3	75	125	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 229297 **SampType:** MSD Units **µg/L** RPD Limit **20**

SampID: 24091272-013BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		1.0		**556**	500.0	0	111.2	556.2	0.01	10/08/2024
Arsenic		1.0		**517**	500.0	9.929	101.4	507.1	1.89	10/07/2024
Barium		1.0		**2120**	2000	30.51	104.3	2129	0.62	10/07/2024
Beryllium		1.0		**50.5**	50.00	0	100.9	50.40	0.14	10/07/2024
Boron		25.0		**590**	500.0	80.35	101.9	594.3	0.73	10/07/2024
Cadmium		1.0		**55.3**	50.00	0	110.6	55.26	0.11	10/07/2024
Chromium		1.5		**203**	200.0	2.018	100.2	199.7	1.39	10/07/2024
Cobalt		1.0		**475**	500.0	0.8831	94.8	470.1	1.06	10/07/2024
Lead		1.0		**499**	500.0	0.7010	99.7	501.2	0.37	10/07/2024
Lithium	*	3.0		**532**	500.0	23.59	101.7	531.8	0.09	10/07/2024
Molybdenum		1.5		**484**	500.0	6.480	95.4	479.0	0.95	10/07/2024
Selenium		1.0		**491**	500.0	0	98.1	483.0	1.58	10/07/2024
Thallium		2.0		**243**	250.0	0	97.3	243.2	0.01	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 229350 **SampType:** MBLK Units µg/L

SampID: MBLK-229350

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0	JS	**0.7**	0.4500	0	164.7	-100	100	10/08/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	10/09/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	10/08/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	10/10/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	10/10/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	10/09/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	10/10/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	10/10/2024
Copper		1.0		**< 1.0**	0.2980	0	0	-100	100	10/10/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	10/10/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	10/08/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	10/10/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	10/10/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	10/09/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	10/08/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	10/09/2024
Silver		1.0		**< 1.0**	0.1110	0	0	-100	100	10/09/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	10/08/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	10/10/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	10/10/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 229350 **SampType:** LCS Units **µg/L**

SampID: LCS-229350

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0	B	**557**	500.0	0	111.3	80	120	10/08/2024
Arsenic		1.0		**508**	500.0	0	101.5	80	120	10/09/2024
Barium		1.0		**2000**	2000	0	100.0	80	120	10/08/2024
Beryllium		1.0		**44.4**	50.00	0	88.9	80	120	10/10/2024
Boron		25.0		**441**	500.0	0	88.1	80	120	10/10/2024
Cadmium		1.0		**47.5**	50.00	0	94.9	80	120	10/09/2024
Chromium		1.5		**198**	200.0	0	99.0	80	120	10/10/2024
Cobalt		1.0		**491**	500.0	0	98.2	80	120	10/10/2024
Copper		1.0		**244**	250.0	0	97.4	80	120	10/10/2024
Iron		25.0		**1950**	2000	0	97.3	80	120	10/10/2024
Lead		1.0		**468**	500.0	0	93.7	80	120	10/08/2024
Lithium	*	3.0		**450**	500.0	0	90.0	80	120	10/10/2024
Manganese		2.0		**495**	500.0	0	99.1	80	120	10/10/2024
Molybdenum		1.5		**461**	500.0	0	92.2	80	120	10/09/2024
Selenium		1.0		**494**	500.0	0	98.8	80	120	10/09/2024
Selenium		1.0		**486**	500.0	0	97.2	80	120	10/08/2024
Silver		1.0		**53.7**	50.00	0	107.4	80	120	10/09/2024
Thallium		2.0		**223**	250.0	0	89.3	80	120	10/08/2024
Vanadium		5.0		**499**	500.0	0	99.7	80	120	10/10/2024
Zinc		15.0		**469**	500.0	0	93.9	80	120	10/10/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 229380 **SampType:** MBLK Units **µg/L**

SampID: MBLK-229380

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	10/09/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	10/10/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	10/10/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	10/16/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	10/10/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	10/10/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	10/10/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	10/10/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	10/10/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	10/10/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	10/16/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	10/10/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	10/09/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	10/09/2024

Batch 229380 **SampType:** LCS Units **µg/L**

SampID: LCS-229380

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**569**	500.0	0	113.9	80	120	10/09/2024
Arsenic		1.0		**526**	500.0	0	105.3	80	120	10/10/2024
Barium		1.0		**2090**	2000	0	104.4	80	120	10/10/2024
Beryllium		1.0		**56.2**	50.00	0	112.4	80	120	10/16/2024
Boron		25.0		**496**	500.0	0	99.2	80	120	10/10/2024
Cadmium		1.0		**54.0**	50.00	0	108.1	80	120	10/10/2024
Chromium		1.5		**206**	200.0	0	103.1	80	120	10/10/2024
Cobalt		1.0		**494**	500.0	0	98.7	80	120	10/10/2024
Iron		25.0		**1960**	2000	0	97.9	80	120	10/10/2024
Lead		1.0		**498**	500.0	0	99.7	80	120	10/10/2024
Lithium	*	3.0		**512**	500.0	0	102.5	80	120	10/16/2024
Manganese		2.0		**516**	500.0	0	103.2	80	120	10/10/2024
Selenium		1.0		**525**	500.0	0	105.0	80	120	10/09/2024
Thallium		2.0		**245**	250.0	0	98.2	80	120	10/09/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 229445 **SampType:** MBLK Units **µg/L**

SampID: MBLK-229445

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	10/10/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	10/10/2024
Barium		1.0		**< 1.0**	0.7000	0	0	-100	100	10/10/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	10/10/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	10/10/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	10/10/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	10/10/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	10/10/2024
Copper		1.0		**< 1.0**	0.2980	0	0	-100	100	10/10/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	10/10/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	10/10/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	10/10/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	10/10/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	10/10/2024
Nickel		1.0		**< 1.0**	0.4300	0	0	-100	100	10/10/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	10/10/2024
Silver		1.0		**< 1.0**	0.1110	0	0	-100	100	10/10/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	10/10/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	10/10/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	10/10/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 229445 **SampType:** LCS Units **µg/L**

SampID: LCS-229445

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**494**	500.0	0	98.8	80	120	10/10/2024
Arsenic		1.0		**522**	500.0	0	104.4	80	120	10/10/2024
Barium		1.0		**1920**	2000	0	95.8	80	120	10/10/2024
Beryllium		1.0		**52.3**	50.00	0	104.7	80	120	10/10/2024
Boron		25.0		**445**	500.0	0	89.0	80	120	10/10/2024
Cadmium		1.0		**54.2**	50.00	0	108.4	80	120	10/10/2024
Chromium		1.5		**218**	200.0	0	108.8	80	120	10/10/2024
Cobalt		1.0		**472**	500.0	0	94.3	80	120	10/10/2024
Copper		1.0		**263**	250.0	0	105.1	80	120	10/10/2024
Iron		25.0		**1790**	2000	0	89.6	80	120	10/10/2024
Lead		1.0		**457**	500.0	0	91.5	80	120	10/10/2024
Lithium	*	3.0		**568**	500.0	0	113.5	80	120	10/10/2024
Manganese		2.0		**515**	500.0	0	103.0	80	120	10/10/2024
Molybdenum		1.5		**472**	500.0	0	94.4	80	120	10/10/2024
Nickel		1.0		**455**	500.0	0	91.1	80	120	10/10/2024
Selenium		1.0		**507**	500.0	0	101.5	80	120	10/10/2024
Silver		1.0		**50.3**	50.00	0	100.5	80	120	10/10/2024
Thallium		2.0		**224**	250.0	0	89.4	80	120	10/10/2024
Vanadium		5.0		**503**	500.0	0	100.6	80	120	10/10/2024
Zinc		15.0		**540**	500.0	0	108.1	80	120	10/10/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 229478 **SampType:** MBLK Units **µg/L**

SampID: MBLK-229478

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**< 1.0**	0.4500	0	0	-100	100	10/17/2024
Arsenic		1.0		**< 1.0**	0.3750	0	0	-100	100	10/10/2024
Beryllium		1.0		**< 1.0**	0.2500	0	0	-100	100	10/10/2024
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	10/11/2024
Cadmium		1.0		**< 1.0**	0.1340	0	0	-100	100	10/10/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	10/10/2024
Cobalt		1.0		**< 1.0**	0.1150	0	0	-100	100	10/10/2024
Copper		1.0		**< 1.0**	0.2980	0	0	-100	100	10/10/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	10/11/2024
Lead		1.0		**< 1.0**	0.6000	0	0	-100	100	10/11/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	10/10/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	10/10/2024
Nickel		1.0		**< 1.0**	0.4300	0	0	-100	100	10/11/2024
Selenium		1.0		**< 1.0**	0.6000	0	0	-100	100	10/10/2024
Silver		1.0		**< 1.0**	0.1110	0	0	-100	100	10/10/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	10/10/2024
Vanadium		5.0		**< 5.0**	5.000	0	0	-100	100	10/10/2024
Zinc		15.0		**< 15.0**	5.900	0	0	-100	100	10/10/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 229478 **SampType:** LCS Units **µg/L**

SampID: LCS-229478

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0	S	**635**	500.0	0	127.1	80	120	10/17/2024
Arsenic		1.0		**499**	500.0	0	99.9	80	120	10/10/2024
Beryllium		1.0		**52.2**	50.00	0	104.3	80	120	10/10/2024
Boron		25.0		**527**	500.0	0	105.5	80	120	10/11/2024
Cadmium		1.0		**53.8**	50.00	0	107.6	80	120	10/10/2024
Chromium		1.5		**201**	200.0	0	100.7	80	120	10/10/2024
Cobalt		1.0		**471**	500.0	0	94.2	80	120	10/10/2024
Copper		1.0		**247**	250.0	0	99.0	80	120	10/10/2024
Iron		25.0		**1960**	2000	0	98.2	80	120	10/11/2024
Lead		1.0		**498**	500.0	0	99.5	80	120	10/11/2024
Manganese		2.0		**497**	500.0	0	99.5	80	120	10/10/2024
Molybdenum		1.5		**468**	500.0	0	93.5	80	120	10/10/2024
Nickel		1.0		**478**	500.0	0	95.5	80	120	10/11/2024
Selenium		1.0		**485**	500.0	0	97.0	80	120	10/10/2024
Silver		1.0		**50.8**	50.00	0	101.5	80	120	10/10/2024
Thallium		2.0		**246**	250.0	0	98.4	80	120	10/10/2024
Vanadium		5.0		**503**	500.0	0	100.7	80	120	10/10/2024
Zinc		15.0		**522**	500.0	0	104.3	80	120	10/10/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 229478 **SampType:** MS Units **µg/L**

SampID: 24091272-002HMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Antimony		1.0		**573**	500.0	0.7281	114.4	75	125	10/17/2024
Arsenic		1.0		**581**	500.0	3.392	115.5	75	125	10/15/2024
Barium		1.0		**2890**	2000	741.5	107.4	75	125	10/15/2024
Beryllium		1.0		**53.2**	50.00	0	106.5	75	125	10/15/2024
Boron		25.0		**649**	500.0	172.2	95.3	75	125	10/15/2024
Cadmium		1.0		**54.5**	50.00	0	108.9	75	125	10/15/2024
Chromium		1.5		**210**	200.0	2.471	103.7	75	125	10/17/2024
Cobalt		1.0		**528**	500.0	1.425	105.3	75	125	10/15/2024
Copper		1.0		**258**	250.0	3.567	101.7	75	125	10/15/2024
Iron		25.0		**6320**	2000	4353	98.5	75	125	10/16/2024
Lead		1.0		**511**	500.0	0.9524	101.9	75	125	10/11/2024
Manganese		2.0		**619**	500.0	114.8	100.9	75	125	10/15/2024
Nickel		1.0		**515**	500.0	3.057	102.4	75	125	10/15/2024
Selenium		1.0		**614**	500.0	0	122.9	75	125	10/15/2024
Silver		1.0		**50.3**	50.00	0	100.6	75	125	10/15/2024
Thallium		2.0		**249**	250.0	0	99.8	75	125	10/11/2024
Vanadium		5.0		**551**	500.0	4.850	109.3	75	125	10/15/2024
Zinc		15.0		**539**	500.0	8.866	106.1	75	125	10/15/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 229478 **SampType:** MSD Units µg/L RPD Limit 20

SampID: 24091272-002HMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Antimony		1.0		**562**	500.0	0.7281	112.3	572.6	1.86	10/17/2024
Arsenic		1.0		**554**	500.0	3.392	110.1	580.7	4.75	10/15/2024
Barium		1.0		**2780**	2000	741.5	101.9	2890	3.87	10/15/2024
Beryllium		1.0		**52.1**	50.00	0	104.2	53.23	2.18	10/15/2024
Boron		25.0		**660**	500.0	172.2	97.5	648.6	1.71	10/15/2024
Cadmium		1.0		**52.1**	50.00	0	104.3	54.46	4.34	10/15/2024
Chromium		1.5		**208**	200.0	2.471	102.7	210.0	1.03	10/17/2024
Cobalt		1.0		**518**	500.0	1.425	103.3	527.9	1.91	10/15/2024
Copper		1.0		**250**	250.0	3.567	98.6	257.9	3.05	10/15/2024
Iron		25.0		**6060**	2000	4353	85.6	6322	4.17	10/16/2024
Lead		1.0		**493**	500.0	0.9524	98.3	510.7	3.58	10/11/2024
Manganese		2.0		**604**	500.0	114.8	97.9	619.1	2.44	10/15/2024
Nickel		1.0		**505**	500.0	3.057	100.3	515.0	2.06	10/15/2024
Selenium		1.0		**578**	500.0	0	115.5	614.3	6.16	10/15/2024
Silver		1.0		**48.6**	50.00	0	97.1	50.29	3.46	10/15/2024
Thallium		2.0		**241**	250.0	0	96.6	249.4	3.25	10/11/2024
Vanadium		5.0		**546**	500.0	4.850	108.3	551.4	0.90	10/15/2024
Zinc		15.0		**517**	500.0	8.866	101.7	539.3	4.17	10/15/2024

Batch 229990 **SampType:** MBLK Units µg/L

SampID: MBLK-229990

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	10/22/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	10/23/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	10/22/2024
Manganese		2.0		**< 2.0**	0.7500	0	0	-100	100	10/22/2024
Thallium		2.0		**< 2.0**	0.9500	0	0	-100	100	10/22/2024

Batch 229990 **SampType:** LCS Units µg/L

SampID: LCS-229990

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		25.0		**547**	500.0	0	109.4	80	120	10/22/2024
Chromium		1.5		**223**	200.0	0	111.4	80	120	10/23/2024
Iron		25.0		**1980**	2000	0	99.2	80	120	10/22/2024
Manganese		2.0		**518**	500.0	0	103.6	80	120	10/22/2024
Thallium		2.0		**226**	250.0	0	90.4	80	120	10/22/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 229990 **SampType:** MS Units µg/L

SampID: 24091272-059CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		25.0	S	**8730**	500.0	7753	195.3	75	125	10/22/2024
Chromium		30.0		**354**	200.0	147.9	103.1	75	125	10/23/2024
Iron		500	S	**70300**	2000	57780	627.9	75	125	10/23/2024
Manganese		40.0		**1130**	500.0	664.3	93.2	75	125	10/23/2024

Batch 229990 **SampType:** MSD Units µg/L RPD Limit **20**

SampID: 24091272-059CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Boron		25.0	S	**7650**	500.0	7753	-19.9	8729	13.13	10/22/2024
Chromium		30.0		**353**	200.0	147.9	102.5	354.2	0.35	10/23/2024
Iron		500	S	**58100**	2000	57780	17.7	70330	19.00	10/23/2024
Manganese		40.0		**1110**	500.0	664.3	89.5	1131	1.65	10/23/2024

Batch 230070 **SampType:** MBLK Units µg/L

SampID: MBLK-230070

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	10/23/2024

Batch 230070 **SampType:** LCS Units µg/L

SampID: LCS-230070

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lithium	*	3.0		**528**	500.0	0	105.6	80	120	10/24/2024

Batch 230351 **SampType:** MBLK Units µg/L

SampID: MBLK-230351

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		25.0		**< 25.0**	9.250	0	0	-100	100	10/31/2024
Chromium		1.5		**< 1.5**	0.7000	0	0	-100	100	10/31/2024
Copper		1.0		**< 1.0**	0.2980	0	0	-100	100	11/01/2024
Iron		25.0		**< 25.0**	11.50	0	0	-100	100	10/31/2024
Lithium	*	3.0		**< 3.0**	1.450	0	0	-100	100	10/31/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	11/01/2024
Molybdenum		1.5		**< 1.5**	0.6000	0	0	-100	100	10/31/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 3005A, 6020A, METALS BY ICPMS (TOTAL)

Batch 230351 **SampType:** LCS Units µg/L

SampID: LCS-230351

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Boron		25.0		**558**	500.0	0	111.7	80	120	10/31/2024
Chromium		1.5		**228**	200.0	0	114.2	80	120	10/31/2024
Copper		1.0		**263**	250.0	0	105.1	80	120	11/01/2024
Iron		25.0		**2120**	2000	0	105.9	80	120	10/31/2024
Lithium	*	3.0		**549**	500.0	0	109.8	80	120	10/31/2024
Molybdenum		1.5		**508**	500.0	0	101.6	80	120	11/01/2024

SW-846 7470A (DISSOLVED)

Batch 229476 **SampType:** MS Units µg/L

SampID: 24091272-055CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.73**	5.000	0	94.6	75	125	10/10/2024

Batch 229476 **SampType:** MSD Units µg/L RPD Limit **15**

SampID: 24091272-055CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.37**	5.000	0	87.5	4.728	7.82	10/10/2024

SW-846 7470A (TOTAL)

Batch 229313 **SampType:** MBLK Units µg/L

SampID: MBLK-229313

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	10/07/2024

Batch 229313 **SampType:** LCS Units µg/L

SampID: LCS-229313

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.75**	5.000	0	95.0	85	115	10/07/2024

Batch 229313 **SampType:** MS Units µg/L

SampID: 24091272-013BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.83**	5.000	0	96.7	75	125	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 7470A (TOTAL)

Batch 229313 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24091272-013BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.87**	5.000	0	97.5	4.835	0.79	10/07/2024

Batch 229313 **SampType:** MS Units µg/L

SampID: 24091272-014BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.85**	5.000	0	97.0	75	125	10/07/2024

Batch 229313 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24091272-014BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.58**	5.000	0	91.6	4.852	5.78	10/07/2024

Batch 229315 **SampType:** MBLK Units µg/L

SampID: MBLK-229315

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	10/07/2024

Batch 229315 **SampType:** LCS Units µg/L

SampID: LCS-229315

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.49**	5.000	0	89.8	85	115	10/07/2024

Batch 229315 **SampType:** MS Units µg/L

SampID: 24091272-015BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.20**	5.000	0	84.0	75	125	10/07/2024

Batch 229315 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24091272-015BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.14**	5.000	0	82.8	4.202	1.46	10/07/2024

Batch 229315 **SampType:** MS Units µg/L

SampID: 24091272-016BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.48**	5.000	0	89.6	75	125	10/07/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 7470A (TOTAL)

Batch 229315 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24091272-016BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.47**	5.000	0	89.3	4.482	0.35	10/07/2024

Batch 229358 **SampType:** MBLK Units µg/L

SampID: MBLK-229358

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	10/08/2024

Batch 229358 **SampType:** LCS Units µg/L

SampID: LCS-229358

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.46**	5.000	0	89.2	85	115	10/08/2024

Batch 229358 **SampType:** MS Units µg/L

SampID: 24091272-001HMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.47**	5.000	0	89.4	75	125	10/08/2024

Batch 229358 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24091272-001HMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.52**	5.000	0	90.4	4.470	1.10	10/08/2024

Batch 229358 **SampType:** MS Units µg/L

SampID: 24091272-011BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.55**	5.000	0	91.1	75	125	10/08/2024

Batch 229358 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24091272-011BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.57**	5.000	0	91.3	4.554	0.26	10/08/2024

Batch 229360 **SampType:** MBLK Units µg/L

SampID: MBLK-229360

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 7470A (TOTAL)

Batch 229360 **SampType:** LCS Units µg/L
SampID: LCS-229360

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.34**	5.000	0	86.7	85	115	10/08/2024

Batch 229360 **SampType:** MS Units µg/L
SampID: 24091272-020BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.63**	5.000	0	92.5	75	125	10/08/2024

Batch 229360 **SampType:** MSD Units µg/L RPD Limit **15**
SampID: 24091272-020BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.51**	5.000	0	90.3	4.626	2.46	10/08/2024

Batch 229360 **SampType:** MS Units µg/L
SampID: 24091272-023BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.50**	5.000	0	90.0	75	125	10/08/2024

Batch 229360 **SampType:** MSD Units µg/L RPD Limit **15**
SampID: 24091272-023BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.46**	5.000	0	89.2	4.499	0.91	10/08/2024

Batch 229364 **SampType:** MBLK Units µg/L
SampID: MBLK-229364

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	10/08/2024

Batch 229364 **SampType:** LCS Units µg/L
SampID: LCS-229364

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.49**	5.000	0	89.8	85	115	10/08/2024

Batch 229364 **SampType:** MS Units µg/L
SampID: 24091272-052HMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.45**	5.000	0	88.9	75	125	10/08/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 7470A (TOTAL)

Batch 229364 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24091272-052HMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.45**	5.000	0	88.9	4.446	0.04	10/08/2024

Batch 229364 **SampType:** MS Units µg/L

SampID: 24091272-079CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.40**	5.000	0	88.0	75	125	10/08/2024

Batch 229364 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24091272-079CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.25**	5.000	0	85.0	4.402	3.46	10/08/2024

Batch 229394 **SampType:** MBLK Units µg/L

SampID: MBLK-229394

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	10/09/2024

Batch 229394 **SampType:** LCS Units µg/L

SampID: LCS-229394

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.49**	5.000	0	89.8	85	115	10/09/2024

Batch 229394 **SampType:** MS Units µg/L

SampID: 24091272-005CMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.44**	5.000	0	88.9	75	125	10/09/2024

Batch 229394 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24091272-005CMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.34**	5.000	0	86.9	4.444	2.29	10/09/2024

Batch 229394 **SampType:** MS Units µg/L

SampID: 24091272-022BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.66**	5.000	0	93.2	75	125	10/09/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 7470A (TOTAL)

Batch 229394 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24091272-022BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.59**	5.000	0	91.7	4.660	1.60	10/09/2024

Batch 229395 **SampType:** MBLK Units µg/L

SampID: MBLK-229395

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	10/09/2024

Batch 229395 **SampType:** LCS Units µg/L

SampID: LCS-229395

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.45**	5.000	0	89.0	85	115	10/09/2024

Batch 229395 **SampType:** MS Units µg/L

SampID: 24091272-081BMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.49**	5.000	0	89.8	75	125	10/09/2024

Batch 229395 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24091272-081BMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.53**	5.000	0	90.6	4.491	0.90	10/09/2024

Batch 229476 **SampType:** MBLK Units µg/L

SampID: MBLK-229476

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	10/10/2024

Batch 229476 **SampType:** LCS Units µg/L

SampID: LCS-229476

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.60**	5.000	0	91.9	85	115	10/10/2024

Batch 229476 **SampType:** MS Units µg/L

SampID: 24091272-077HMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.50**	5.000	0	90.0	75	125	10/10/2024

Client: Ramboll **Work Order:** 24091272

Client Project: NEW-24Q4 **Report Date:** 12-Nov-24

SW-846 7470A (TOTAL)

Batch 229476 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24091272-077HMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.33**	5.000	0	86.5	4.499	3.93	10/10/2024

Batch 229481 **SampType:** MBLK Units µg/L

SampID: MBLK-229481

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**< 0.20**	0.0550	0	0	-100	100	10/10/2024

Batch 229481 **SampType:** LCS Units µg/L

SampID: LCS-229481

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.70**	5.000	0	94.0	85	115	10/10/2024

Batch 229481 **SampType:** MS Units µg/L

SampID: 24091272-078HMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Mercury		0.20		**4.69**	5.000	0	93.8	75	125	10/10/2024

Batch 229481 **SampType:** MSD Units µg/L RPD Limit 15

SampID: 24091272-078HMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Mercury		0.20		**4.55**	5.000	0	91.0	4.688	2.95	10/10/2024

Receiving Check List

http://www.teklabinc.com/

Client: Ramboll
Client Project: NEW-24Q4

Work Order: 24091272
Report Date: 12-Nov-24

Carrier: Daniel Crump

Received By: AMD

Completed by: Amber Dilallo
On: 04-Oct-24

Reviewed by: Elizabeth A. Hurley
On: 09-Oct-24

Pages to follow: Chain of custody 18 Extra pages included 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C 1.9
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☑	Lab ☐	NA ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water – at least one vial per sample has zero headspace?	Yes ☑	No ☐	No VOA vials ☐
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	NA ☐
NPDES/CWA TCN interferences checked/treated in the field?	Yes ☐	No ☐	NA ☑

Any No responses must be detailed below or on the COC.

Samples were received on 10/3/24 at 1600 on ice [1.9C - LTG#5]. pH strip #89660/96651. Additional Nitric Acid (99964) was needed in APW02 upon arrival at the laboratory. Additional Sodium Hydroxide (99725) was needed in A213, G106, G130, G133, G136, G139, R217D and A213 Duplicate upon arrival at the laboratory. - amberdilallo - 10/4/2024 8:54:25 AM

Samples were received on 10/7/24 at 1610 on ice [12.7C - LTG#5]. pH strip #89660/96651. Additional Nitric Acid (99964) was needed in S101 and S102 upon arrival at the laboratory. Additional Sulfuric Acid (99031) was needed in S101 and S102 upon arrival at the laboratory. Additional Sodium Hydroxide (99725) was needed in G125, G128 and G217S upon arrival at the laboratory. G105 was split and preserved with Nitric Acid (99964) upon arrival at the laboratory. - amberdilallo - 10/7/2024 5:03:21 PM

Samples were received on 10/8/24 at 1500 on ice [5.1C - LTG#5]. Additional Nitric Acid (99964) was needed in L1R, APW09, and APW07 upon arrival at the laboratory. Additional Sodium Hydroxide (99725) was needed in G231 upon arrival at the laboratory. L1R, Field Blank, and Equipment Blank 2 were filtered unpreserved and preserved with Nitric Acid (99964) and Sulfuric Acid (99031) for the dissolved parameters upon arrival at the laboratory. pH strip #98858/96651. Date and time of collection for sample A214 per Tracy Carroll. - JD/MLDII/amberdilallo - 10/9/2024 8:52:47 AM

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Brian Voelker
Address:	6725 N. 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448			Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:		Profile #:	

REGULATORY AGENCY: NPDES, GROUND WATER, DRINKING WATER, UST, RCRA, OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A213	WT	G	10-3-24	1141		14	7	1	2	3	1						X							24091272-001
2	A214	WT	G				25	15	1	2	6	1						X							24091272-002
3	A215	WT	G				14	7	1	2	3	1						X							24091272-003
4	APW02	WT	G	10-2-24	1049		4	2		2							X				X		X		24091272-004
5	APW03	WT	G				4	2		2							X				X		X		24091272-005
6	APW04	WT	G				4	2		2							X				X		X		24091272-006
7	APW05	WT	G	10-2-24	1146		3	1		2							X				X	X		X		24091272-007
8	APW05S	WT	G	10-2-24	1218		3	1		2							X				X			X		24091272-008
9	APW06	WT	G				3	1		2							X				X	X		X		24091272-009
10	APW07	WT	G				3	1		2							X				X			X		24091272-010
11	APW08	WT	G	10-2-24	0935		3	1		2							X				X			X		24091272-011
12	APW09	WT	G				3	1		2							X				X			X		24091272-012
13	APW10	WT	G	10-1-24	1158		3	1		2							X				X			X		24091272-013
14	APW11	WT	G		1025		3	1		2							X				X			X		24091272-014
15	APW12	WT	G		1103		3	1		2							X				X			X		24091272-015
16	APW13	WT	G	↓	1247		3	1		2							X				X			X		24091272-016

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Y	N	
NEW-24Q4 Rev 0		10.3	1600		10/3/24	1600	19			
MS/MSD volume included fro A214 (organics).							#5			

JK HS PW 96651/89660
add HNO3(9964) to APW02
add NaOH(99725) to *

LH 10/4/24

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Justin Cole					
SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY): 10-1-24				

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Brian Voelker
Address:	6725 N. 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448			Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:		Profile #:	

REGULATORY AGENCY: NPDES GROUND WATER DRINKING WATER; UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW14	WT	G	10-1-24	1333		3	1		2							X			X			X			24091272-017
2	APW15	WT	G	10-1-24	1426		3	1		2							X			X			X			24091272-018
3	APW16	WT	G	10-2-24	0905		3	1		2							X			X			X			24091272-019
4	APW17	WT	G	10-2-24	1018		3	1		2							X			X			X			24091272-020
5	APW18	WT	G	10-2-24	1121		3	1		2							X			X			X			24091272-021
6	APW19S	WT	G				3	1		2											X		X			24091272-022
7	APW20S	WT	G	10.2.24	1347		3	1		2											X		X			24091272-023
8	APW21S	WT	G	10.2.24	1248		3	1		2											X		X			24091272-024
9	APW22S	WT	G	10.2.24	1154		3	1		2											X		X			24091272-025
10	APW23	WT	G	10.2.24	1031		3	1		2											X		X			24091272-026
11	APW23S	WT	G	10.2.24	938		3	1		2											X		X			24091272-027
12	G104	WT	G				5	2	1	1		1							X							24091272-028
13	G104D	WT	G				0												X							24091272-029
14	G104S	WT	G				0												X							24091272-030
15	G105	WT	G				5	2	1	1		1							X							24091272-031
16	G106	WT	G	10-3-24	1315		5	2	1	1		1							X							24091272-032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q4 Rev 0		10.3	1600		10/3/24	1600	

SAMPLE CONDITIONS: Y / N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Cole

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 10-1-24

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N. 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	

Section C Invoice Information:

Attention:	Brian Voelker
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G109	WT	G				0												X						24091272-033
2	G111	WT	G				0												X						24091272-034
3	G112	WT	G				0												X						24091272-035
4	G113	WT	G				0												X						24091272-036
5	G114	WT	G				0												X						24091272-037
6	G115	WT	G				0												X						24091272-038
7	G116	WT	G				5	2	1	1		1							X			X			24091272-039
8	G117	WT	G				0												X						24091272-040
9	G118	WT	G				0												X						24091272-041
10	G119	WT	G				0												X						24091272-042
11	G120	WT	G				0												X						24091272-043
12	G125	WT	G				5	2	1	1		1							X						24091272-044
13	G128	WT	G				5	2	1	1		1							X						24091272-045
14	G130	WT	G	10/3/24	1328		5	2	1	1		1							X						24091272-046
15	G133	WT	G	10/3/24	1252		5	2	1	1		1							X						24091272-047
16	G136	WT	G	10/3/24	1158		5	2	1	1		1							X						24091272-048

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q4 Rev 0		10-3	1600		10/4/24	1100	

SAMPLE CONDITIONS: Y / N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tracy Carroll

SIGNATURE of SAMPLER: Tracy Carroll DATE Signed (MM/DD/YY): 10/3/24

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Brian Voelker
Address:	6725 N. 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448			Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:		Profile #:	

REGULATORY AGENCY		
NPDES	GROUND WATER	DRINKING WATER
UST	RCRA	OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G139	WT	G	10/3/24	1114		5	2	1	1		1							X							24091272-049
2	G141	WT	G				5	2	1	1		1							X							24091272-050
3	G217S	WT	G				5	2	1	1		1						X								24091272-051
4	G221	WT	G	10-3-24	1215		14	7	1	2	3	1						X								24091272-052
5	G225	WT	G				5	2	1	1		1						X								24091272-053
6	G230	WT	G	10-3-24	0904		5	2	1	1		1						X								24091272-054
7	G231	WT	G				5	2	1	1		1						X								24091272-055
8	G232	WT	G	10-3-24	0935		5	2	1	1		1						X								24091272-056
9	G233	WT	G	10-3-24	0956		5	2	1	1		1						X								24091272-057
10	G234	WT	G	10-3-24	1016		5	2	1	1		1						X								24091272-058
11	L1R	WT	G				7	2	3	2									X							24091272-059
12	L201	WT	G				0												X							24091272-060
13	L202	WT	G				0												X							24091272-061
14	L203	WT	G				0												X							24091272-062
15	L204	WT	G				0												X							24091272-063
16	L205	WT	G				0												X							24091272-064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q4 Rev 0		10-3	1600		10/4/24	1100	

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Tracy Carroll				
SIGNATURE of SAMPLER:					
DATE Signed (MM/DD/YY):	10/3/24				

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N. 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	

Section C Invoice Information:

Attention:	Brian Voelker
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000					Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	R217D	WT	G	10-3-24	1101		14	7	1	2	3	1						X											24091272-065
2	R219	WT	G				14	7	1	2	3	1						X											24091272-066
3	S101	WT	G				7	2	3	2									X										24091272-067
4	S102	WT	G				7	2	3	2									X										24091272-068
5	SG02	WT	G				0										X			X									24091272-069
6	T101	WT	G	10/3/24	923		7	2	3	2									X										24091272-070
7	T102	WT	G	10/3/24	1016		7	2	3	2									X										24091272-071
8	XPW01	WT	G	removed/abandoned			0										X			X									24091272-072
9	XPW02	WT	G	removed/abandoned			0										X			X									24091272-073
10	XPW03	WT	G	removed/abandoned			0										X			X									24091272-074
11	XPW04	WT	G	removed/abandoned			0										X			X									24091272-075
12	XSG01	WT	G				0										X			X									24091272-076
13	Field Blank	WT	G				16	9	2	1	3	1					X	X	X	X	X	X	X						24091272-077
14	A213 Duplicate	WT	G	10-3-24	1141		14	7	1	2	3	1						X											24091272-078
15	APW02 Duplicate	WT	G	10-2-24	1049		4	2		2							X			X		X	X						24091272-079
16	G104 Duplicate	WT	G				5	2	1	1		1							X										24091272-080

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q4 Rev 0		10-3	1600		10/3/24	1600	

SAMPLE CONDITIONS	Y	N	
Temp in °C			
Received on Ice (Y/N)			
Custody Sealed Cooler (Y/N)			
Samples Intact (Y/N)			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tracy Davis

SIGNATURE of SAMPLER: Tracy Davis

DATE Signed (MM/DD/YY): 10/2/24

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N. 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	

Section C Invoice Information:

Attention:	Brian Voelker
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW19S Duplicate	WT	G				3	1		2											X		X		24091272-081
2	Equipment Blank 1	WT	G				16	9	2	1	3	1					X	X	X	X	X	X	X		24091272-082
3	Equipment Blank 2	WT	G				16	9	2	1	3	1					X	X	X	X	X	X	X		24091272-083
4	Equipment Blank 3	WT	G				16	9	2	1	3	1					X	X	X	X	X	X	X		24091272-084
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									
16																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q4 Rev 0		10-3	1600		10/3/24	1600	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Y	N	

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

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Page: 1 of 6

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Brian Voelker
Address:	6725 N. 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448			Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:		Profile #:	

REGULATORY AGENCY		
NPDES	GROUND WATER	DRINKING WATER
UST	RCRA	OTHER
Site Location STATE:	IL	

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A213	WT	G				14	7	1	2	3	1					X							24091272-001
2	A214	WT	G				25	15	1	2	6	1					X							24091272-002
3	A215	WT	G				14	7	1	2	3	1					X							24091272-003
4	APW02	WT	G				4	2		2						X			X		X	X		24091272-004
5	APW03	WT	G	10.7.24	1123		4	2		2						X			X		X	X		24091272-005
6	APW04	WT	G	10.7.24	1223		4	2		2						X			X		X	X		24091272-006
7	APW05	WT	G				3	1		2						X			X	X		X		24091272-007
8	APW05S	WT	G				3	1		2						X			X			X		24091272-008
9	APW06	WT	G				3	1		2						X			X	X		X		24091272-009
10	APW07	WT	G				3	1		2						X			X			X		24091272-010
11	APW08	WT	G				3	1		2						X			X			X		24091272-011
12	APW09	WT	G				3	1		2						X			X			X		24091272-012
13	APW10	WT	G				3	1		2						X			X			X		24091272-013
14	APW11	WT	G				3	1		2						X			X			X		24091272-014
15	APW12	WT	G				3	1		2						X			X			X		24091272-015
16	APW13	WT	G				3	1		2						X			X			X		24091272-016

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS		
NEW-24Q4 Rev 0	[signature]	10-7	1610	[signature]	10/7/24	1610	12.7	Y	N
MS/MSD volume included fro A214 (organics).							#5		

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Tracy Carroll					
SIGNATURE of SAMPLER:	[signature]	DATE Signed (MM/DD/YY): 10.7.24 16:17				

Added HNO3 (99164) to S101 & S102.
Added H2SO4 (99031) to S101 & S102.
Added NaOH (99725) to G125, G128 & G275. [signature] 10.7.24 16:17

pH ✓ 8260/8260SI Split G105 w/ HNO3 (99164) rcm 10/7/24

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

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Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N. 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	

Section C Invoice Information:

Attention:	Brian Voelker
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW14	WT	G				3	1		2							X			X			X		24091272-017
2	APW15	WT	G				3	1		2							X			X			X		24091272-018
3	APW16	WT	G				3	1		2							X			X			X		24091272-019
4	APW17	WT	G				3	1		2							X			X			X		24091272-020
5	APW18	WT	G				3	1		2							X			X			X		24091272-021
6	APW19S	WT	G	10.7.24	1035		3	1		2											X		X		24091272-022
7	APW20S	WT	G				3	1		2											X		X		24091272-023
8	APW21S	WT	G				3	1		2											X		X		24091272-024
9	APW22S	WT	G				3	1		2											X		X		24091272-025
10	APW23	WT	G				3	1		2											X		X		24091272-026
11	APW23S	WT	G				3	1		2											X		X		24091272-027
12	G104	WT	G	10-7-24	1020		5	2	1	1		1							X						24091272-028
13	G104D	WT	G				0												X						24091272-029
14	G104S	WT	G				0												X						24091272-030
15	G105	WT	G	10-7-24	1400		5	2	1	1		1							X						24091272-031
16	G106	WT	G				5	2	1	1		1							X						24091272-032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q4 Rev 0		10-7	1610		10/7/24	1610

SAMPLE CONDITIONS	Y	N	
Temp in °C			
Received on Ice (Y/N)			
Custody Sealed Cooler (Y/N)			
Samples Intact (Y/N)			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tracy Carroll

SIGNATURE of SAMPLER: Tracy Carroll DATE Signed (MM/DD/YY): 10/7/24 1617

Jackie Davis 10/7/24 16:17

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

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Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N. 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	

Section C Invoice Information:

Attention:	Brian Voelker
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G109	WT	G				0												X						24091272-033
2	G111	WT	G				0												X						24091272-034
3	G112	WT	G				0												X						24091272-035
4	G113	WT	G				0												X						24091272-036
5	G114	WT	G				0												X						24091272-037
6	G115	WT	G				0												X						24091272-038
7	G116	WT	G				5	2	1	1		1							X			X			24091272-039
8	G117	WT	G				0												X						24091272-040
9	G118	WT	G				0												X						24091272-041
10	G119	WT	G				0												X						24091272-042
11	G120	WT	G				0												X						24091272-043
12	G125	WT	G	10-7-24	1137		5	2	1	1		1							X						24091272-044
13	G128	WT	G	10-7-24	1200		5	2	1	1		1							X						24091272-045
14	G130	WT	G				5	2	1	1		1							X						24091272-046
15	G133	WT	G				5	2	1	1		1							X						24091272-047
16	G136	WT	G				5	2	1	1		1							X						24091272-048

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
NEW-24Q4 Rev 0		10-7	1610		10/7/24	1610		Y	N	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tracy Carril

SIGNATURE of SAMPLER: Tracy Carril DATE Signed (MM/DD/YY): 10.7.24 16:17

Joakin DeLeon 10-7-24 16:17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Brian Voelker
Address:	6725 N. 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448			Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:		Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: IL

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G139	WT	G				5	2	1	1		1							X							24091272-049
2	G141	WT	G	10-7-24	1238		5	2	1	1		1							X							24091272-050
3	G217S	WT	G	10-7-24	1052		5	2	1	1		1						X								24091272-051
4	G221	WT	G				14	7	1	2	3	1						X								24091272-052
5	G225	WT	G	10-7-24	1309		5	2	1	1		1						X								24091272-053
6	G230	WT	G				5	2	1	1		1						X								24091272-054
7	G231	WT	G				5	2	1	1		1						X								24091272-055
8	G232	WT	G				5	2	1	1		1						X								24091272-056
9	G233	WT	G				5	2	1	1		1						X								24091272-057
10	G234	WT	G				5	2	1	1		1						X								24091272-058
11	L1R	WT	G				7	2	3	2									X							24091272-059
12	L201	WT	G				0												X							24091272-060
13	L202	WT	G				0												X							24091272-061
14	L203	WT	G				0												X							24091272-062
15	L204	WT	G				0												X							24091272-063
16	L205	WT	G				0												X							24091272-064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Y	N
NEW-24Q4 Rev 0		10-7	1610		10/7/24	1610			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tracy Carroll

SIGNATURE of SAMPLER: Tracy Carroll DATE Signed (MM/DD/YY): 10/7/24 16:17

Jackie Davis 10/7/24 16:17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Brian Voelker
Address:	6725 N. 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448			Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:		Profile #:	

REGULATORY AGENCY: NPDES, GROUND WATER, DRINKING WATER, UST, RCRA, OTHER

Site Location STATE: IL

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000					Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	R217D	WT	G				14	7	1	2	3	1						X										24091272-065
2	R219	WT	G				14	7	1	2	3	1						X										24091272-066
3	S101	WT	G	10.7.24	1305		7	2	3	2									X									24091272-067
4	S102	WT	G	10.7.24	1319		7	2	3	2									X									24091272-068
5	SG02	WT	G				0										X			X								24091272-069
6	T101	WT	G				7	2	3	2									X									24091272-070
7	T102	WT	G				7	2	3	2									X									24091272-071
8	XPW01	WT	G	removed/abandoned			0										X			X								24091272-072
9	XPW02	WT	G	removed/abandoned			0										X			X								24091272-073
10	XPW03	WT	G	removed/abandoned			0										X			X								24091272-074
11	XPW04	WT	G	removed/abandoned			0										X			X								24091272-075
12	XSG01	WT	G				0										X			X								24091272-076
13	Field Blank	WT	G				16	9	2	1	3	1					X	X	X	X	X	X	X					24091272-077
14	A213 Duplicate	WT	G				14	7	1	2	3	1						X										24091272-078
15	APW02 Duplicate	WT	G				4	2		2							X			X		X	X					24091272-079
16	G104 Duplicate	WT	G	10-7-24	1020		5	2	1	1		1							X									24091272-080

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Y	N	
NEW-24Q4 Rev 0		10-7	1610		10/7/24	1610	Temp in °C			
							Received on Ice (Y/N)			
							Custody Sealed Cooler (Y/N)			
							Samples Intact (Y/N)			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tracy Carroll

SIGNATURE of SAMPLER: Tracy Carroll DATE Signed (MM/DD/YY): 10/7/24 16:17

Jackie Davis 10.7.24 16:17

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 6 of 6

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N. 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	

Section C Invoice Information:

Attention:	Brian Voelker
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW19S Duplicate	WT	G	10.7.24	~~10:24~~ 10:35		3	1		2											X		X		24091272-081
2	Equipment Blank 1	WT	G				16	9	2	1	3	1					X	X	X	X	X	X	X		24091272-082
3	Equipment Blank 2	WT	G				16	9	2	1	3	1					X	X	X	X	X	X	X		24091272-083
4	Equipment Blank 3	WT	G				16	9	2	1	3	1					X	X	X	X	X	X	X		24091272-084
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									
16																									

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q4 Rev 0		10-7	1610		10/7/24	1610

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Y	N	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Traci Carroll

SIGNATURE of SAMPLER: Traci Carroll DATE Signed (MM/DD/YY): 10.7.24 16:17

Jackie Peters 10-7-24 16:17

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Brian Voelker
Address:	6725 N. 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448			Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:		Profile #:	

REGULATORY AGENCY: NPDES GROUND WATER DRINKING WATER; UST RCRA OTHER

Site Location STATE: IL

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	A213	WT	G				14	7	1	2	3	1						X							24091272-001
2	A214	WT	G	10-8-24	1122		25	15	1	2	6	1						X							24091272-002
3	A215	WT	G	10-8-24	1091		14	7	1	2	3	1						X							24091272-003
4	APW02	WT	G				4	2		2							X			X		X	X		24091272-004
5	APW03	WT	G				4	2		2							X			X		X	X		24091272-005
6	APW04	WT	G				4	2		2							X			X		X	X		24091272-006
7	APW05	WT	G				3	1		2							X			X	X		X		24091272-007
8	APW05S	WT	G				3	1		2							X			X			X		24091272-008
9	APW06	WT	G	10-8-24	0933		3	1		2							X			X	X		X		24091272-009
10	APW07	WT	G	10-8-24	1005		3	1		2							X			X			X		24091272-010
11	APW08	WT	G				3	1		2							X			X			X		24091272-011
12	APW09	WT	G	10-8-24	1151		3	1		2							X			X			X		24091272-012
13	APW10	WT	G				3	1		2							X			X			X		24091272-013
14	APW11	WT	G				3	1		2							X			X			X		24091272-014
15	APW12	WT	G				3	1		2							X			X			X		24091272-015
16	APW13	WT	G				3	1		2							X			X			X		24091272-016

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
NEW-24Q4 Rev 0		10-8	1500			1500	5.1 #5
MS/MSD volume included fro A214 (organics).							

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Cole

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 10-8-24 15:00

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

* Filter ~~INtact~~ Lab TJK 10.8.24
Added HNO3(99964) to Sample
LIR, APW09, APW07

~~Added NaOH (99725) to Sample G231~~
PH 98858 5.1 #5

Jackie Davis 10/8/24 15:00

Date & time for A214 per Tracy Carroll JDM 10/8/24

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

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Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Brian Voelker
Address:	6725 N. 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448			Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:		Profile #:	

REGULATORY AGENCY		
NPDES	GROUND WATER	DRINKING WATER
UST	RCRA	OTHER
Site Location STATE:	IL	

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N)	Analysis Test (Y/N)	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW14	WT	G				3	1		2								X			X			X			24091272-017
2	APW15	WT	G				3	1		2								X			X			X			24091272-018
3	APW16	WT	G				3	1		2								X			X			X			24091272-019
4	APW17	WT	G				3	1		2								X			X			X			24091272-020
5	APW18	WT	G				3	1		2								X			X			X			24091272-021
6	APW19S	WT	G				3	1		2												X		X			24091272-022
7	APW20S	WT	G				3	1		2												X		X			24091272-023
8	APW21S	WT	G				3	1		2												X		X			24091272-024
9	APW22S	WT	G				3	1		2												X		X			24091272-025
10	APW23	WT	G				3	1		2												X		X			24091272-026
11	APW23S	WT	G				3	1		2												X		X			24091272-027
12	G104	WT	G				5	2	1	1		1							X								24091272-028
13	G104D	WT	G				0												X								24091272-029
14	G104S	WT	G				0												X								24091272-030
15	G105	WT	G				5	2	1	1		1							X								24091272-031
16	G106	WT	G				5	2	1	1		1							X								24091272-032

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q4 Rev 0	BJG	10-8	1500	Jackie Davis	10/8/24	1500

SAMPLE CONDITIONS	Y	N	
Temp in °C			
Received on Ice (Y/N)			
Custody Sealed Cooler (Y/N)			
Samples Intact (Y/N)			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: N/A SAH 10/9/24

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 1500

Jackie Davis 10/8/24 15:00

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

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Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Brian Voelker
Address:	6725 N. 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448			Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:		Profile #:	

REGULATORY AGENCY		
NPDES	GROUND WATER	DRINKING WATER
UST	RCRA	OTHER

Site Location STATE: IL

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analysis Test: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G109	WT	G				0												X						24091272-033
2	G111	WT	G				0												X						24091272-034
3	G112	WT	G				0												X						24091272-035
4	G113	WT	G				0												X						24091272-036
5	G114	WT	G				0												X						24091272-037
6	G115	WT	G				0												X						24091272-038
7	G116	WT	G	10.8.24	1245		5	2	1	1		1							X			X			24091272-039
8	G117	WT	G				0												X						24091272-040
9	G118	WT	G				0												X						24091272-041
10	G119	WT	G				0												X						24091272-042
11	G120	WT	G				0												X						24091272-043
12	G125	WT	G				5	2	1	1		1							X						24091272-044
13	G128	WT	G				5	2	1	1		1							X						24091272-045
14	G130	WT	G				5	2	1	1		1							X						24091272-046
15	G133	WT	G				5	2	1	1		1							X						24091272-047
16	G136	WT	G				5	2	1	1		1							X						24091272-048

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Y	N
NEW-24Q4 Rev 0		10-8	1500		10/8/24	1500			

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Tracy Carroll					
SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY): 10.8.24 15:00				

Jackie Davis 10/8/24 15:00

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 4 of 6

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Brian Voelker
Address:	6725 N. 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448			Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:		Profile #:	

REGULATORY AGENCY		
NPDES	GROUND WATER	DRINKING WATER
UST	RCRA	OTHER
Site Location STATE:	IL	

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	G139	WT	G				5	2	1	1		1							X						24091272-049
2	G141	WT	G				5	2	1	1		1							X						24091272-050
3	G217S	WT	G				5	2	1	1		1						X							24091272-051
4	G221	WT	G				14	7	1	2	3	1						X							24091272-052
5	G225	WT	G				5	2	1	1		1						X							24091272-053
6	G230	WT	G				5	2	1	1		1						X							24091272-054
7	G231	WT	G	10.8.24	1046		5	2	1	1		1						X							24091272-055
8	G232	WT	G				5	2	1	1		1						X							24091272-056
9	G233	WT	G				5	2	1	1		1						X							24091272-057
10	G234	WT	G				5	2	1	1		1						X							24091272-058
11	L1R *	WT	G	10.8.24	1147		7	2	3	2									X						24091272-059
12	L201	WT	G				0												X						24091272-060
13	L202	WT	G				0												X						24091272-061
14	L203	WT	G				0												X						24091272-062
15	L204	WT	G				0												X						24091272-063
16	L205	WT	G				0												X						24091272-064

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Y	N
NEW-24Q4 Rev 0		10-8	1500		10/8/24	1500			

* Filter In Lab

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Tracy Carroll					
SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY): 10/8/24 15:00				

Jackie Davis 10/8/24 15:00

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp-Newton	Report To:	Brian Voelker	Attention:	Brian Voelker
Address:	6725 N. 500th St	Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com	Company Name:	Vistra Corp
	Newton, IL 62448			Address:	see Section A
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:	
Phone:	(217) 753-8911 Fax:	Project Name:		Project Manager:	
Requested Due Date/TAT:	10 day	Project Number:		Profile #:	

REGULATORY AGENCY		
NPDES	GROUND WATER	DRINKING WATER
UST	RCRA	OTHER
Site Location STATE:	IL	

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analysis Test	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000					Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	R217D	WT	G				14	7	1	2	3	1							X										24091272-065
2	R219	WT	G	10-8-24	1117		14	7	1	2	3	1							X										24091272-066
3	S101	WT	G				7	2	3	2										X									24091272-067
4	S102	WT	G				7	2	3	2										X									24091272-068
5	SG02	WT	G				0											X			X								24091272-069
6	T101	WT	G				7	2	3	2										X									24091272-070
7	T102	WT	G				7	2	3	2										X									24091272-071
8	XPW01	WT	G	removed/abandoned			0											X			X								24091272-072
9	XPW02	WT	G	removed/abandoned			0											X			X								24091272-073
10	XPW03	WT	G	removed/abandoned			0											X			X								24091272-074
11	XPW04	WT	G	removed/abandoned			0											X			X								24091272-075
12	XSG01	WT	G				0											X			X								24091272-076
13	Field Blank	WT	G	10-8-24	1206		16	9	2	1	3	1							X	X	X	X	X	X	X				24091272-077
14	A213 Duplicate	WT	G				14	7	1	2	3	1								X									24091272-078
15	APW02 Duplicate	WT	G				4	2		2									X			X		X	X				24091272-079
16	G104 Duplicate	WT	G				5	2	1	1		1									X								24091272-080

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
NEW-24Q4 Rev 0		10-8	1500		10/8/24	1500		Y	N	

SAMPLER NAME AND SIGNATURE						
PRINT Name of SAMPLER:	Jason Curick					
SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY):	10.8.24	1500		
Jackie Davis			10/8/24	15:00		

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

24091272

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Vistra Corp-Newton
Address:	6725 N. 500th St
	Newton, IL 62448
Email To:	Brian.Voelker@VistraCorp.com
Phone: (217) 753-8911	Fax:
Requested Due Date/TAT:	10 day

Section B Required Project Information:

Report To:	Brian Voelker
Copy To:	Terry Hanratty - Terry.Hanratty@vistracorp.com
Purchase Order No.:	
Project Name:	
Project Number:	

Section C Invoice Information:

Attention:	Brian Voelker
Company Name:	Vistra Corp
Address:	see Section A
Quote Reference:	
Project Manager:	
Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER

Site Location STATE: IL

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	NEW-257-501	NEW-811-502	NEW-811-503	NEW-845-501	NEW-NE-501	NEW-NPDES-501	NEW-SUP-000	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	APW19S Duplicate	WT	G				3	1		2											X		X		24091272-081
2	Equipment Blank 1	WT	G				16	9	2	1	3	1					X	X	X	X	X	X	X		24091272-082
3	Equipment Blank 2	WT	G	10.8.24	1250		16	9	2	1	3	1					X	X	X	X	X	X	X		24091272-083
4	Equipment Blank 3	WT	G				16	9	2	1	3	1					X	X	X	X	X	X	X		24091272-084
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									
16																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
NEW-24Q4 Rev 0		10-8	1500		10/8/24	1500

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Y	N	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tracy Barrett

SIGNATURE of SAMPLER: Tracy Barrett DATE Signed (MM/DD/YY): 10.8.24 15:00

Jackie Davis 10/8/24 15:00

APPENDIX C
SOLIDS SAMPLING LAB REPORTS

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Michael Davis
Ramboll Americas Engineering Solutions
333 W Wacker Drive
Suite 1050
Chicago, Illinois 60606

Generated 7/31/2024 2:07:59 PM Revision 1

JOB DESCRIPTION

Newton, ILNature & Extent CEC Analysis

JOB NUMBER

860-77313-1

Eurofins Houston
4145 Greenbriar Dr
Stafford TX 77477

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization

Generated
7/31/2024 2:07:59 PM
Revision 1

Authorized for release by
Sachin Kudchadkar, Senior Project Manager
Sachin.Kudchadkar@et.eurofinsus.com
(281)748-9025

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Definitions/Glossary

Client: Ramboll Americas Engineering Solutions
Job ID: 860-77313-1
Project/Site: Newton, ILNature & Extent CEC Analysis

Qualifiers

Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

General Chemistry

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

This data package is for Job No. 860-77313-1 and consists of:

This signature page, the laboratory review checklist, and the following reportable data:

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. preparation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☐ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☑ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: ☐ This laboratory meets an exception under 30 TAC §25.6 and was last inspected by ☐ TCEQ or ☐ _____ on __/__/__. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name (Printed)	Signature	Official Title (Printed)	Date

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 07/31/2024
Project Name: Newton, ILNature & Extent CEC Analysis	Laboratory Job Number: 860-77313-1
Reviewer Name:	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?	✓				
		Were % moisture (or solids) reported for all soil and sediment samples?	✓				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?			✓		
		Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		✓			1
		Were MS/MSD RPDs within laboratory QC limits?	✓				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	✓				
		Were analytical duplicates analyzed at the appropriate frequency?	✓				
		Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	✓				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 07/31/2024
Project Name: Newton, ILNature & Extent CEC Analysis	Laboratory Job Number: 860-77313-1
Reviewer Name:	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	✓				
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?			✓		
		Were ion abundance data within the method-required QC limits?			✓		
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?			✓		
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?	✓				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 07/31/2024
Project Name: Newton, ILNature & Extent CEC Analysis	Laboratory Job Number: 860-77313-1
Reviewer Name:	

ER#[1]	Description
1	Method 6010D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 860-169399 and analytical batch 860-169698 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Job ID: 860-77313-1 — Eurofins Houston

Job Narrative
860-77313-1

Revision
The report being provided is a revision of the original report sent on 7/25/2024. The report (revision 1) is being revised due to: sample ID corrected: APW23-37-39'.

Receipt
The samples were received on 6/28/2024 9:25 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 28.0º C.

Metals
Methods 6010B, 6010C, 6010D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 860-169399 and analytical batch 860-169698 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Ramboll Americas Engineering Solutions
Job ID: 860-77313-1
Project/Site: Newton, ILNature & Extent CEC Analysis

Client Sample ID: APW19S-7.5-8.2' — Lab Sample ID: 860-77313-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sodium	100		48.1	11.9	mg/Kg	1	☼	6010D	Total/NA
Cation Exchange Capacity	4.77		0.548	0.548	meq/100gm	1	☼	9081	Total/NA

Client Sample ID: APW19S-16-18' — Lab Sample ID: 860-77313-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sodium	181		49.2	12.1	mg/Kg	1	☼	6010D	Total/NA
Cation Exchange Capacity	11.7		0.580	0.580	meq/100gm	1	☼	9081	Total/NA

Client Sample ID: APW20S-14-16' — Lab Sample ID: 860-77313-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sodium	147		46.7	11.5	mg/Kg	1	☼	6010D	Total/NA
Cation Exchange Capacity	13.8		0.532	0.532	meq/100gm	1	☼	9081	Total/NA

Client Sample ID: APW20S-20-22' — Lab Sample ID: 860-77313-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sodium	146		47.6	11.7	mg/Kg	1	☼	6010D	Total/NA
Cation Exchange Capacity	11.3		0.552	0.552	meq/100gm	1	☼	9081	Total/NA

Client Sample ID: APW21S-8-10' — Lab Sample ID: 860-77313-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sodium	66.3		50.9	12.6	mg/Kg	1	☼	6010D	Total/NA
Cation Exchange Capacity	10.7		0.580	0.580	meq/100gm	1	☼	9081	Total/NA

Client Sample ID: APW21S-14-16' — Lab Sample ID: 860-77313-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sodium	75.3		46.2	11.4	mg/Kg	1	☼	6010D	Total/NA
Cation Exchange Capacity	5.17		0.546	0.546	meq/100gm	1	☼	9081	Total/NA

Client Sample ID: APW22S-9-11' — Lab Sample ID: 860-77313-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sodium	339		51.7	12.8	mg/Kg	1	☼	6010D	Total/NA
Cation Exchange Capacity	28.8		0.590	0.590	meq/100gm	1	☼	9081	Total/NA

Client Sample ID: APW22S-20.5-22' — Lab Sample ID: 860-77313-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sodium	208		49.0	12.1	mg/Kg	1	☼	6010D	Total/NA
Cation Exchange Capacity	5.82		0.558	0.558	meq/100gm	1	☼	9081	Total/NA

Client Sample ID: APW23S-12-16' — Lab Sample ID: 860-77313-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sodium	148		50.4	12.4	mg/Kg	1	☼	6010D	Total/NA
Cation Exchange Capacity	25.8		0.585	0.585	meq/100gm	1	☼	9081	Total/NA

Client Sample ID: APW23-37-39' — Lab Sample ID: 860-77313-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sodium	187		51.5	12.7	mg/Kg	1	☼	6010D	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Ramboll Americas Engineering Solutions
Job ID: 860-77313-1
Project/Site: Newton, ILNature & Extent CEC Analysis

Client Sample ID: APW23-37-39' (Continued)
Lab Sample ID: 860-77313-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cation Exchange Capacity	8.02		0.588	0.588	meq/100gm	1	☼	9081	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: APW19S-7.5-8.2'
Lab Sample ID: 860-77313-1
Date Collected: 06/18/24 16:20
Matrix: Solid
Date Received: 06/28/24 09:25
Percent Solids: 91.2

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	100		48.1	11.9	mg/Kg	☼	07/03/24 10:10	07/05/24 10:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cation Exchange Capacity (SW846 9081)	4.77		0.548	0.548	meq/100gm	☼	07/19/24 18:45	07/25/24 09:28	1

Client Sample ID: APW19S-16-18'
Lab Sample ID: 860-77313-2
Date Collected: 06/18/24 16:30
Matrix: Solid
Date Received: 06/28/24 09:25
Percent Solids: 86.2

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	181		49.2	12.1	mg/Kg	☼	07/03/24 10:10	07/05/24 10:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cation Exchange Capacity (SW846 9081)	11.7		0.580	0.580	meq/100gm	☼	07/19/24 18:45	07/25/24 09:28	1

Client Sample ID: APW20S-14-16'
Lab Sample ID: 860-77313-3
Date Collected: 06/18/24 11:00
Matrix: Solid
Date Received: 06/28/24 09:25
Percent Solids: 94.0

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	147		46.7	11.5	mg/Kg	☼	07/03/24 10:10	07/05/24 10:39	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cation Exchange Capacity (SW846 9081)	13.8		0.532	0.532	meq/100gm	☼	07/19/24 18:45	07/25/24 09:28	1

Client Sample ID: APW20S-20-22'
Lab Sample ID: 860-77313-4
Date Collected: 06/18/24 11:10
Matrix: Solid
Date Received: 06/28/24 09:25
Percent Solids: 90.6

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	146		47.6	11.7	mg/Kg	☼	07/03/24 10:10	07/05/24 10:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cation Exchange Capacity (SW846 9081)	11.3		0.552	0.552	meq/100gm	☼	07/19/24 18:45	07/25/24 09:28	1

Client Sample ID: APW21S-8-10'
Lab Sample ID: 860-77313-5
Date Collected: 06/18/24 18:50
Matrix: Solid
Date Received: 06/28/24 09:25
Percent Solids: 86.2

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	66.3		50.9	12.6	mg/Kg	☼	07/03/24 10:10	07/05/24 10:43	1

Client Sample ID: APW21S-8-10'
Lab Sample ID: 860-77313-5
Date Collected: 06/18/24 18:50
Matrix: Solid
Date Received: 06/28/24 09:25
Percent Solids: 86.2

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cation Exchange Capacity (SW846 9081)	10.7		0.580	0.580	meq/100gm	☼	07/19/24 18:45	07/25/24 09:28	1

Client Sample ID: APW21S-14-16'
Lab Sample ID: 860-77313-6
Date Collected: 06/18/24 18:55
Matrix: Solid
Date Received: 06/28/24 09:25
Percent Solids: 91.6

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	75.3		46.2	11.4	mg/Kg	☼	07/03/24 10:10	07/05/24 10:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cation Exchange Capacity (SW846 9081)	5.17		0.546	0.546	meq/100gm	☼	07/19/24 18:45	07/25/24 09:28	1

Client Sample ID: APW22S-9-11'
Lab Sample ID: 860-77313-7
Date Collected: 06/19/24 11:45
Matrix: Solid
Date Received: 06/28/24 09:25
Percent Solids: 84.8

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	339		51.7	12.8	mg/Kg	☼	07/03/24 10:10	07/05/24 10:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cation Exchange Capacity (SW846 9081)	28.8		0.590	0.590	meq/100gm	☼	07/19/24 18:45	07/25/24 09:28	1

Client Sample ID: APW22S-20.5-22'
Lab Sample ID: 860-77313-8
Date Collected: 06/19/24 11:55
Matrix: Solid
Date Received: 06/28/24 09:25
Percent Solids: 89.6

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	208		49.0	12.1	mg/Kg	☼	07/03/24 10:10	07/05/24 10:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cation Exchange Capacity (SW846 9081)	5.82		0.558	0.558	meq/100gm	☼	07/19/24 18:45	07/25/24 09:28	1

Client Sample ID: APW23S-12-16'
Lab Sample ID: 860-77313-9
Date Collected: 06/19/24 17:50
Matrix: Solid
Date Received: 06/28/24 09:25
Percent Solids: 85.5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	148		50.4	12.4	mg/Kg	☼	07/03/24 10:10	07/05/24 10:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cation Exchange Capacity (SW846 9081)	25.8		0.585	0.585	meq/100gm	☼	07/19/24 18:45	07/25/24 09:28	1

Client Sample Results

Client: Ramboll Americas Engineering Solutions
Job ID: 860-77313-1
Project/Site: Newton, ILNature & Extent CEC Analysis

Client Sample ID: APW23-37-39'
Lab Sample ID: 860-77313-10
Date Collected: 06/20/24 11:45
Matrix: Solid
Date Received: 06/28/24 09:25
Percent Solids: 85.1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	187		51.5	12.7	mg/Kg	☼	07/03/24 10:10	07/05/24 10:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cation Exchange Capacity (SW846 9081)	8.02		0.588	0.588	meq/100gm	☼	07/19/24 18:45	07/25/24 09:28	1

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 860-169399/1-A
Matrix: Solid
Analysis Batch: 169698

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 169399

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	12.3	U	50.0	12.3	mg/Kg		07/03/24 10:09	07/05/24 10:17	1

Lab Sample ID: LCS 860-169399/2-A
Matrix: Solid
Analysis Batch: 169698

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 169399

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sodium	2500	2300		mg/Kg		92	80 - 120

Lab Sample ID: LCSD 860-169399/3-A
Matrix: Solid
Analysis Batch: 169698

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 169399

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sodium	2500	2300		mg/Kg		92	80 - 120	0	20

Method: 9081 - Cation Exchange Capacity (CEC)

Lab Sample ID: MB 860-171441/1-A
Matrix: Solid
Analysis Batch: 177527

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 171441

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cation Exchange Capacity	0.500	U	0.500	0.500	meq/100gm		07/19/24 18:45	07/25/24 09:28	1

Metals

Prep Batch: 169399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-77313-1	APW19S-7.5-8.2'	Total/NA	Solid	3051A	
860-77313-2	APW19S-16-18'	Total/NA	Solid	3051A	
860-77313-3	APW20S-14-16'	Total/NA	Solid	3051A	
860-77313-4	APW20S-20-22'	Total/NA	Solid	3051A	
860-77313-5	APW21S-8-10'	Total/NA	Solid	3051A	
860-77313-6	APW21S-14-16'	Total/NA	Solid	3051A	
860-77313-7	APW22S-9-11'	Total/NA	Solid	3051A	
860-77313-8	APW22S-20.5-22'	Total/NA	Solid	3051A	
860-77313-9	APW23S-12-16'	Total/NA	Solid	3051A	
860-77313-10	APW23-37-39'	Total/NA	Solid	3051A	
MB 860-169399/1-A	Method Blank	Total/NA	Solid	3051A	
LCS 860-169399/2-A	Lab Control Sample	Total/NA	Solid	3051A	
LCSD 860-169399/3-A	Lab Control Sample Dup	Total/NA	Solid	3051A	

Analysis Batch: 169698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-77313-1	APW19S-7.5-8.2'	Total/NA	Solid	6010D	169399
860-77313-2	APW19S-16-18'	Total/NA	Solid	6010D	169399
860-77313-3	APW20S-14-16'	Total/NA	Solid	6010D	169399
860-77313-4	APW20S-20-22'	Total/NA	Solid	6010D	169399
860-77313-5	APW21S-8-10'	Total/NA	Solid	6010D	169399
860-77313-6	APW21S-14-16'	Total/NA	Solid	6010D	169399
860-77313-7	APW22S-9-11'	Total/NA	Solid	6010D	169399
860-77313-8	APW22S-20.5-22'	Total/NA	Solid	6010D	169399
860-77313-9	APW23S-12-16'	Total/NA	Solid	6010D	169399
860-77313-10	APW23-37-39'	Total/NA	Solid	6010D	169399
MB 860-169399/1-A	Method Blank	Total/NA	Solid	6010D	169399
LCS 860-169399/2-A	Lab Control Sample	Total/NA	Solid	6010D	169399
LCSD 860-169399/3-A	Lab Control Sample Dup	Total/NA	Solid	6010D	169399

General Chemistry

Analysis Batch: 169091

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-77313-1	APW19S-7.5-8.2'	Total/NA	Solid	Moisture	
860-77313-2	APW19S-16-18'	Total/NA	Solid	Moisture	
860-77313-3	APW20S-14-16'	Total/NA	Solid	Moisture	
860-77313-9	APW23S-12-16'	Total/NA	Solid	Moisture	
MB 860-169091/1	Method Blank	Total/NA	Solid	Moisture	

Analysis Batch: 169205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-77313-4	APW20S-20-22'	Total/NA	Solid	Moisture	
860-77313-5	APW21S-8-10'	Total/NA	Solid	Moisture	
860-77313-6	APW21S-14-16'	Total/NA	Solid	Moisture	
860-77313-7	APW22S-9-11'	Total/NA	Solid	Moisture	
860-77313-8	APW22S-20.5-22'	Total/NA	Solid	Moisture	
860-77313-10	APW23-37-39'	Total/NA	Solid	Moisture	
MB 860-169205/1	Method Blank	Total/NA	Solid	Moisture	
860-77313-4 DU	APW20S-20-22'	Total/NA	Solid	Moisture	

QC Association Summary

Client: Ramboll Americas Engineering Solutions
Job ID: 860-77313-1
Project/Site: Newton, ILNature & Extent CEC Analysis

General Chemistry

Prep Batch: 171441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-77313-1	APW19S-7.5-8.2'	Total/NA	Solid	9081	
860-77313-2	APW19S-16-18'	Total/NA	Solid	9081	
860-77313-3	APW20S-14-16'	Total/NA	Solid	9081	
860-77313-4	APW20S-20-22'	Total/NA	Solid	9081	
860-77313-5	APW21S-8-10'	Total/NA	Solid	9081	
860-77313-6	APW21S-14-16'	Total/NA	Solid	9081	
860-77313-7	APW22S-9-11'	Total/NA	Solid	9081	
860-77313-8	APW22S-20.5-22'	Total/NA	Solid	9081	
860-77313-9	APW23S-12-16'	Total/NA	Solid	9081	
860-77313-10	APW23-37-39'	Total/NA	Solid	9081	
MB 860-171441/1-A	Method Blank	Total/NA	Solid	9081	

Analysis Batch: 177527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-77313-1	APW19S-7.5-8.2'	Total/NA	Solid	9081	171441
860-77313-2	APW19S-16-18'	Total/NA	Solid	9081	171441
860-77313-3	APW20S-14-16'	Total/NA	Solid	9081	171441
860-77313-4	APW20S-20-22'	Total/NA	Solid	9081	171441
860-77313-5	APW21S-8-10'	Total/NA	Solid	9081	171441
860-77313-6	APW21S-14-16'	Total/NA	Solid	9081	171441
860-77313-7	APW22S-9-11'	Total/NA	Solid	9081	171441
860-77313-8	APW22S-20.5-22'	Total/NA	Solid	9081	171441
860-77313-9	APW23S-12-16'	Total/NA	Solid	9081	171441
860-77313-10	APW23-37-39'	Total/NA	Solid	9081	171441
MB 860-171441/1-A	Method Blank	Total/NA	Solid	9081	171441

Client Sample ID: APW19S-7.5-8.2'

Lab Sample ID: 860-77313-1

Date Collected: 06/18/24 16:20

Matrix: Solid

Date Received: 06/28/24 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			169091	07/01/24 15:37	JC	EET HOU

Client Sample ID: APW19S-7.5-8.2'

Lab Sample ID: 860-77313-1

Date Collected: 06/18/24 16:20

Matrix: Solid

Date Received: 06/28/24 09:25

Percent Solids: 91.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3051A			.57 g	50 mL	169399	07/03/24 10:10	PB	EET HOU
Total/NA	Analysis	6010D		1			169698	07/05/24 10:36	JDM	EET HOU
Total/NA	Prep	9081			2.51 g	50 mL	171441	07/19/24 18:45	PB	EET HOU
Total/NA	Analysis	9081		1			177527	07/25/24 09:28	JDM	EET HOU

Client Sample ID: APW19S-16-18'

Lab Sample ID: 860-77313-2

Date Collected: 06/18/24 16:30

Matrix: Solid

Date Received: 06/28/24 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			169091	07/01/24 15:37	JC	EET HOU

Client Sample ID: APW19S-16-18'

Lab Sample ID: 860-77313-2

Date Collected: 06/18/24 16:30

Matrix: Solid

Date Received: 06/28/24 09:25

Percent Solids: 86.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3051A			.59 g	50 mL	169399	07/03/24 10:10	PB	EET HOU
Total/NA	Analysis	6010D		1			169698	07/05/24 10:38	JDM	EET HOU
Total/NA	Prep	9081			2.26 g	50 mL	171441	07/19/24 18:45	PB	EET HOU
Total/NA	Analysis	9081		1			177527	07/25/24 09:28	JDM	EET HOU

Client Sample ID: APW20S-14-16'

Lab Sample ID: 860-77313-3

Date Collected: 06/18/24 11:00

Matrix: Solid

Date Received: 06/28/24 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			169091	07/01/24 15:37	JC	EET HOU

Client Sample ID: APW20S-14-16'

Lab Sample ID: 860-77313-3

Date Collected: 06/18/24 11:00

Matrix: Solid

Date Received: 06/28/24 09:25

Percent Solids: 94.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3051A			.57 g	50 mL	169399	07/03/24 10:10	PB	EET HOU
Total/NA	Analysis	6010D		1			169698	07/05/24 10:39	JDM	EET HOU
Total/NA	Prep	9081			2.54 g	50 mL	171441	07/19/24 18:45	PB	EET HOU
Total/NA	Analysis	9081		1			177527	07/25/24 09:28	JDM	EET HOU

Client Sample ID: APW20S-20-22'

Lab Sample ID: 860-77313-4

Date Collected: 06/18/24 11:10

Matrix: Solid

Date Received: 06/28/24 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			169205	07/02/24 09:53	JC	EET HOU

Client Sample ID: APW20S-20-22'

Lab Sample ID: 860-77313-4

Date Collected: 06/18/24 11:10

Matrix: Solid

Date Received: 06/28/24 09:25

Percent Solids: 90.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3051A			.58 g	50 mL	169399	07/03/24 10:10	PB	EET HOU
Total/NA	Analysis	6010D		1			169698	07/05/24 10:41	JDM	EET HOU
Total/NA	Prep	9081			2.52 g	50 mL	171441	07/19/24 18:45	PB	EET HOU
Total/NA	Analysis	9081		1			177527	07/25/24 09:28	JDM	EET HOU

Client Sample ID: APW21S-8-10'

Lab Sample ID: 860-77313-5

Date Collected: 06/18/24 18:50

Matrix: Solid

Date Received: 06/28/24 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			169205	07/02/24 09:53	JC	EET HOU

Client Sample ID: APW21S-8-10'

Lab Sample ID: 860-77313-5

Date Collected: 06/18/24 18:50

Matrix: Solid

Date Received: 06/28/24 09:25

Percent Solids: 86.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3051A			.57 g	50 mL	169399	07/03/24 10:10	PB	EET HOU
Total/NA	Analysis	6010D		1			169698	07/05/24 10:43	JDM	EET HOU
Total/NA	Prep	9081			2.51 g	50 mL	171441	07/19/24 18:45	PB	EET HOU
Total/NA	Analysis	9081		1			177527	07/25/24 09:28	JDM	EET HOU

Client Sample ID: APW21S-14-16'

Lab Sample ID: 860-77313-6

Date Collected: 06/18/24 18:55

Matrix: Solid

Date Received: 06/28/24 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			169205	07/02/24 09:53	JC	EET HOU

Client Sample ID: APW21S-14-16'

Lab Sample ID: 860-77313-6

Date Collected: 06/18/24 18:55

Matrix: Solid

Date Received: 06/28/24 09:25

Percent Solids: 91.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3051A			.59 g	50 mL	169399	07/03/24 10:10	PB	EET HOU
Total/NA	Analysis	6010D		1			169698	07/05/24 10:44	JDM	EET HOU
Total/NA	Prep	9081			2.51 g	50 mL	171441	07/19/24 18:45	PB	EET HOU
Total/NA	Analysis	9081		1			177527	07/25/24 09:28	JDM	EET HOU

Client Sample ID: APW22S-9-11'
Lab Sample ID: 860-77313-7
Date Collected: 06/19/24 11:45
Matrix: Solid
Date Received: 06/28/24 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			169205	07/02/24 09:53	JC	EET HOU

Client Sample ID: APW22S-9-11'
Lab Sample ID: 860-77313-7
Date Collected: 06/19/24 11:45
Matrix: Solid
Date Received: 06/28/24 09:25
Percent Solids: 84.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3051A			.57 g	50 mL	169399	07/03/24 10:10	PB	EET HOU
Total/NA	Analysis	6010D		1			169698	07/05/24 10:46	JDM	EET HOU
Total/NA	Prep	9081			2.53 g	50 mL	171441	07/19/24 18:45	PB	EET HOU
Total/NA	Analysis	9081		1			177527	07/25/24 09:28	JDM	EET HOU

Client Sample ID: APW22S-20.5-22'
Lab Sample ID: 860-77313-8
Date Collected: 06/19/24 11:55
Matrix: Solid
Date Received: 06/28/24 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			169205	07/02/24 09:53	JC	EET HOU

Client Sample ID: APW22S-20.5-22'
Lab Sample ID: 860-77313-8
Date Collected: 06/19/24 11:55
Matrix: Solid
Date Received: 06/28/24 09:25
Percent Solids: 89.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3051A			.57 g	50 mL	169399	07/03/24 10:10	PB	EET HOU
Total/NA	Analysis	6010D		1			169698	07/05/24 10:55	JDM	EET HOU
Total/NA	Prep	9081			2.50 g	50 mL	171441	07/19/24 18:45	PB	EET HOU
Total/NA	Analysis	9081		1			177527	07/25/24 09:28	JDM	EET HOU

Client Sample ID: APW23S-12-16'
Lab Sample ID: 860-77313-9
Date Collected: 06/19/24 17:50
Matrix: Solid
Date Received: 06/28/24 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			169091	07/01/24 15:37	JC	EET HOU

Client Sample ID: APW23S-12-16'
Lab Sample ID: 860-77313-9
Date Collected: 06/19/24 17:50
Matrix: Solid
Date Received: 06/28/24 09:25
Percent Solids: 85.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3051A			.58 g	50 mL	169399	07/03/24 10:10	PB	EET HOU
Total/NA	Analysis	6010D		1			169698	07/05/24 10:56	JDM	EET HOU
Total/NA	Prep	9081			2.51 g	50 mL	171441	07/19/24 18:45	PB	EET HOU
Total/NA	Analysis	9081		1			177527	07/25/24 09:28	JDM	EET HOU

Lab Chronicle

Client: Ramboll Americas Engineering Solutions
Job ID: 860-77313-1
Project/Site: Newton, ILNature & Extent CEC Analysis

Client Sample ID: APW23-37-39'
Lab Sample ID: 860-77313-10
Date Collected: 06/20/24 11:45
Matrix: Solid
Date Received: 06/28/24 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			169205	07/02/24 09:53	JC	EET HOU

Client Sample ID: APW23-37-39'
Lab Sample ID: 860-77313-10
Date Collected: 06/20/24 11:45
Matrix: Solid
Date Received: 06/28/24 09:25
Percent Solids: 85.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3051A			.57 g	50 mL	169399	07/03/24 10:10	PB	EET HOU
Total/NA	Analysis	6010D		1			169698	07/05/24 10:58	JDM	EET HOU
Total/NA	Prep	9081			2.54 g	50 mL	171441	07/19/24 18:45	PB	EET HOU
Total/NA	Analysis	9081		1			177527	07/25/24 09:28	JDM	EET HOU

Laboratory References:

EET HOU = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Ramboll Americas Engineering Solutions
Job ID: 860-77313-1
Project/Site: Newton, ILNature & Extent CEC Analysis

Laboratory: Eurofins Houston

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	88-00759	08-03-24
Florida	NELAP	E871002	06-30-25
Louisiana (All)	NELAP	03054	06-30-25
Oklahoma	NELAP	1306	08-31-24
Oklahoma	State	2023-139	08-31-24
Texas	NELAP	T104704215	06-30-25
Texas	TCEQ Water Supply	T104704215	12-28-25
USDA	US Federal Programs	525-23-79-79507	03-20-26

Method Summary

Client: Ramboll Americas Engineering Solutions
Job ID: 860-77313-1
Project/Site: Newton, ILNature & Extent CEC Analysis

Method	Method Description	Protocol	Laboratory
6010D	Metals (ICP)	SW846	EET HOU
9081	Cation Exchange Capacity (CEC)	SW846	EET HOU
Moisture	Percent Moisture	EPA	EET HOU
3051A	Preparation, Metals, Microwave Assisted	SW846	EET HOU
9081	Cation Exchange Capacity (CEC)	SW846	EET HOU

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET HOU = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Ramboll Americas Engineering Solutions
Job ID: 860-77313-1
Project/Site: Newton, ILNature & Extent CEC Analysis

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-77313-1	APW19S-7.5-8.2'	Solid	06/18/24 16:20	06/28/24 09:25
860-77313-2	APW19S-16-18'	Solid	06/18/24 16:30	06/28/24 09:25
860-77313-3	APW20S-14-16'	Solid	06/18/24 11:00	06/28/24 09:25
860-77313-4	APW20S-20-22'	Solid	06/18/24 11:10	06/28/24 09:25
860-77313-5	APW21S-8-10'	Solid	06/18/24 18:50	06/28/24 09:25
860-77313-6	APW21S-14-16'	Solid	06/18/24 18:55	06/28/24 09:25
860-77313-7	APW22S-9-11'	Solid	06/19/24 11:45	06/28/24 09:25
860-77313-8	APW22S-20.5-22'	Solid	06/19/24 11:55	06/28/24 09:25
860-77313-9	APW23S-12-16'	Solid	06/19/24 17:50	06/28/24 09:25
860-77313-10	APW23-37-39'	Solid	06/20/24 11:45	06/28/24 09:25

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Phone (281) 240-4200

Chain of Custody Record

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Client Information	Sampler: Michael Davis	Lab PM: Sachin Kulchalkar	Carrier Tracking No(s):	COC No: 860-9401-3272.1
Client Contact: Michael Davis	Phone: 708-415-7367	E-Mail: MDavis@ramboll.com	State of Origin: IL	Page: Page
Company: Ramboll Americas Engineering Solutions	PWSID:	Analysis Requested		Job #:
Address: 333 W Wacker Dr. Suite 600	Due Date Requested:			Preservation Codes:
City: Chicago	TAT Requested (days): Standard			A HCL M Hexane; B NaOH N None; C Zn Acetate O AsNaO2; D Nitric Acid P Na2O4S; E NaHSO4 Q Na2SO3; F MeOH R Na2S2O3; G Amchlor S H2SO4; H Ascorbic Acid T TSP Dodecahydrate; I Ice U Acetone; J DI Water V MCAA; K EDTA W pH 4-5; L EDA Z other (specify); Other
State, Zip: IL 60606	Compliance Project: Δ Yes Δ No			
Phone: 708-415-7367	PO #: 1940009481			
Email: mjavis@ramboll.com	WO #:			
Project Name: NEWTON Nature + Extent	Project #: 1940108208			
Site: Newton Power Plant	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water S=solid, O=waste/oil BT=Tissue, A=Air)	File dil Filter or Sample (Yes or No)	9081 Cation Exchange Capacity	moisture	Total Number of containers	Special Instructions/Note:
			Preservation Code:			N	N		
APW195_75-82'	6/18/24	1620	G	S		X	X	1	
APW195_16-18'	6/18/24	1630				X	X	1	
APW203_14-16'	6/18/24	1100				X	X	1	
APW203_20-22'	6/18/24	1110				X	X	1	
APW215_8-10'	6/18/24	1850				X	X	1	
APW215_14-16'	6/18/24	1855				X	X	1	
APW225_9-11'	6/19/24	1145				X	X	1	
APW225_20.5-22'	6/19/24	1155				X	X	1	
APW233_12-16'	6/19/24	1750				X	X	1	
APW23_37-39'	6/20/24	1145				X	X	1	
				Water					

860-77313 Chain of Custody

Temp: 27 8IR ID:HOU-368
C/F +0.2
Corrected Temp: 27 NO 28.0

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☒ Archive For 1 Months

Deliverable Requested: I II III IV Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Michael Davis	6/25/24 1400	Ramboll			
Relinquished by:	Date/Time:	Company	Received by: Nuevo	Date/Time: 6/28/24 925	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Ramboll Americas Engineering Solutions

Job Number: 860-77313-1

Login Number: 77313
List Number: 1
Creator: Jimenez, Nicanor

List Source: Eurofins Houston

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	Refer to Job Narrative for details.
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

Login Sample Receipt Checklist

Client: Ramboll Americas Engineering Solutions

Job Number: 860-77313-1

Login Number: 77313
List Number: 2
Creator: Jimenez, Nicanor

List Source: Eurofins Houston

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

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ANALYTICAL REPORT

PREPARED FOR

Attn: Michael Davis
Ramboll Americas Engineering Solutions
333 W Wacker Drive
Suite 1050
Chicago, Illinois 60606

Generated 8/15/2024 2:24:38 PM

JOB DESCRIPTION

Newton Nature & Extent SEP

JOB NUMBER

140-37375-1

Eurofins Knoxville
5815 Middlebrook Pike
Knoxville TN 37921

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

Authorization

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Authorized for release by
Ryan Henry, Project Manager I
William.Henry@et.eurofinsus.com
(865)291-3006

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Definitions/Glossary

Client: Ramboll Americas Engineering Solutions
Job ID: 140-37375-1
Project/Site: Newton Nature & Extent SEP

Qualifiers

Metals

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
B	Compound was found in the blank and sample.
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL, and the absolute difference between results is < the upper reporting limits for both.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
L	A negative instrument reading had an absolute value greater than the reporting limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job Narrative
140-37375-1

Receipt
The samples were received on 6/28/2024 at 9:30am and arrived in good condition, and where required, properly preserved and on ice.

Metals
7 Step Sequential Extraction Procedure

These soil samples were prepared and analyzed using Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0008, "7 Step Sequential Extraction Procedure". SW-846 Method 6010B as incorporated in Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analyses.

An aliquot of each sample was sequentially extracted using the steps listed below:

· Step 1 - Exchangeable Fraction: A 5 gram aliquot of sample was extracted with 25 mL of 1M magnesium sulfate (MgSO4), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 2 - Carbonate Fraction: The sample residue from step 1 was extracted with 25 mL of 1M sodium acetate/acetic acid (NaOAc/HOAc) at pH 5, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 3 - Non-crystalline Materials Fraction: The sample residue from step 2 was extracted with 25 mL of 0.2M ammonium oxalate (pH 3), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 4 - Metal Hydroxide Fraction: The sample residue from step 3 was extracted with 25 mL of 1M hydroxylamine hydrochloride solution in 25% v/v acetic acid, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 5 - Organic-bound Fraction: The sample residue from step 4 was extracted three times with 25 mL of 5% sodium hypochlorite (NaClO) at pH 9.5, centrifuged and filtered. The resulting leachates were combined and 5 mL were digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 6 - Acid/Sulfide Fraction: The sample residue from step 5 was extracted with 25 mL of a 3:1:2 v/v solution of HCl-HNO3-H2O, centrifuged and filtered. 5 mL of the resulting leachate was diluted to 50 mL with reagent water and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 7 - Residual Fraction: A 1.0 g aliquot of the sample residue from step 6 was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Results are reported in mg/kg on a dry weight basis.

In addition, a 1.0 g aliquot of the original sample was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Total metal results are reported in mg/kg on a dry weight basis.

Results were calculated using the following equation:

Result, µg/g or mg/Kg, dry weight = (C × V × V1 × D) / (W × S × V2)

Where:
C = Concentration from instrument readout, µg/mL
V = Final volume of digestate, mL
D = Instrument dilution factor
V1 = Total volume of leachate, mL
V2 = Volume of leachate digested, mL
W = Wet weight of sample, g
S = Percent solids/100

A method blank, laboratory control sample and laboratory control sample duplicate were prepared and analyzed with each SEP step in order to provide information about both the presence of elements of interest in the extraction solutions, and the recovery of elements of interest from the extraction solutions. Results outside of laboratory QC limits do not reflect out of control performance, but rather the effect of the extraction solution upon the analyte.

A laboratory sample duplicate was prepared and analyzed with each batch of samples in order to provide information regarding the reproducibility of the procedure.

SEP Report Notes:

Job ID: 140-37375-1 (Continued) Eurofins Knoxville

The final report lists the results for each step, the result for the total digestion of the sample, and a sum of the results of steps 1 through 7 by element.

Magnesium was not reported for step 1 because the extraction solution for this step (magnesium sulfate) contains high levels of magnesium.

Sodium was not reported for steps 2 and 5 since the extraction solution for these steps contain high levels of sodium.

The sum of steps 1 through 7 is much higher than the total result for sodium and magnesium due to the magnesium and sodium introduced by the extraction solutions.

The digestates for steps 1, 2 and 5 were analyzed at a dilution due to instrument problems caused by the high solids content of the digestates. The reporting limits were adjusted accordingly.

The serial diilution is analyzed at an additional 5 fold dilution using the dilution factors applied to the duplicate and the associated original sample. Due to a limitation of the expanded deliverable forms, the dilutions of the duplicate and serial dilution in the expanded deliverable are not expressed on a per analyte basis.

Please refer to the summary section of the report for the duplicate information as it contains the dilution factors at which the sample was analyzed.

Method 6010B: The serial dilution performed for the following samples associated with batch 140-89783 was outside control limits: APW 19S_16-18' (140-37375-2) and (140-37375-A-2-A SD ^50)

Methods 6010B, 6010B SEP: The following samples were diluted due to the nature of the sample matrix: APW 19S_7.5-8.2' (140-37375-1), APW 19S_16-18' (140-37375-2), APW 20S_14-16' (140-37375-3), APW 20S_20-22' (140-37375-4), APW 21S_8-10' (140-37375-5), APW 21S_14-16' (140-37375-6), APW 22S_9-11' (140-37375-7), APW 22S_20.5-22' (140-37375-8), APW 23S_12-16' (140-37375-9) and APW 23_37-39' (140-37375-10). Elevated reporting limits (RLs) are provided for Aluminum and Calcium.

Methods 6010B, 6010B SEP: The serial dilution performed for the following samples associated with batch 140-89793 was outside control limits: APW 19S_16-18' (140-37375-2), (140-37375-A-2-A SD ^5) and (140-37375-A-2-Y SD ^5)

Method 6010B: The following samples were diluted due to the presence of Silicon which interferes with Arsenic, Cobalt, Lead, Selenium and Thallium: APW 19S_7.5-8.2' (140-37375-1), APW 21S_8-10' (140-37375-5), APW 21S_14-16' (140-37375-6), APW 22S_20.5-22' (140-37375-8) and APW 23_37-39' (140-37375-10). Elevated reporting limits (RLs) are provided.

Method 6010B: The following samples were diluted due to the presence of Titanium which interferes with Cobalt, Lead and Thallium: APW 22S_9-11' (140-37375-7) and APW 23S_12-16' (140-37375-9). Elevated reporting limits (RLs) are provided.

Method 6010B: The following sample was diluted due to the presence of Aluminum which interferes with Lead: APW 23S_12-16' (140-37375-9). Elevated reporting limits (RLs) are provided.

Method 6010B SEP: The sample duplicate (DUP) precision for preparation batch 140-89137 and 140-89175 and analytical batch 140-89629 was outside control limits. Sample non-homogeneity is suspected.

Method 6010B SEP: The sample duplicate (DUP) precision for preparation batch 140-89294 and 140-89471 and analytical batch 140-89677 was outside control limits. Sample non-homogeneity is suspected.

Method 6010B SEP: The serial dilution performed for the following samples associated with batch 140-89677 was outside control limits: APW 19S_16-18' (140-37375-2) and (140-37375-A-2-W SD ^5)

Method 6010B SEP: The laboratory control sample duplicate (LCSD) for Step 5 was outside the advisory limits for Arsenic. The recovery was 59%. The LCS met the advisory limits with 62% recovery. Arsenic is known to have low recoveries for this step based on historical data with the acceptance range between 60 and 100%. All samples were either non-detect or estimated values for Arsenic; therefore, the data has been reported. The following samples were affected: APW 19S_7.5-8.2' (140-37375-1), APW 19S_16-18' (140-37375-2), APW 20S_14-16' (140-37375-3), APW 20S_20-22' (140-37375-4), APW 21S_8-10' (140-37375-5), APW 21S_14-16' (140-37375-6), APW 22S_9-11' (140-37375-7), APW 22S_20.5-22' (140-37375-8), APW 23S_12-16' (140-37375-9), APW 23_37-39' (140-37375-10) and (140-37375-A-2-V DU ^5)

Job ID: 140-37375-1 (Continued) Eurofins Knoxville

Method 6010B SEP: The sample duplicate (DUP) precision for preparation batch 140-89496 and analytical batch 140-89793 was outside control limits. Sample non-homogeneity is suspected.

Method 6010B SEP: The following samples were diluted due to the presence of Silicon which interferes with Arsenic, Cobalt, Lead, Selenium and Thallium: APW 19S_7.5-8.2' (140-37375-1), APW 19S_16-18' (140-37375-2), APW 20S_14-16' (140-37375-3), APW 20S_20-22' (140-37375-4), APW 21S_8-10' (140-37375-5), APW 21S_14-16' (140-37375-6), APW 22S_9-11' (140-37375-7), APW 22S_20.5-22' (140-37375-8), APW 23S_12-16' (140-37375-9) and APW 23_37-39' (140-37375-10). Elevated reporting limits (RLs) are provided.

Method 6010B SEP: The following samples were diluted due to the presence of Titanium which interferes with Cobalt, Lead and Thallium: APW 20S_14-16' (140-37375-3), APW 20S_20-22' (140-37375-4) and APW 23S_12-16' (140-37375-9). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
% Moisture: The samples were analyzed for percent moisture using SOP number KNOX-WC-0012 (based on Modified MCAWW 160.3 and SM2540B and on the percent moisture determinations described in methods 3540C and 3550B).

Loss On Ignition: Loss on Ignition (LOI) is based on ASTM test method D 7348. LOI is analyzed in a manner that is similar to ash content in that the data collection process is the same, although the ignition conditions may be different. The result expresses the sample lost during ignition as a percentage instead of measuring the concentration of sample residue retained under the ignition conditions. LOI applies only to solid samples.

One gram of a solid sample is ignited in an air atmosphere at 750°C (combustion industries or for general information) or 950°C (cement industry). The sample weight lost during the ignition is calculated as a percentage of the original sample weight.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Sample Summary

Client: Ramboll Americas Engineering Solutions
Project/Site: Newton Nature & Extent SEP

Job ID: 140-37375-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-37375-1	APW 19S_7.5-8.2'	Solid	06/18/24 16:20	06/28/24 09:30
140-37375-2	APW 19S_16-18'	Solid	06/18/24 16:30	06/28/24 09:30
140-37375-3	APW 20S_14-16'	Solid	06/18/24 11:00	06/28/24 09:30
140-37375-4	APW 20S_20-22'	Solid	06/18/24 11:10	06/28/24 09:30
140-37375-5	APW 21S_8-10'	Solid	06/18/24 18:50	06/28/24 09:30
140-37375-6	APW 21S_14-16'	Solid	06/18/24 18:55	06/28/24 09:30
140-37375-7	APW 22S_9-11'	Solid	06/19/24 11:45	06/28/24 09:30
140-37375-8	APW 22S_20.5-22'	Solid	06/19/24 11:55	06/28/24 09:30
140-37375-9	APW 23S_12-16'	Solid	06/19/24 17:50	06/28/24 09:30
140-37375-10	APW 23_37-39'	Solid	06/20/24 11:45	06/28/24 09:30

Client Sample ID: APW 19S_7.5-8.2'
Date Collected: 06/18/24 16:20
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-1
Matrix: Solid
Percent Solids: 91.0

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		44	7.0	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4
Antimony	ND		13	1.2	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4
Arsenic	ND		2.2	0.57	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4
Barium	ND		11	0.53	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4
Beryllium	ND		1.1	0.34	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4
Cadmium	ND		1.1	0.070	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4
Calcium	**550**	**J**	1100	8.3	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4
Chromium	ND		2.2	0.31	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4
Cobalt	ND		11	0.20	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4
Iron	ND		22	13	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4
Lead	ND		2.2	0.48	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4
Lithium	ND		11	0.66	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4
Manganese	**0.81**	**J**	3.3	0.14	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4
Molybdenum	ND		8.8	0.36	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4
Selenium	ND		2.2	0.75	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4
Thallium	ND		7.7	0.92	mg/Kg	☼	07/24/24 07:00	08/06/24 12:40	4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**13**	**J**	33	5.3	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3
Antimony	ND		9.9	0.92	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3
Arsenic	ND		1.6	0.43	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3
Barium	**2.3**	**J**	8.2	0.40	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3
Beryllium	ND		0.82	0.053	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3
Cadmium	**0.056**	**J**	0.82	0.036	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3
Calcium	**16000**		820	7.3	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3
Chromium	ND		1.6	0.23	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3
Cobalt	ND		8.2	0.21	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3
Iron	**14**	**J**	16	9.6	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3
Lead	ND		1.6	0.36	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3
Lithium	ND		8.2	0.49	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3
Manganese	**35**		2.5	0.92	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3
Molybdenum	ND		6.6	0.27	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3
Selenium	ND		1.6	0.56	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3
Thallium	ND		5.8	0.69	mg/Kg	☼	07/25/24 07:00	08/06/24 14:43	3

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**52**		11	2.3	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1
Antimony	ND		3.3	0.31	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1
Arsenic	**0.33**	**J**	0.55	0.14	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1
Barium	**1.6**	**J**	2.7	0.13	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1
Beryllium	ND		0.27	0.016	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1
Cadmium	ND		0.27	0.012	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1
Calcium	**8.4**	**J**	270	1.6	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1
Chromium	**0.32**	**J**	0.55	0.077	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1
Cobalt	**3.1**		2.7	0.049	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1
Iron	**180**		5.5	3.2	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1
Lead	ND		0.55	0.12	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1
Lithium	ND		2.7	0.16	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1

Client Sample ID: APW 19S_7.5-8.2'
Lab Sample ID: 140-37375-1
Date Collected: 06/18/24 16:20
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 91.0

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**260**	**B**	0.82	0.030	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1
Molybdenum	**0.097**	**J**	2.2	0.090	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1
Selenium	ND		0.55	0.19	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1
Thallium	ND		1.9	0.23	mg/Kg	☼	07/26/24 07:00	08/06/24 16:49	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**340**		11	1.8	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1
Antimony	ND		3.3	0.49	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1
Arsenic	**0.97**		0.55	0.24	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1
Barium	**22**		2.7	0.13	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1
Beryllium	**0.076**	**J**	0.27	0.018	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1
Cadmium	**0.15**	**J**	0.27	0.012	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1
Calcium	**16000**		270	2.4	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1
Chromium	**1.3**	**B**	0.55	0.077	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1
Cobalt	**0.57**	**J**	2.7	0.058	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1
Iron	**3600**		5.5	3.2	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1
Lead	**3.2**		0.55	0.12	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1
Lithium	**0.95**	**J**	2.7	0.16	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1
Manganese	**93**		0.82	0.14	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1
Molybdenum	**0.17**	**J**	2.2	0.090	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1
Selenium	ND		0.55	0.52	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1
Thallium	ND		1.9	0.32	mg/Kg	☼	07/30/24 07:00	08/07/24 15:19	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**190**	**B**	160	26	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5
Antimony	ND		49	4.6	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5
Arsenic	ND	*-	8.2	2.1	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5
Barium	**5.0**	**J**	41	2.0	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5
Beryllium	ND		4.1	0.35	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5
Cadmium	ND		4.1	0.18	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5
Calcium	**7400**	**B**	4100	12	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5
Chromium	**2.3**	**J**	8.2	1.2	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5
Cobalt	ND		41	0.66	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5
Iron	ND		82	48	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5
Lead	ND		8.2	1.8	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5
Lithium	ND		41	2.4	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5
Manganese	**7.2**	**J**	12	2.0	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5
Molybdenum	ND		33	1.4	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5
Selenium	ND		8.2	2.9	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5
Thallium	ND		29	3.8	mg/Kg	☼	08/02/24 07:00	08/07/24 17:23	5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2600**		11	1.8	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1
Antimony	ND		3.3	0.31	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1
Arsenic	**2.3**		0.55	0.16	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1
Barium	**5.9**		2.7	0.13	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1
Beryllium	**0.089**	**J**	0.27	0.013	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1

Client Sample ID: APW 19S_7.5-8.2'
Lab Sample ID: 140-37375-1

Date Collected: 06/18/24 16:20
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 91.0

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.16	J	0.27	0.012	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1
Calcium	6000		270	2.3	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1
Chromium	4.8		0.55	0.077	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1
Cobalt	1.6	J	2.7	0.051	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1
Iron	5500		5.5	3.2	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1
Lead	1.8		0.55	0.12	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1
Lithium	5.4		2.7	0.16	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1
Manganese	58		0.82	0.27	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1
Molybdenum	0.12	J	2.2	0.11	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1
Selenium	ND		0.55	0.19	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1
Thallium	ND		1.9	0.23	mg/Kg	☼	08/02/24 07:30	08/07/24 19:29	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	23000		110	18	mg/Kg	☼	08/05/24 07:00	08/10/24 11:20	10
Antimony	0.30	J	3.3	0.15	mg/Kg	☼	08/05/24 07:00	08/11/24 10:55	1
Arsenic	1.8		1.1	0.66	mg/Kg	☼	08/05/24 07:00	08/12/24 11:53	2
Barium	190		2.7	0.051	mg/Kg	☼	08/05/24 07:00	08/11/24 10:55	1
Beryllium	0.50		0.27	0.018	mg/Kg	☼	08/05/24 07:00	08/11/24 10:55	1
Cadmium	0.13	J	0.27	0.012	mg/Kg	☼	08/05/24 07:00	08/11/24 10:55	1
Calcium	1900		270	6.3	mg/Kg	☼	08/05/24 07:00	08/11/24 10:55	1
Chromium	17	B	0.55	0.077	mg/Kg	☼	08/05/24 07:00	08/11/24 10:55	1
Cobalt	0.79	J	5.5	0.057	mg/Kg	☼	08/05/24 07:00	08/12/24 11:53	2
Iron	4000		5.5	4.5	mg/Kg	☼	08/05/24 07:00	08/11/24 10:55	1
Lead	1.7		1.1	0.24	mg/Kg	☼	08/05/24 07:00	08/12/24 11:53	2
Lithium	13		2.7	0.16	mg/Kg	☼	08/05/24 07:00	08/11/24 10:55	1
Manganese	37		0.82	0.34	mg/Kg	☼	08/05/24 07:00	08/11/24 10:55	1
Molybdenum	ND		2.2	0.090	mg/Kg	☼	08/05/24 07:00	08/11/24 10:55	1
Selenium	ND		1.1	0.37	mg/Kg	☼	08/05/24 07:00	08/12/24 11:53	2
Thallium	0.84	J	3.8	0.40	mg/Kg	☼	08/05/24 07:00	08/12/24 11:53	2

Method: SW846 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	27000		10	1.6	mg/Kg			08/14/24 18:56	1
Antimony	0.30	J	3.0	0.14	mg/Kg			08/14/24 18:56	1
Arsenic	5.3		0.50	0.13	mg/Kg			08/14/24 18:56	1
Barium	220		2.5	0.12	mg/Kg			08/14/24 18:56	1
Beryllium	0.67		0.25	0.0075	mg/Kg			08/14/24 18:56	1
Cadmium	0.49		0.25	0.011	mg/Kg			08/14/24 18:56	1
Calcium	48000		250	0.74	mg/Kg			08/14/24 18:56	1
Chromium	26		0.50	0.070	mg/Kg			08/14/24 18:56	1
Cobalt	6.0		2.5	0.023	mg/Kg			08/14/24 18:56	1
Iron	13000		5.0	4.1	mg/Kg			08/14/24 18:56	1
Lead	6.7		0.50	0.11	mg/Kg			08/14/24 18:56	1
Lithium	20		2.5	0.15	mg/Kg			08/14/24 18:56	1
Manganese	490		0.75	0.052	mg/Kg			08/14/24 18:56	1
Molybdenum	0.38	J	2.0	0.082	mg/Kg			08/14/24 18:56	1
Selenium	ND		0.50	0.17	mg/Kg			08/14/24 18:56	1
Thallium	0.84	J	1.8	0.18	mg/Kg			08/14/24 18:56	1

Client Sample ID: APW 19S_7.5-8.2'
Lab Sample ID: 140-37375-1

Date Collected: 06/18/24 16:20
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 91.0

Method: SW846 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	13000		110	18	mg/Kg	☼	08/05/24 08:00	08/10/24 13:07	10
Antimony	0.69	J	3.3	0.15	mg/Kg	☼	08/05/24 08:00	08/11/24 12:47	1
Arsenic	6.6		1.1	0.66	mg/Kg	☼	08/05/24 08:00	08/12/24 14:05	2
Barium	240		2.7	0.051	mg/Kg	☼	08/05/24 08:00	08/11/24 12:47	1
Beryllium	0.48		0.27	0.018	mg/Kg	☼	08/05/24 08:00	08/11/24 12:47	1
Cadmium	0.17	J	0.27	0.012	mg/Kg	☼	08/05/24 08:00	08/11/24 12:47	1
Calcium	42000		2700	63	mg/Kg	☼	08/05/24 08:00	08/10/24 13:07	10
Chromium	15	B	0.55	0.077	mg/Kg	☼	08/05/24 08:00	08/11/24 12:47	1
Cobalt	4.8	J	5.5	0.057	mg/Kg	☼	08/05/24 08:00	08/12/24 14:05	2
Iron	13000		5.5	4.5	mg/Kg	☼	08/05/24 08:00	08/11/24 12:47	1
Lead	9.8		1.1	0.24	mg/Kg	☼	08/05/24 08:00	08/12/24 14:05	2
Lithium	9.5		2.7	0.16	mg/Kg	☼	08/05/24 08:00	08/11/24 12:47	1
Manganese	370		0.82	0.34	mg/Kg	☼	08/05/24 08:00	08/11/24 12:47	1
Molybdenum	0.65	J	2.2	0.090	mg/Kg	☼	08/05/24 08:00	08/11/24 12:47	1
Selenium	ND		1.1	0.37	mg/Kg	☼	08/05/24 08:00	08/12/24 14:05	2
Thallium	1.1	J	3.8	0.40	mg/Kg	☼	08/05/24 08:00	08/12/24 14:05	2

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Loss on Ignition (SPCC Loss On Ignit.)	14		0.37	0.37	%			07/02/24 13:38	1

Client Sample ID: APW 19S_16-18'
Lab Sample ID: 140-37375-2

Date Collected: 06/18/24 16:30
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 86.2

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		46	7.4	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4
Antimony	ND		14	1.3	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4
Arsenic	ND		2.3	0.60	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4
Barium	ND		12	0.56	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4
Beryllium	ND		1.2	0.36	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4
Cadmium	ND		1.2	0.074	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4
Calcium	**1000**	**J**	1200	8.8	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4
Chromium	ND		2.3	0.32	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4
Cobalt	ND		12	0.21	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4
Iron	ND		23	13	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4
Lead	ND		2.3	0.51	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4
Lithium	ND		12	0.70	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4
Manganese	**6.8**		3.5	0.14	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4
Molybdenum	ND		9.3	0.38	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4
Selenium	ND		2.3	0.79	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4
Thallium	ND		8.1	0.97	mg/Kg	☼	07/24/24 07:00	08/06/24 12:45	4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**23**	**J**	35	5.6	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3
Antimony	ND		10	0.97	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3
Arsenic	ND		1.7	0.45	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3
Barium	**3.9**	**J**	8.7	0.42	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3
Beryllium	ND		0.87	0.056	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3
Cadmium	**0.063**	**J**	0.87	0.038	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3
Calcium	**19000**		870	7.7	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3
Chromium	**0.39**	**J**	1.7	0.24	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3
Cobalt	**0.88**	**J**	8.7	0.22	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3
Iron	**46**		17	10	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3
Lead	**0.90**	**J**	1.7	0.38	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3
Lithium	ND		8.7	0.52	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3
Manganese	**120**		2.6	0.97	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3
Molybdenum	ND		7.0	0.29	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3
Selenium	ND		1.7	0.59	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3
Thallium	ND		6.1	0.73	mg/Kg	☼	07/25/24 07:00	08/06/24 14:49	3

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**120**		12	2.4	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1
Antimony	ND		3.5	0.32	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1
Arsenic	**0.27**	**J**	0.58	0.15	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1
Barium	**1.4**	**J**	2.9	0.14	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1
Beryllium	ND		0.29	0.017	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1
Cadmium	ND		0.29	0.013	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1
Calcium	**8.6**	**J**	290	1.7	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1
Chromium	**0.93**		0.58	0.081	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1
Cobalt	**0.96**	**J**	2.9	0.052	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1
Iron	**340**		5.8	3.4	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1
Lead	ND		0.58	0.13	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1
Lithium	**0.24**	**J**	2.9	0.17	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1

Client Sample ID: APW 19S_16-18'
Lab Sample ID: 140-37375-2

Date Collected: 06/18/24 16:30
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 86.2

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**36**	**B**	0.87	0.031	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1
Molybdenum	**0.15**	**J**	2.3	0.095	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1
Selenium	ND		0.58	0.20	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1
Thallium	ND		2.0	0.24	mg/Kg	☼	07/26/24 07:00	08/06/24 16:54	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**660**		12	1.9	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1
Antimony	ND		3.5	0.52	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1
Arsenic	**1.3**		0.58	0.26	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1
Barium	**17**		2.9	0.14	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1
Beryllium	**0.15**	**J**	0.29	0.019	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1
Cadmium	**0.19**	**J**	0.29	0.013	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1
Calcium	**12000**		290	2.6	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1
Chromium	**2.5**	**B**	0.58	0.081	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1
Cobalt	**1.4**	**J**	2.9	0.062	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1
Iron	**4900**		5.8	3.4	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1
Lead	**3.6**		0.58	0.13	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1
Lithium	**2.3**	**J**	2.9	0.17	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1
Manganese	**75**		0.87	0.15	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1
Molybdenum	**0.41**	**J**	2.3	0.095	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1
Selenium	ND		0.58	0.55	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1
Thallium	ND		2.0	0.34	mg/Kg	☼	07/30/24 07:00	08/07/24 15:24	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**160**	**J B**	170	27	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5
Antimony	ND		52	4.9	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5
Arsenic	ND	*-	8.7	2.2	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5
Barium	**5.2**	**J**	44	2.1	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5
Beryllium	ND		4.4	0.37	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5
Cadmium	ND		4.4	0.19	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5
Calcium	**8000**	**B**	4400	13	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5
Chromium	**2.6**	**J**	8.7	1.2	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5
Cobalt	ND		44	0.70	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5
Iron	ND		87	51	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5
Lead	ND		8.7	1.9	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5
Lithium	**2.8**	**J B**	44	2.6	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5
Manganese	**2.5**	**J**	13	2.1	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5
Molybdenum	ND		35	1.5	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5
Selenium	ND		8.7	3.0	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5
Thallium	ND		30	4.1	mg/Kg	☼	08/02/24 07:00	08/07/24 17:28	5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**4000**		12	1.9	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1
Antimony	**0.34**	**J**	3.5	0.32	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1
Arsenic	**2.1**		0.58	0.17	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1
Barium	**9.9**		2.9	0.14	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1
Beryllium	**0.13**	**J**	0.29	0.014	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1

Client Sample ID: APW 19S_16-18'
Lab Sample ID: 140-37375-2

Date Collected: 06/18/24 16:30
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 86.2

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.20	J	0.29	0.013	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1
Calcium	7500		290	2.4	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1
Chromium	6.2		0.58	0.081	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1
Cobalt	2.3	J	2.9	0.053	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1
Iron	7000		5.8	3.4	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1
Lead	1.8		0.58	0.13	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1
Lithium	7.4		2.9	0.17	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1
Manganese	62		0.87	0.29	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1
Molybdenum	0.15	J	2.3	0.11	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1
Selenium	ND		0.58	0.20	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1
Thallium	ND		2.0	0.24	mg/Kg	☼	08/02/24 07:30	08/07/24 19:34	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	21000		120	19	mg/Kg	☼	08/05/24 07:00	08/10/24 11:25	10
Antimony	0.47	J	3.5	0.16	mg/Kg	☼	08/05/24 07:00	08/11/24 11:00	1
Arsenic	1.8		1.2	0.70	mg/Kg	☼	08/05/24 07:00	08/12/24 11:58	2
Barium	210		2.9	0.053	mg/Kg	☼	08/05/24 07:00	08/11/24 11:00	1
Beryllium	0.56		0.29	0.019	mg/Kg	☼	08/05/24 07:00	08/11/24 11:00	1
Cadmium	0.11	J	0.29	0.013	mg/Kg	☼	08/05/24 07:00	08/11/24 11:00	1
Calcium	1900		290	6.6	mg/Kg	☼	08/05/24 07:00	08/11/24 11:00	1
Chromium	18	B	0.58	0.081	mg/Kg	☼	08/05/24 07:00	08/11/24 11:00	1
Cobalt	0.83	J	5.8	0.060	mg/Kg	☼	08/05/24 07:00	08/12/24 11:58	2
Iron	4300		5.8	4.8	mg/Kg	☼	08/05/24 07:00	08/11/24 11:00	1
Lead	2.4		1.2	0.26	mg/Kg	☼	08/05/24 07:00	08/12/24 11:58	2
Lithium	12		2.9	0.17	mg/Kg	☼	08/05/24 07:00	08/11/24 11:00	1
Manganese	48		0.87	0.36	mg/Kg	☼	08/05/24 07:00	08/11/24 11:00	1
Molybdenum	ND		2.3	0.095	mg/Kg	☼	08/05/24 07:00	08/11/24 11:00	1
Selenium	ND		1.2	0.39	mg/Kg	☼	08/05/24 07:00	08/12/24 11:58	2
Thallium	ND		4.1	0.42	mg/Kg	☼	08/05/24 07:00	08/12/24 11:58	2

Method: SW846 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	26000		10	1.6	mg/Kg			08/14/24 18:56	1
Antimony	0.82	J	3.0	0.14	mg/Kg			08/14/24 18:56	1
Arsenic	5.4		0.50	0.13	mg/Kg			08/14/24 18:56	1
Barium	250		2.5	0.12	mg/Kg			08/14/24 18:56	1
Beryllium	0.84		0.25	0.0075	mg/Kg			08/14/24 18:56	1
Cadmium	0.56		0.25	0.011	mg/Kg			08/14/24 18:56	1
Calcium	50000		250	0.74	mg/Kg			08/14/24 18:56	1
Chromium	31		0.50	0.070	mg/Kg			08/14/24 18:56	1
Cobalt	6.3		2.5	0.023	mg/Kg			08/14/24 18:56	1
Iron	17000		5.0	4.1	mg/Kg			08/14/24 18:56	1
Lead	8.7		0.50	0.11	mg/Kg			08/14/24 18:56	1
Lithium	25		2.5	0.15	mg/Kg			08/14/24 18:56	1
Manganese	350		0.75	0.052	mg/Kg			08/14/24 18:56	1
Molybdenum	0.71	J	2.0	0.082	mg/Kg			08/14/24 18:56	1
Selenium	ND		0.50	0.17	mg/Kg			08/14/24 18:56	1
Thallium	ND		1.8	0.18	mg/Kg			08/14/24 18:56	1

Client Sample ID: APW 19S_16-18'
Lab Sample ID: 140-37375-2

Date Collected: 06/18/24 16:30
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 86.2

Method: SW846 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	9100		120	19	mg/Kg	☼	08/05/24 08:00	08/10/24 13:12	10
Antimony	1.2	J	3.5	0.16	mg/Kg	☼	08/05/24 08:00	08/11/24 12:53	1
Arsenic	5.2		0.58	0.35	mg/Kg	☼	08/05/24 08:00	08/11/24 12:53	1
Barium	300		2.9	0.053	mg/Kg	☼	08/05/24 08:00	08/11/24 12:53	1
Beryllium	0.78		0.29	0.019	mg/Kg	☼	08/05/24 08:00	08/11/24 12:53	1
Cadmium	0.14	J	0.29	0.013	mg/Kg	☼	08/05/24 08:00	08/11/24 12:53	1
Calcium	51000		2900	66	mg/Kg	☼	08/05/24 08:00	08/10/24 13:12	10
Chromium	29	B	0.58	0.081	mg/Kg	☼	08/05/24 08:00	08/11/24 12:53	1
Cobalt	6.2		2.9	0.030	mg/Kg	☼	08/05/24 08:00	08/11/24 12:53	1
Iron	15000		5.8	4.8	mg/Kg	☼	08/05/24 08:00	08/11/24 12:53	1
Lead	9.3		0.58	0.13	mg/Kg	☼	08/05/24 08:00	08/11/24 12:53	1
Lithium	19		2.9	0.17	mg/Kg	☼	08/05/24 08:00	08/11/24 12:53	1
Manganese	320		0.87	0.36	mg/Kg	☼	08/05/24 08:00	08/11/24 12:53	1
Molybdenum	1.1	J	2.3	0.095	mg/Kg	☼	08/05/24 08:00	08/11/24 12:53	1
Selenium	ND	L	0.58	0.20	mg/Kg	☼	08/05/24 08:00	08/11/24 12:53	1
Thallium	1.1	J	2.0	0.21	mg/Kg	☼	08/05/24 08:00	08/11/24 12:53	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Loss on Ignition (SPCC Loss On Ignit.)	23		0.24	0.24	%			07/02/24 13:38	1

Client Sample ID: APW 20S_14-16'
Lab Sample ID: 140-37375-3
Date Collected: 06/18/24 11:00
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 93.4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		43	6.8	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4
Antimony	ND		13	1.2	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4
Arsenic	ND		2.1	0.56	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4
Barium	ND		11	0.51	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4
Beryllium	ND		1.1	0.33	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4
Cadmium	ND		1.1	0.068	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4
Calcium	**1200**		1100	8.1	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4
Chromium	ND		2.1	0.30	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4
Cobalt	ND		11	0.19	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4
Iron	ND		21	12	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4
Lead	ND		2.1	0.47	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4
Lithium	ND		11	0.64	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4
Manganese	ND		3.2	0.13	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4
Molybdenum	ND		8.6	0.35	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4
Selenium	ND		2.1	0.73	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4
Thallium	ND		7.5	0.90	mg/Kg	☼	07/24/24 07:00	08/06/24 12:55	4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**17**	**J**	32	5.1	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3
Antimony	ND		9.6	0.90	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3
Arsenic	ND		1.6	0.42	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3
Barium	**1.1**	**J**	8.0	0.39	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3
Beryllium	ND		0.80	0.051	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3
Cadmium	**0.11**	**J**	0.80	0.035	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3
Calcium	**13000**		800	7.1	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3
Chromium	ND		1.6	0.22	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3
Cobalt	ND		8.0	0.20	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3
Iron	**26**		16	9.3	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3
Lead	**0.46**	**J**	1.6	0.35	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3
Lithium	ND		8.0	0.48	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3
Manganese	**75**		2.4	0.90	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3
Molybdenum	ND		6.4	0.26	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3
Selenium	ND		1.6	0.55	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3
Thallium	ND		5.6	0.67	mg/Kg	☼	07/25/24 07:00	08/06/24 14:59	3

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**87**		11	2.2	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1
Antimony	ND		3.2	0.30	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1
Arsenic	**0.26**	**J**	0.54	0.14	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1
Barium	**1.0**	**J**	2.7	0.13	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1
Beryllium	ND		0.27	0.016	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1
Cadmium	ND		0.27	0.012	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1
Calcium	**9.6**	**J**	270	1.6	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1
Chromium	**0.54**		0.54	0.075	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1
Cobalt	**4.0**		2.7	0.048	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1
Iron	**330**		5.4	3.1	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1
Lead	ND		0.54	0.12	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1
Lithium	**0.18**	**J**	2.7	0.16	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1

Client Sample ID: APW 20S_14-16'
Lab Sample ID: 140-37375-3

Date Collected: 06/18/24 11:00
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 93.4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**420**	**B**	0.80	0.029	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1
Molybdenum	**0.28**	**J**	2.1	0.088	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1
Selenium	ND		0.54	0.18	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1
Thallium	ND		1.9	0.22	mg/Kg	☼	07/26/24 07:00	08/06/24 17:04	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**460**		11	1.7	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1
Antimony	ND		3.2	0.48	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1
Arsenic	**0.58**		0.54	0.24	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1
Barium	**17**		2.7	0.13	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1
Beryllium	**0.15**	**J**	0.27	0.017	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1
Cadmium	**0.27**		0.27	0.012	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1
Calcium	**15000**		270	2.4	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1
Chromium	**1.8**	**B**	0.54	0.075	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1
Cobalt	**1.4**	**J**	2.7	0.057	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1
Iron	**5000**		5.4	3.1	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1
Lead	**3.9**		0.54	0.12	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1
Lithium	**1.9**	**J**	2.7	0.16	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1
Manganese	**220**		0.80	0.14	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1
Molybdenum	**0.58**	**J**	2.1	0.088	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1
Selenium	ND		0.54	0.50	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1
Thallium	ND		1.9	0.31	mg/Kg	☼	07/30/24 07:00	08/07/24 15:34	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**190**	**B**	160	25	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5
Antimony	ND		48	4.5	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5
Arsenic	ND	*-	8.0	2.0	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5
Barium	**14**	**J**	40	1.9	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5
Beryllium	ND		4.0	0.34	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5
Cadmium	ND		4.0	0.17	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5
Calcium	**9100**	**B**	4000	12	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5
Chromium	**3.5**	**J**	8.0	1.1	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5
Cobalt	ND		40	0.64	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5
Iron	ND		80	47	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5
Lead	ND		8.0	1.8	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5
Lithium	ND		40	2.4	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5
Manganese	**14**		12	2.0	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5
Molybdenum	ND		32	1.3	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5
Selenium	ND		8.0	2.8	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5
Thallium	ND		28	3.7	mg/Kg	☼	08/02/24 07:00	08/07/24 17:39	5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**4800**		11	1.7	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1
Antimony	**0.44**	**J**	3.2	0.30	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1
Arsenic	**4.5**		0.54	0.16	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1
Barium	**16**		2.7	0.13	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1
Beryllium	**0.20**	**J**	0.27	0.013	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1

Client Sample ID: APW 20S_14-16'
Lab Sample ID: 140-37375-3

Date Collected: 06/18/24 11:00
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 93.4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.37		0.27	0.012	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1
Calcium	5500		270	2.2	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1
Chromium	7.2		0.54	0.075	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1
Cobalt	2.5	J	2.7	0.049	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1
Iron	12000		5.4	3.1	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1
Lead	3.0		0.54	0.12	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1
Lithium	7.6		2.7	0.16	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1
Manganese	110		0.80	0.27	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1
Molybdenum	0.36	J	2.1	0.11	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1
Selenium	ND	L	0.54	0.18	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1
Thallium	ND		1.9	0.22	mg/Kg	☼	08/02/24 07:30	08/07/24 19:44	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	23000		110	17	mg/Kg	☼	08/05/24 07:00	08/10/24 11:49	10
Antimony	0.58	J	3.2	0.15	mg/Kg	☼	08/05/24 07:00	08/11/24 11:24	1
Arsenic	2.5		1.1	0.64	mg/Kg	☼	08/05/24 07:00	08/12/24 12:08	2
Barium	180		2.7	0.049	mg/Kg	☼	08/05/24 07:00	08/11/24 11:24	1
Beryllium	0.51		0.27	0.017	mg/Kg	☼	08/05/24 07:00	08/11/24 11:24	1
Cadmium	0.13	J	0.27	0.012	mg/Kg	☼	08/05/24 07:00	08/11/24 11:24	1
Calcium	1400		270	6.1	mg/Kg	☼	08/05/24 07:00	08/11/24 11:24	1
Chromium	19	B	0.54	0.075	mg/Kg	☼	08/05/24 07:00	08/11/24 11:24	1
Cobalt	0.86	J	5.4	0.056	mg/Kg	☼	08/05/24 07:00	08/12/24 12:08	2
Iron	4800		5.4	4.4	mg/Kg	☼	08/05/24 07:00	08/11/24 11:24	1
Lead	1.9		1.1	0.24	mg/Kg	☼	08/05/24 07:00	08/12/24 12:08	2
Lithium	14		2.7	0.16	mg/Kg	☼	08/05/24 07:00	08/11/24 11:24	1
Manganese	41		0.80	0.33	mg/Kg	☼	08/05/24 07:00	08/11/24 11:24	1
Molybdenum	0.11	J	2.1	0.088	mg/Kg	☼	08/05/24 07:00	08/11/24 11:24	1
Selenium	ND		1.1	0.36	mg/Kg	☼	08/05/24 07:00	08/12/24 12:08	2
Thallium	0.59	J	3.7	0.39	mg/Kg	☼	08/05/24 07:00	08/12/24 12:08	2

Method: SW846 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	29000		10	1.6	mg/Kg			08/14/24 18:56	1
Antimony	1.0	J	3.0	0.14	mg/Kg			08/14/24 18:56	1
Arsenic	7.8		0.50	0.13	mg/Kg			08/14/24 18:56	1
Barium	230		2.5	0.12	mg/Kg			08/14/24 18:56	1
Beryllium	0.87		0.25	0.0075	mg/Kg			08/14/24 18:56	1
Cadmium	0.87		0.25	0.011	mg/Kg			08/14/24 18:56	1
Calcium	46000		250	0.74	mg/Kg			08/14/24 18:56	1
Chromium	32		0.50	0.070	mg/Kg			08/14/24 18:56	1
Cobalt	8.8		2.5	0.023	mg/Kg			08/14/24 18:56	1
Iron	22000		5.0	4.1	mg/Kg			08/14/24 18:56	1
Lead	9.2		0.50	0.11	mg/Kg			08/14/24 18:56	1
Lithium	23		2.5	0.15	mg/Kg			08/14/24 18:56	1
Manganese	880		0.75	0.052	mg/Kg			08/14/24 18:56	1
Molybdenum	1.3	J	2.0	0.082	mg/Kg			08/14/24 18:56	1
Selenium	ND		0.50	0.17	mg/Kg			08/14/24 18:56	1
Thallium	0.59	J	1.8	0.18	mg/Kg			08/14/24 18:56	1

Client Sample ID: APW 20S_14-16'
Lab Sample ID: 140-37375-3

Date Collected: 06/18/24 11:00
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 93.4

Method: SW846 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	19000		110	17	mg/Kg	☼	08/05/24 08:00	08/10/24 13:21	10
Antimony	1.2	J	3.2	0.15	mg/Kg	☼	08/05/24 08:00	08/11/24 13:03	1
Arsenic	8.1		0.54	0.32	mg/Kg	☼	08/05/24 08:00	08/11/24 13:03	1
Barium	230		2.7	0.049	mg/Kg	☼	08/05/24 08:00	08/11/24 13:03	1
Beryllium	0.74		0.27	0.017	mg/Kg	☼	08/05/24 08:00	08/11/24 13:03	1
Cadmium	0.28		0.27	0.012	mg/Kg	☼	08/05/24 08:00	08/11/24 13:03	1
Calcium	68000		2700	61	mg/Kg	☼	08/05/24 08:00	08/10/24 13:21	10
Chromium	26	B	0.54	0.075	mg/Kg	☼	08/05/24 08:00	08/11/24 13:03	1
Cobalt	7.0		2.7	0.028	mg/Kg	☼	08/05/24 08:00	08/11/24 13:03	1
Iron	19000		5.4	4.4	mg/Kg	☼	08/05/24 08:00	08/11/24 13:03	1
Lead	9.3		0.54	0.12	mg/Kg	☼	08/05/24 08:00	08/11/24 13:03	1
Lithium	20		2.7	0.16	mg/Kg	☼	08/05/24 08:00	08/11/24 13:03	1
Manganese	720		0.80	0.33	mg/Kg	☼	08/05/24 08:00	08/11/24 13:03	1
Molybdenum	1.5	J	2.1	0.088	mg/Kg	☼	08/05/24 08:00	08/11/24 13:03	1
Selenium	ND	L	0.54	0.18	mg/Kg	☼	08/05/24 08:00	08/11/24 13:03	1
Thallium	1.4	J	1.9	0.19	mg/Kg	☼	08/05/24 08:00	08/11/24 13:03	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Loss on Ignition (SPCC Loss On Ignit.)	15		0.29	0.29	%			07/02/24 13:38	1

Client Sample ID: APW 20S_20-22'
Lab Sample ID: 140-37375-4

Date Collected: 06/18/24 11:10
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 90.7

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		44	7.1	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4
Antimony	ND		13	1.2	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4
Arsenic	ND		2.2	0.57	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4
Barium	ND		11	0.53	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4
Beryllium	ND		1.1	0.34	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4
Cadmium	ND		1.1	0.071	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4
Calcium	**1100**		1100	8.4	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4
Chromium	ND		2.2	0.31	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4
Cobalt	ND		11	0.20	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4
Iron	ND		22	13	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4
Lead	ND		2.2	0.49	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4
Lithium	ND		11	0.66	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4
Manganese	**9.2**		3.3	0.14	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4
Molybdenum	ND		8.8	0.36	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4
Selenium	ND		2.2	0.75	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4
Thallium	ND		7.7	0.93	mg/Kg	☼	07/24/24 07:00	08/06/24 13:00	4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**43**		33	5.3	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3
Antimony	ND		9.9	0.93	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3
Arsenic	ND		1.7	0.43	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3
Barium	**1.4**	**J**	8.3	0.40	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3
Beryllium	ND		0.83	0.053	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3
Cadmium	**0.060**	**J**	0.83	0.036	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3
Calcium	**12000**		830	7.3	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3
Chromium	**0.31**	**J**	1.7	0.23	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3
Cobalt	**0.75**	**J**	8.3	0.21	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3
Iron	**930**		17	9.6	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3
Lead	**0.64**	**J**	1.7	0.36	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3
Lithium	ND		8.3	0.50	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3
Manganese	**110**		2.5	0.93	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3
Molybdenum	ND		6.6	0.27	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3
Selenium	ND		1.7	0.56	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3
Thallium	ND		5.8	0.69	mg/Kg	☼	07/25/24 07:00	08/06/24 15:04	3

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**220**		11	2.3	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1
Antimony	ND		3.3	0.31	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1
Arsenic	**1.2**		0.55	0.14	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1
Barium	**0.54**	**J**	2.8	0.13	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1
Beryllium	ND		0.28	0.017	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1
Cadmium	**0.061**	**J**	0.28	0.012	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1
Calcium	**8.2**	**J**	280	1.7	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1
Chromium	**0.59**		0.55	0.077	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1
Cobalt	**0.88**	**J**	2.8	0.050	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1
Iron	**3300**		5.5	3.2	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1
Lead	ND		0.55	0.12	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1
Lithium	**0.17**	**J**	2.8	0.17	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1

Client Sample ID: APW 20S_20-22'
Lab Sample ID: 140-37375-4

Date Collected: 06/18/24 11:10
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 90.7

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**80**	**B**	0.83	0.030	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1
Molybdenum	**0.38**	**J**	2.2	0.090	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1
Selenium	ND		0.55	0.19	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1
Thallium	ND		1.9	0.23	mg/Kg	☼	07/26/24 07:00	08/06/24 17:24	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**490**		11	1.8	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1
Antimony	ND		3.3	0.50	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1
Arsenic	**0.57**		0.55	0.24	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1
Barium	**9.2**		2.8	0.13	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1
Beryllium	**0.15**	**J**	0.28	0.018	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1
Cadmium	**0.14**	**J**	0.28	0.012	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1
Calcium	**17000**		280	2.4	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1
Chromium	**1.5**	**B**	0.55	0.077	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1
Cobalt	**1.7**	**J**	2.8	0.058	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1
Iron	**2800**		5.5	3.2	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1
Lead	**3.9**		0.55	0.12	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1
Lithium	**2.1**	**J**	2.8	0.17	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1
Manganese	**170**		0.83	0.14	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1
Molybdenum	**0.25**	**J**	2.2	0.090	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1
Selenium	ND		0.55	0.52	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1
Thallium	ND		1.9	0.32	mg/Kg	☼	07/30/24 07:00	08/07/24 15:39	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**110**	**J B**	170	26	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5
Antimony	ND		50	4.6	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5
Arsenic	ND	*-	8.3	2.1	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5
Barium	**2.7**	**J**	41	2.0	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5
Beryllium	ND		4.1	0.35	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5
Cadmium	ND		4.1	0.18	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5
Calcium	**8900**	**B**	4100	12	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5
Chromium	**3.2**	**J**	8.3	1.2	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5
Cobalt	ND		41	0.66	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5
Iron	ND		83	49	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5
Lead	ND		8.3	1.8	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5
Lithium	ND		41	2.4	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5
Manganese	**29**		12	2.0	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5
Molybdenum	ND		33	1.4	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5
Selenium	ND		8.3	2.9	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5
Thallium	ND		29	3.9	mg/Kg	☼	08/02/24 07:00	08/07/24 17:44	5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**5300**		11	1.8	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1
Antimony	ND		3.3	0.31	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1
Arsenic	**1.8**		0.55	0.17	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1
Barium	**9.9**		2.8	0.13	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1
Beryllium	**0.17**	**J**	0.28	0.013	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1

Client Sample ID: APW 20S_20-22'
Lab Sample ID: 140-37375-4

Date Collected: 06/18/24 11:10
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 90.7

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.21	J	0.28	0.012	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1
Calcium	6800		280	2.3	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1
Chromium	7.4		0.55	0.077	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1
Cobalt	2.6	J	2.8	0.051	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1
Iron	7000		5.5	3.2	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1
Lead	2.4		0.55	0.12	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1
Lithium	8.6		2.8	0.17	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1
Manganese	67		0.83	0.28	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1
Molybdenum	0.16	J	2.2	0.11	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1
Selenium	ND		0.55	0.19	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1
Thallium	ND		1.9	0.23	mg/Kg	☼	08/02/24 07:30	08/07/24 20:04	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	23000		110	18	mg/Kg	☼	08/05/24 07:00	08/10/24 11:54	10
Antimony	0.48	J	3.3	0.15	mg/Kg	☼	08/05/24 07:00	08/11/24 11:29	1
Arsenic	2.0		1.1	0.66	mg/Kg	☼	08/05/24 07:00	08/12/24 12:13	2
Barium	160		2.8	0.051	mg/Kg	☼	08/05/24 07:00	08/11/24 11:29	1
Beryllium	0.48		0.28	0.018	mg/Kg	☼	08/05/24 07:00	08/11/24 11:29	1
Cadmium	0.17	J	0.28	0.012	mg/Kg	☼	08/05/24 07:00	08/11/24 11:29	1
Calcium	1600		280	6.3	mg/Kg	☼	08/05/24 07:00	08/11/24 11:29	1
Chromium	19	B	0.55	0.077	mg/Kg	☼	08/05/24 07:00	08/11/24 11:29	1
Cobalt	0.92	J	5.5	0.057	mg/Kg	☼	08/05/24 07:00	08/12/24 12:13	2
Iron	4400		5.5	4.5	mg/Kg	☼	08/05/24 07:00	08/11/24 11:29	1
Lead	1.3		1.1	0.24	mg/Kg	☼	08/05/24 07:00	08/12/24 12:13	2
Lithium	13		2.8	0.17	mg/Kg	☼	08/05/24 07:00	08/11/24 11:29	1
Manganese	37		0.83	0.34	mg/Kg	☼	08/05/24 07:00	08/11/24 11:29	1
Molybdenum	ND		2.2	0.090	mg/Kg	☼	08/05/24 07:00	08/11/24 11:29	1
Selenium	ND		1.1	0.37	mg/Kg	☼	08/05/24 07:00	08/12/24 12:13	2
Thallium	0.75	J	3.9	0.40	mg/Kg	☼	08/05/24 07:00	08/12/24 12:13	2

Method: SW846 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	29000		10	1.6	mg/Kg			08/14/24 18:56	1
Antimony	0.48	J	3.0	0.14	mg/Kg			08/14/24 18:56	1
Arsenic	5.6		0.50	0.13	mg/Kg			08/14/24 18:56	1
Barium	190		2.5	0.12	mg/Kg			08/14/24 18:56	1
Beryllium	0.80		0.25	0.0075	mg/Kg			08/14/24 18:56	1
Cadmium	0.64		0.25	0.011	mg/Kg			08/14/24 18:56	1
Calcium	47000		250	0.74	mg/Kg			08/14/24 18:56	1
Chromium	32		0.50	0.070	mg/Kg			08/14/24 18:56	1
Cobalt	6.8		2.5	0.023	mg/Kg			08/14/24 18:56	1
Iron	18000		5.0	4.1	mg/Kg			08/14/24 18:56	1
Lead	8.3		0.50	0.11	mg/Kg			08/14/24 18:56	1
Lithium	24		2.5	0.15	mg/Kg			08/14/24 18:56	1
Manganese	500		0.75	0.052	mg/Kg			08/14/24 18:56	1
Molybdenum	0.79	J	2.0	0.082	mg/Kg			08/14/24 18:56	1
Selenium	ND		0.50	0.17	mg/Kg			08/14/24 18:56	1
Thallium	0.75	J	1.8	0.18	mg/Kg			08/14/24 18:56	1

Client Sample ID: APW 20S_20-22'
Lab Sample ID: 140-37375-4

Date Collected: 06/18/24 11:10
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 90.7

Method: SW846 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	15000		110	18	mg/Kg	☼	08/05/24 08:00	08/10/24 13:26	10
Antimony	1.1	J	3.3	0.15	mg/Kg	☼	08/05/24 08:00	08/11/24 13:09	1
Arsenic	5.5		0.55	0.33	mg/Kg	☼	08/05/24 08:00	08/11/24 13:09	1
Barium	240		2.8	0.051	mg/Kg	☼	08/05/24 08:00	08/11/24 13:09	1
Beryllium	0.81		0.28	0.018	mg/Kg	☼	08/05/24 08:00	08/11/24 13:09	1
Cadmium	0.22	J	0.28	0.012	mg/Kg	☼	08/05/24 08:00	08/11/24 13:09	1
Calcium	54000		2800	63	mg/Kg	☼	08/05/24 08:00	08/10/24 13:26	10
Chromium	28	B	0.55	0.077	mg/Kg	☼	08/05/24 08:00	08/11/24 13:09	1
Cobalt	6.3		2.8	0.029	mg/Kg	☼	08/05/24 08:00	08/11/24 13:09	1
Iron	15000		5.5	4.5	mg/Kg	☼	08/05/24 08:00	08/11/24 13:09	1
Lead	11		0.55	0.12	mg/Kg	☼	08/05/24 08:00	08/11/24 13:09	1
Lithium	21		2.8	0.17	mg/Kg	☼	08/05/24 08:00	08/11/24 13:09	1
Manganese	410		0.83	0.34	mg/Kg	☼	08/05/24 08:00	08/11/24 13:09	1
Molybdenum	1.1	J	2.2	0.090	mg/Kg	☼	08/05/24 08:00	08/11/24 13:09	1
Selenium	ND		0.55	0.19	mg/Kg	☼	08/05/24 08:00	08/11/24 13:09	1
Thallium	1.1	J	1.9	0.20	mg/Kg	☼	08/05/24 08:00	08/11/24 13:09	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Loss on Ignition (SPCC Loss On Ignit.)	19		0.42	0.42	%			07/02/24 13:38	1

Client Sample ID: APW 21S_8-10'
Lab Sample ID: 140-37375-5

Date Collected: 06/18/24 18:50
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 87.8

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		46	7.3	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4
Antimony	ND		14	1.3	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4
Arsenic	ND		2.3	0.59	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4
Barium	**0.76**	**J**	11	0.55	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4
Beryllium	ND		1.1	0.35	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4
Cadmium	ND		1.1	0.073	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4
Calcium	**560**	**J**	1100	8.7	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4
Chromium	ND		2.3	0.32	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4
Cobalt	ND		11	0.21	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4
Iron	ND		23	13	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4
Lead	ND		2.3	0.50	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4
Lithium	ND		11	0.68	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4
Manganese	ND		3.4	0.14	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4
Molybdenum	ND		9.1	0.37	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4
Selenium	ND		2.3	0.77	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4
Thallium	ND		8.0	0.96	mg/Kg	☼	07/24/24 07:00	08/06/24 13:04	4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**18**	**J**	34	5.5	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3
Antimony	ND		10	0.96	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3
Arsenic	ND		1.7	0.44	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3
Barium	**2.2**	**J**	8.5	0.41	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3
Beryllium	ND		0.85	0.055	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3
Cadmium	ND		0.85	0.038	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3
Calcium	**4600**		850	7.5	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3
Chromium	ND		1.7	0.24	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3
Cobalt	ND		8.5	0.22	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3
Iron	**11**	**J**	17	9.9	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3
Lead	ND		1.7	0.38	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3
Lithium	ND		8.5	0.51	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3
Manganese	**10**		2.6	0.96	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3
Molybdenum	ND		6.8	0.28	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3
Selenium	ND		1.7	0.58	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3
Thallium	ND		6.0	0.72	mg/Kg	☼	07/25/24 07:00	08/06/24 15:24	3

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**110**		11	2.4	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1
Antimony	ND		3.4	0.32	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1
Arsenic	**0.58**		0.57	0.15	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1
Barium	**1.1**	**J**	2.8	0.14	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1
Beryllium	ND		0.28	0.017	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1
Cadmium	ND		0.28	0.013	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1
Calcium	**7.5**	**J**	280	1.7	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1
Chromium	**0.31**	**J**	0.57	0.080	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1
Cobalt	**1.7**	**J**	2.8	0.051	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1
Iron	**500**		5.7	3.3	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1
Lead	ND		0.57	0.13	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1
Lithium	ND		2.8	0.17	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1

Client Sample ID: APW 21S_8-10'
Lab Sample ID: 140-37375-5

Date Collected: 06/18/24 18:50
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 87.8

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**230**	**B**	0.85	0.031	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1
Molybdenum	ND		2.3	0.093	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1
Selenium	ND		0.57	0.19	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1
Thallium	ND		2.0	0.24	mg/Kg	☼	07/26/24 07:00	08/06/24 17:29	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**410**		11	1.8	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1
Antimony	ND		3.4	0.51	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1
Arsenic	**1.9**		0.57	0.25	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1
Barium	**13**		2.8	0.14	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1
Beryllium	**0.061**	**J**	0.28	0.018	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1
Cadmium	**0.14**	**J**	0.28	0.013	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1
Calcium	**7100**		280	2.5	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1
Chromium	**1.3**	**B**	0.57	0.080	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1
Cobalt	**0.55**	**J**	2.8	0.060	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1
Iron	**3500**		5.7	3.3	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1
Lead	**2.6**		0.57	0.13	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1
Lithium	**0.71**	**J**	2.8	0.17	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1
Manganese	**69**		0.85	0.15	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1
Molybdenum	ND		2.3	0.093	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1
Selenium	ND		0.57	0.54	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1
Thallium	ND		2.0	0.33	mg/Kg	☼	07/30/24 07:00	08/07/24 15:44	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**200**	**B**	170	27	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5
Antimony	ND		51	4.8	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5
Arsenic	ND	*-	8.5	2.2	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5
Barium	**2.2**	**J**	43	2.1	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5
Beryllium	ND		4.3	0.36	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5
Cadmium	ND		4.3	0.18	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5
Calcium	**3700**	**J B**	4300	13	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5
Chromium	**1.8**	**J**	8.5	1.2	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5
Cobalt	ND		43	0.68	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5
Iron	ND		85	50	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5
Lead	ND		8.5	1.9	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5
Lithium	ND		43	2.5	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5
Manganese	**4.9**	**J**	13	2.1	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5
Molybdenum	ND		34	1.4	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5
Selenium	ND		8.5	3.0	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5
Thallium	ND		30	4.0	mg/Kg	☼	08/02/24 07:00	08/07/24 18:04	5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1800**		11	1.8	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1
Antimony	ND		3.4	0.32	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1
Arsenic	**1.5**		0.57	0.17	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1
Barium	**6.3**		2.8	0.14	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1
Beryllium	**0.049**	**J**	0.28	0.014	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1

Client Sample ID: APW 21S_8-10'
Lab Sample ID: 140-37375-5

Date Collected: 06/18/24 18:50
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 87.8

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.091	J	0.28	0.013	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1
Calcium	3700		280	2.4	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1
Chromium	2.9		0.57	0.080	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1
Cobalt	0.91	J	2.8	0.052	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1
Iron	3500		5.7	3.3	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1
Lead	0.96		0.57	0.13	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1
Lithium	3.0		2.8	0.17	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1
Manganese	36		0.85	0.28	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1
Molybdenum	ND		2.3	0.11	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1
Selenium	ND		0.57	0.19	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1
Thallium	ND		2.0	0.24	mg/Kg	☼	08/02/24 07:30	08/07/24 20:09	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	19000		110	18	mg/Kg	☼	08/05/24 07:00	08/10/24 11:59	10
Antimony	ND		3.4	0.16	mg/Kg	☼	08/05/24 07:00	08/11/24 11:34	1
Arsenic	1.5		1.1	0.68	mg/Kg	☼	08/05/24 07:00	08/12/24 12:17	2
Barium	230		2.8	0.052	mg/Kg	☼	08/05/24 07:00	08/11/24 11:34	1
Beryllium	0.35		0.28	0.018	mg/Kg	☼	08/05/24 07:00	08/11/24 11:34	1
Cadmium	0.14	J	0.28	0.013	mg/Kg	☼	08/05/24 07:00	08/11/24 11:34	1
Calcium	2400		280	6.5	mg/Kg	☼	08/05/24 07:00	08/11/24 11:34	1
Chromium	7.2	B	0.57	0.080	mg/Kg	☼	08/05/24 07:00	08/11/24 11:34	1
Cobalt	0.62	J	5.7	0.059	mg/Kg	☼	08/05/24 07:00	08/12/24 12:17	2
Iron	2500		5.7	4.7	mg/Kg	☼	08/05/24 07:00	08/11/24 11:34	1
Lead	3.0		1.1	0.25	mg/Kg	☼	08/05/24 07:00	08/12/24 12:17	2
Lithium	4.8		2.8	0.17	mg/Kg	☼	08/05/24 07:00	08/11/24 11:34	1
Manganese	38		0.85	0.35	mg/Kg	☼	08/05/24 07:00	08/11/24 11:34	1
Molybdenum	ND		2.3	0.093	mg/Kg	☼	08/05/24 07:00	08/11/24 11:34	1
Selenium	ND		1.1	0.39	mg/Kg	☼	08/05/24 07:00	08/12/24 12:17	2
Thallium	ND		4.0	0.41	mg/Kg	☼	08/05/24 07:00	08/12/24 12:17	2

Method: SW846 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	21000		10	1.6	mg/Kg			08/14/24 18:56	1
Antimony	ND		3.0	0.14	mg/Kg			08/14/24 18:56	1
Arsenic	5.5		0.50	0.13	mg/Kg			08/14/24 18:56	1
Barium	260		2.5	0.12	mg/Kg			08/14/24 18:56	1
Beryllium	0.46		0.25	0.0075	mg/Kg			08/14/24 18:56	1
Cadmium	0.37		0.25	0.011	mg/Kg			08/14/24 18:56	1
Calcium	22000		250	0.74	mg/Kg			08/14/24 18:56	1
Chromium	14		0.50	0.070	mg/Kg			08/14/24 18:56	1
Cobalt	3.7		2.5	0.023	mg/Kg			08/14/24 18:56	1
Iron	10000		5.0	4.1	mg/Kg			08/14/24 18:56	1
Lead	6.5		0.50	0.11	mg/Kg			08/14/24 18:56	1
Lithium	8.5		2.5	0.15	mg/Kg			08/14/24 18:56	1
Manganese	390		0.75	0.052	mg/Kg			08/14/24 18:56	1
Molybdenum	ND		2.0	0.082	mg/Kg			08/14/24 18:56	1
Selenium	ND		0.50	0.17	mg/Kg			08/14/24 18:56	1
Thallium	ND		1.8	0.18	mg/Kg			08/14/24 18:56	1

Client Sample ID: APW 21S_8-10'
Lab Sample ID: 140-37375-5

Date Collected: 06/18/24 18:50
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 87.8

Method: SW846 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	14000		110	18	mg/Kg	☼	08/05/24 08:00	08/10/24 13:46	10
Antimony	0.42	J	3.4	0.16	mg/Kg	☼	08/05/24 08:00	08/11/24 13:29	1
Arsenic	5.8		1.1	0.68	mg/Kg	☼	08/05/24 08:00	08/12/24 14:10	2
Barium	250		2.8	0.052	mg/Kg	☼	08/05/24 08:00	08/11/24 13:29	1
Beryllium	0.43		0.28	0.018	mg/Kg	☼	08/05/24 08:00	08/11/24 13:29	1
Cadmium	0.15	J	0.28	0.013	mg/Kg	☼	08/05/24 08:00	08/11/24 13:29	1
Calcium	32000		2800	65	mg/Kg	☼	08/05/24 08:00	08/10/24 13:46	10
Chromium	12	B	0.57	0.080	mg/Kg	☼	08/05/24 08:00	08/11/24 13:29	1
Cobalt	3.5	J	5.7	0.059	mg/Kg	☼	08/05/24 08:00	08/12/24 14:10	2
Iron	8500		5.7	4.7	mg/Kg	☼	08/05/24 08:00	08/11/24 13:29	1
Lead	6.0		1.1	0.25	mg/Kg	☼	08/05/24 08:00	08/12/24 14:10	2
Lithium	7.6		2.8	0.17	mg/Kg	☼	08/05/24 08:00	08/11/24 13:29	1
Manganese	230		0.85	0.35	mg/Kg	☼	08/05/24 08:00	08/11/24 13:29	1
Molybdenum	0.11	J	2.3	0.093	mg/Kg	☼	08/05/24 08:00	08/11/24 13:29	1
Selenium	ND		1.1	0.39	mg/Kg	☼	08/05/24 08:00	08/12/24 14:10	2
Thallium	0.81	J	4.0	0.41	mg/Kg	☼	08/05/24 08:00	08/12/24 14:10	2

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Loss on Ignition (SPCC Loss On Ignit.)	17		0.30	0.30	%			07/02/24 13:38	1

Client Sample ID: APW 21S_14-16'
Lab Sample ID: 140-37375-6

Date Collected: 06/18/24 18:55
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 92.0

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		43	7.0	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4
Antimony	ND		13	1.2	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4
Arsenic	ND		2.2	0.57	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4
Barium	ND		11	0.52	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4
Beryllium	ND		1.1	0.33	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4
Cadmium	ND		1.1	0.070	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4
Calcium	**690**	**J**	1100	8.3	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4
Chromium	ND		2.2	0.30	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4
Cobalt	ND		11	0.20	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4
Iron	ND		22	13	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4
Lead	ND		2.2	0.48	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4
Lithium	ND		11	0.65	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4
Manganese	**13**		3.3	0.13	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4
Molybdenum	ND		8.7	0.36	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4
Selenium	ND		2.2	0.74	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4
Thallium	ND		7.6	0.91	mg/Kg	☼	07/24/24 07:00	08/06/24 13:24	4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**17**	**J**	33	5.2	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3
Antimony	ND		9.8	0.91	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3
Arsenic	ND		1.6	0.42	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3
Barium	**1.1**	**J**	8.1	0.39	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3
Beryllium	ND		0.81	0.052	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3
Cadmium	ND		0.81	0.036	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3
Calcium	**17000**		810	7.2	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3
Chromium	**0.25**	**J**	1.6	0.23	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3
Cobalt	**0.29**	**J**	8.1	0.21	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3
Iron	**62**		16	9.5	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3
Lead	**0.40**	**J**	1.6	0.36	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3
Lithium	ND		8.1	0.49	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3
Manganese	**80**		2.4	0.91	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3
Molybdenum	ND		6.5	0.27	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3
Selenium	ND		1.6	0.55	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3
Thallium	ND		5.7	0.68	mg/Kg	☼	07/25/24 07:00	08/06/24 15:29	3

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**57**		11	2.3	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1
Antimony	ND		3.3	0.30	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1
Arsenic	**0.36**	**J**	0.54	0.14	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1
Barium	**0.55**	**J**	2.7	0.13	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1
Beryllium	ND		0.27	0.016	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1
Cadmium	ND		0.27	0.012	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1
Calcium	**7.3**	**J**	270	1.6	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1
Chromium	**0.53**	**J**	0.54	0.076	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1
Cobalt	**0.23**	**J**	2.7	0.049	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1
Iron	**420**		5.4	3.2	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1
Lead	ND		0.54	0.12	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1
Lithium	ND		2.7	0.16	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1

Client Sample ID: APW 21S_14-16'
Date Collected: 06/18/24 18:55
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-6
Matrix: Solid
Percent Solids: 92.0

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**22**	**B**	0.81	0.029	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1
Molybdenum	ND		2.2	0.089	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1
Selenium	ND		0.54	0.18	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1
Thallium	ND		1.9	0.23	mg/Kg	☼	07/26/24 07:00	08/06/24 17:35	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**270**		11	1.7	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1
Antimony	ND		3.3	0.49	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1
Arsenic	**1.3**		0.54	0.24	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1
Barium	**6.9**		2.7	0.13	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1
Beryllium	**0.033**	**J**	0.27	0.017	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1
Cadmium	**0.091**	**J**	0.27	0.012	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1
Calcium	**18000**		270	2.4	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1
Chromium	**1.0**	**B**	0.54	0.076	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1
Cobalt	**0.74**	**J**	2.7	0.058	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1
Iron	**2700**		5.4	3.2	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1
Lead	**1.8**		0.54	0.12	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1
Lithium	**1.0**	**J**	2.7	0.16	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1
Manganese	**73**		0.81	0.14	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1
Molybdenum	**0.15**	**J**	2.2	0.089	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1
Selenium	ND		0.54	0.51	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1
Thallium	ND		1.9	0.32	mg/Kg	☼	07/30/24 07:00	08/07/24 16:04	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**95**	**J B**	160	26	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5
Antimony	ND		49	4.6	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5
Arsenic	ND	*-	8.1	2.1	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5
Barium	ND		41	2.0	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5
Beryllium	ND		4.1	0.34	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5
Cadmium	ND		4.1	0.17	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5
Calcium	**7100**	**B**	4100	12	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5
Chromium	**1.5**	**J**	8.1	1.1	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5
Cobalt	ND		41	0.65	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5
Iron	ND		81	48	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5
Lead	ND		8.1	1.8	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5
Lithium	**2.7**	**J B**	41	2.4	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5
Manganese	ND		12	2.0	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5
Molybdenum	ND		33	1.4	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5
Selenium	ND		8.1	2.8	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5
Thallium	ND		29	3.8	mg/Kg	☼	08/02/24 07:00	08/07/24 18:09	5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1600**		11	1.7	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1
Antimony	ND		3.3	0.30	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1
Arsenic	**1.5**		0.54	0.16	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1
Barium	**3.9**		2.7	0.13	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1
Beryllium	**0.050**	**J**	0.27	0.013	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1

Client Sample ID: APW 21S_14-16'
Lab Sample ID: 140-37375-6

Date Collected: 06/18/24 18:55
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 92.0

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.093	J	0.27	0.012	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1
Calcium	5600		270	2.3	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1
Chromium	3.3		0.54	0.076	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1
Cobalt	1.1	J	2.7	0.050	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1
Iron	3700		5.4	3.2	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1
Lead	0.90		0.54	0.12	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1
Lithium	3.8		2.7	0.16	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1
Manganese	35		0.81	0.27	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1
Molybdenum	ND		2.2	0.11	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1
Selenium	ND		0.54	0.18	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1
Thallium	ND		1.9	0.23	mg/Kg	☼	08/02/24 07:30	08/07/24 20:14	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	19000		110	17	mg/Kg	☼	08/05/24 07:00	08/10/24 12:04	10
Antimony	ND		3.3	0.15	mg/Kg	☼	08/05/24 07:00	08/11/24 11:39	1
Arsenic	1.4		1.1	0.65	mg/Kg	☼	08/05/24 07:00	08/12/24 12:22	2
Barium	200		2.7	0.050	mg/Kg	☼	08/05/24 07:00	08/11/24 11:39	1
Beryllium	0.34		0.27	0.017	mg/Kg	☼	08/05/24 07:00	08/11/24 11:39	1
Cadmium	0.16	J	0.27	0.012	mg/Kg	☼	08/05/24 07:00	08/11/24 11:39	1
Calcium	2500		270	6.2	mg/Kg	☼	08/05/24 07:00	08/11/24 11:39	1
Chromium	9.2	B	0.54	0.076	mg/Kg	☼	08/05/24 07:00	08/11/24 11:39	1
Cobalt	0.58	J	5.4	0.057	mg/Kg	☼	08/05/24 07:00	08/12/24 12:22	2
Iron	2400		5.4	4.5	mg/Kg	☼	08/05/24 07:00	08/11/24 11:39	1
Lead	2.0		1.1	0.24	mg/Kg	☼	08/05/24 07:00	08/12/24 12:22	2
Lithium	7.5		2.7	0.16	mg/Kg	☼	08/05/24 07:00	08/11/24 11:39	1
Manganese	35		0.81	0.34	mg/Kg	☼	08/05/24 07:00	08/11/24 11:39	1
Molybdenum	ND		2.2	0.089	mg/Kg	☼	08/05/24 07:00	08/11/24 11:39	1
Selenium	ND		1.1	0.37	mg/Kg	☼	08/05/24 07:00	08/12/24 12:22	2
Thallium	0.52	J	3.8	0.39	mg/Kg	☼	08/05/24 07:00	08/12/24 12:22	2

Method: SW846 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	21000		10	1.6	mg/Kg			08/14/24 18:56	1
Antimony	ND		3.0	0.14	mg/Kg			08/14/24 18:56	1
Arsenic	4.6		0.50	0.13	mg/Kg			08/14/24 18:56	1
Barium	220		2.5	0.12	mg/Kg			08/14/24 18:56	1
Beryllium	0.43		0.25	0.0075	mg/Kg			08/14/24 18:56	1
Cadmium	0.35		0.25	0.011	mg/Kg			08/14/24 18:56	1
Calcium	51000		250	0.74	mg/Kg			08/14/24 18:56	1
Chromium	16		0.50	0.070	mg/Kg			08/14/24 18:56	1
Cobalt	3.0		2.5	0.023	mg/Kg			08/14/24 18:56	1
Iron	9200		5.0	4.1	mg/Kg			08/14/24 18:56	1
Lead	5.1		0.50	0.11	mg/Kg			08/14/24 18:56	1
Lithium	15		2.5	0.15	mg/Kg			08/14/24 18:56	1
Manganese	260		0.75	0.052	mg/Kg			08/14/24 18:56	1
Molybdenum	0.15	J	2.0	0.082	mg/Kg			08/14/24 18:56	1
Selenium	ND		0.50	0.17	mg/Kg			08/14/24 18:56	1
Thallium	0.52	J	1.8	0.18	mg/Kg			08/14/24 18:56	1

Client Sample ID: APW 21S_14-16'
Lab Sample ID: 140-37375-6

Date Collected: 06/18/24 18:55
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 92.0

Method: SW846 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	9200		110	17	mg/Kg	☼	08/05/24 08:00	08/10/24 13:51	10
Antimony	0.44	J	3.3	0.15	mg/Kg	☼	08/05/24 08:00	08/11/24 13:34	1
Arsenic	5.0		1.1	0.65	mg/Kg	☼	08/05/24 08:00	08/12/24 14:15	2
Barium	220		2.7	0.050	mg/Kg	☼	08/05/24 08:00	08/11/24 13:34	1
Beryllium	0.35		0.27	0.017	mg/Kg	☼	08/05/24 08:00	08/11/24 13:34	1
Cadmium	0.16	J	0.27	0.012	mg/Kg	☼	08/05/24 08:00	08/11/24 13:34	1
Calcium	61000		2700	62	mg/Kg	☼	08/05/24 08:00	08/10/24 13:51	10
Chromium	12	B	0.54	0.076	mg/Kg	☼	08/05/24 08:00	08/11/24 13:34	1
Cobalt	3.2	J	5.4	0.057	mg/Kg	☼	08/05/24 08:00	08/12/24 14:15	2
Iron	8500		5.4	4.5	mg/Kg	☼	08/05/24 08:00	08/11/24 13:34	1
Lead	5.1		1.1	0.24	mg/Kg	☼	08/05/24 08:00	08/12/24 14:15	2
Lithium	8.9		2.7	0.16	mg/Kg	☼	08/05/24 08:00	08/11/24 13:34	1
Manganese	240		0.81	0.34	mg/Kg	☼	08/05/24 08:00	08/11/24 13:34	1
Molybdenum	0.44	J	2.2	0.089	mg/Kg	☼	08/05/24 08:00	08/11/24 13:34	1
Selenium	ND		1.1	0.37	mg/Kg	☼	08/05/24 08:00	08/12/24 14:15	2
Thallium	0.66	J	3.8	0.39	mg/Kg	☼	08/05/24 08:00	08/12/24 14:15	2

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Loss on Ignition (SPCC Loss On Ignit.)	16		0.43	0.43	%			07/02/24 13:38	1

Client: Ramboll Americas Engineering Solutions
Project/Site: Newton Nature & Extent SEP

Job ID: 140-37375-1

Client Sample ID: APW 22S_9-11'
Date Collected: 06/19/24 11:45
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-7
Matrix: Solid
Percent Solids: 85.5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		47	7.5	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4
Antimony	ND		14	1.3	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4
Arsenic	ND		2.3	0.61	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4
Barium	ND		12	0.56	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4
Beryllium	ND		1.2	0.36	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4
Cadmium	ND		1.2	0.075	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4
Calcium	**930**	**J**	1200	8.9	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4
Chromium	ND		2.3	0.33	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4
Cobalt	ND		12	0.21	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4
Iron	ND		23	14	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4
Lead	ND		2.3	0.51	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4
Lithium	ND		12	0.70	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4
Manganese	**55**		3.5	0.14	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4
Molybdenum	ND		9.4	0.38	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4
Selenium	ND		2.3	0.79	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4
Thallium	ND		8.2	0.98	mg/Kg	☼	07/24/24 07:00	08/06/24 13:29	4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**18**	**J**	35	5.6	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3
Antimony	ND		11	0.98	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3
Arsenic	ND		1.8	0.46	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3
Barium	**0.63**	**J**	8.8	0.42	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3
Beryllium	ND		0.88	0.056	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3
Cadmium	ND		0.88	0.039	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3
Calcium	**340**	**J**	880	7.7	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3
Chromium	ND		1.8	0.25	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3
Cobalt	**0.24**	**J**	8.8	0.22	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3
Iron	ND		18	10	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3
Lead	**0.58**	**J**	1.8	0.39	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3
Lithium	ND		8.8	0.53	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3
Manganese	**42**		2.6	0.98	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3
Molybdenum	ND		7.0	0.29	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3
Selenium	ND		1.8	0.60	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3
Thallium	ND		6.1	0.74	mg/Kg	☼	07/25/24 07:00	08/06/24 15:34	3

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**290**		12	2.5	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1
Antimony	ND		3.5	0.33	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1
Arsenic	**0.55**	**J**	0.58	0.15	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1
Barium	**2.3**	**J**	2.9	0.14	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1
Beryllium	**0.11**	**J**	0.29	0.018	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1
Cadmium	ND		0.29	0.013	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1
Calcium	**7.0**	**J**	290	1.8	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1
Chromium	**0.33**	**J**	0.58	0.082	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1
Cobalt	**0.68**	**J**	2.9	0.053	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1
Iron	**370**		5.8	3.4	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1
Lead	**1.0**		0.58	0.13	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1
Lithium	ND		2.9	0.18	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1

Client Sample ID: APW 22S_9-11'
Lab Sample ID: 140-37375-7

Date Collected: 06/19/24 11:45
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 85.5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**66**	**B**	0.88	0.032	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1
Molybdenum	ND		2.3	0.096	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1
Selenium	ND		0.58	0.20	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1
Thallium	ND		2.0	0.25	mg/Kg	☼	07/26/24 07:00	08/06/24 17:40	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**3400**		12	1.9	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1
Antimony	ND		3.5	0.53	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1
Arsenic	**2.8**		0.58	0.26	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1
Barium	**21**		2.9	0.14	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1
Beryllium	**0.24**	**J**	0.29	0.019	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1
Cadmium	**0.20**	**J**	0.29	0.013	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1
Calcium	**370**		290	2.6	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1
Chromium	**5.0**	**B**	0.58	0.082	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1
Cobalt	**2.1**	**J**	2.9	0.062	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1
Iron	**7800**		5.8	3.4	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1
Lead	**4.4**		0.58	0.13	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1
Lithium	**2.8**	**J**	2.9	0.18	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1
Manganese	**69**		0.88	0.15	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1
Molybdenum	**0.27**	**J**	2.3	0.096	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1
Selenium	ND		0.58	0.55	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1
Thallium	ND		2.0	0.34	mg/Kg	☼	07/30/24 07:00	08/07/24 16:09	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**67**	**J B**	180	27	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5
Antimony	ND		53	4.9	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5
Arsenic	ND	*-	8.8	2.2	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5
Barium	**25**	**J**	44	2.1	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5
Beryllium	ND		4.4	0.37	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5
Cadmium	ND		4.4	0.19	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5
Calcium	**1600**	**J B**	4400	13	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5
Chromium	**3.8**	**J**	8.8	1.2	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5
Cobalt	ND		44	0.70	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5
Iron	ND		88	51	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5
Lead	ND		8.8	1.9	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5
Lithium	**2.6**	**J B**	44	2.6	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5
Manganese	**7.7**	**J**	13	2.2	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5
Molybdenum	ND		35	1.5	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5
Selenium	ND		8.8	3.0	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5
Thallium	ND		31	4.1	mg/Kg	☼	08/02/24 07:00	08/07/24 18:14	5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**8500**		12	1.9	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1
Antimony	**0.34**	**J**	3.5	0.33	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1
Arsenic	**1.6**		0.58	0.18	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1
Barium	**34**		2.9	0.14	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1
Beryllium	**0.14**	**J**	0.29	0.014	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1

Client Sample ID: APW 22S_9-11'
Lab Sample ID: 140-37375-7

Date Collected: 06/19/24 11:45
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 85.5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.13	J	0.29	0.013	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1
Calcium	50	J	290	2.5	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1
Chromium	6.8		0.58	0.082	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1
Cobalt	1.3	J	2.9	0.054	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1
Iron	5900		5.8	3.4	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1
Lead	1.8		0.58	0.13	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1
Lithium	5.2		2.9	0.18	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1
Manganese	18		0.88	0.29	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1
Molybdenum	ND		2.3	0.12	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1
Selenium	ND		0.58	0.20	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1
Thallium	ND		2.0	0.25	mg/Kg	☼	08/02/24 07:30	08/07/24 20:20	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	18000		120	19	mg/Kg	☼	08/05/24 07:00	08/10/24 12:09	10
Antimony	0.42	J	3.5	0.16	mg/Kg	☼	08/05/24 07:00	08/11/24 11:44	1
Arsenic	1.8		1.2	0.70	mg/Kg	☼	08/05/24 07:00	08/12/24 12:27	2
Barium	120		2.9	0.054	mg/Kg	☼	08/05/24 07:00	08/11/24 11:44	1
Beryllium	0.21	J	0.29	0.019	mg/Kg	☼	08/05/24 07:00	08/11/24 11:44	1
Cadmium	0.16	J	0.29	0.013	mg/Kg	☼	08/05/24 07:00	08/11/24 11:44	1
Calcium	400		290	6.7	mg/Kg	☼	08/05/24 07:00	08/11/24 11:44	1
Chromium	14	B	0.58	0.082	mg/Kg	☼	08/05/24 07:00	08/11/24 11:44	1
Cobalt	0.88	J	5.8	0.061	mg/Kg	☼	08/05/24 07:00	08/12/24 12:27	2
Iron	3900		5.8	4.8	mg/Kg	☼	08/05/24 07:00	08/11/24 11:44	1
Lead	1.0	J	1.2	0.26	mg/Kg	☼	08/05/24 07:00	08/12/24 12:27	2
Lithium	11		2.9	0.18	mg/Kg	☼	08/05/24 07:00	08/11/24 11:44	1
Manganese	21		0.88	0.36	mg/Kg	☼	08/05/24 07:00	08/11/24 11:44	1
Molybdenum	ND		2.3	0.096	mg/Kg	☼	08/05/24 07:00	08/11/24 11:44	1
Selenium	ND		1.2	0.40	mg/Kg	☼	08/05/24 07:00	08/12/24 12:27	2
Thallium	1.0	J	4.1	0.42	mg/Kg	☼	08/05/24 07:00	08/12/24 12:27	2

Method: SW846 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	30000		10	1.6	mg/Kg			08/14/24 18:56	1
Antimony	0.76	J	3.0	0.14	mg/Kg			08/14/24 18:56	1
Arsenic	6.7		0.50	0.13	mg/Kg			08/14/24 18:56	1
Barium	210		2.5	0.12	mg/Kg			08/14/24 18:56	1
Beryllium	0.70		0.25	0.0075	mg/Kg			08/14/24 18:56	1
Cadmium	0.49		0.25	0.011	mg/Kg			08/14/24 18:56	1
Calcium	3600		250	0.74	mg/Kg			08/14/24 18:56	1
Chromium	30		0.50	0.070	mg/Kg			08/14/24 18:56	1
Cobalt	5.2		2.5	0.023	mg/Kg			08/14/24 18:56	1
Iron	18000		5.0	4.1	mg/Kg			08/14/24 18:56	1
Lead	8.8		0.50	0.11	mg/Kg			08/14/24 18:56	1
Lithium	22		2.5	0.15	mg/Kg			08/14/24 18:56	1
Manganese	280		0.75	0.052	mg/Kg			08/14/24 18:56	1
Molybdenum	0.27	J	2.0	0.082	mg/Kg			08/14/24 18:56	1
Selenium	ND		0.50	0.17	mg/Kg			08/14/24 18:56	1
Thallium	1.0	J	1.8	0.18	mg/Kg			08/14/24 18:56	1

Client: Ramboll Americas Engineering Solutions
Project/Site: Newton Nature & Extent SEP

Job ID: 140-37375-1

Client Sample ID: APW 22S_9-11'

Date Collected: 06/19/24 11:45
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-7

Matrix: Solid
Percent Solids: 85.5

Method: SW846 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	48000		120	19	mg/Kg	☼	08/05/24 08:00	08/10/24 13:56	10
Antimony	1.2	J	3.5	0.16	mg/Kg	☼	08/05/24 08:00	08/11/24 13:40	1
Arsenic	7.0		0.58	0.35	mg/Kg	☼	08/05/24 08:00	08/11/24 13:40	1
Barium	350		2.9	0.054	mg/Kg	☼	08/05/24 08:00	08/11/24 13:40	1
Beryllium	0.98		0.29	0.019	mg/Kg	☼	08/05/24 08:00	08/11/24 13:40	1
Cadmium	ND		0.29	0.013	mg/Kg	☼	08/05/24 08:00	08/11/24 13:40	1
Calcium	4100		2900	67	mg/Kg	☼	08/05/24 08:00	08/10/24 13:56	10
Chromium	36	B	0.58	0.082	mg/Kg	☼	08/05/24 08:00	08/11/24 13:40	1
Cobalt	6.0		5.8	0.061	mg/Kg	☼	08/05/24 08:00	08/12/24 14:20	2
Iron	20000		5.8	4.8	mg/Kg	☼	08/05/24 08:00	08/11/24 13:40	1
Lead	12		1.2	0.26	mg/Kg	☼	08/05/24 08:00	08/12/24 14:20	2
Lithium	25		2.9	0.18	mg/Kg	☼	08/05/24 08:00	08/11/24 13:40	1
Manganese	320		0.88	0.36	mg/Kg	☼	08/05/24 08:00	08/11/24 13:40	1
Molybdenum	0.58	J	2.3	0.096	mg/Kg	☼	08/05/24 08:00	08/11/24 13:40	1
Selenium	ND		0.58	0.20	mg/Kg	☼	08/05/24 08:00	08/11/24 13:40	1
Thallium	0.48	J	4.1	0.42	mg/Kg	☼	08/05/24 08:00	08/12/24 14:20	2

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Loss on Ignition (SPCC Loss On Ignit.)	17		0.35	0.35	%			07/02/24 13:42	1

Client: Ramboll Americas Engineering Solutions
Project/Site: Newton Nature & Extent SEP

Job ID: 140-37375-1

Client Sample ID: APW 22S_20.5-22'

Date Collected: 06/19/24 11:55
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-8

Matrix: Solid
Percent Solids: 91.4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		44	7.0	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4
Antimony	ND		13	1.2	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4
Arsenic	ND		2.2	0.57	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4
Barium	ND		11	0.53	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4
Beryllium	ND		1.1	0.34	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4
Cadmium	ND		1.1	0.070	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4
Calcium	**650**	**J**	1100	8.3	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4
Chromium	ND		2.2	0.31	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4
Cobalt	ND		11	0.20	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4
Iron	ND		22	13	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4
Lead	ND		2.2	0.48	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4
Lithium	ND		11	0.66	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4
Manganese	**3.3**		3.3	0.14	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4
Molybdenum	ND		8.8	0.36	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4
Selenium	ND		2.2	0.74	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4
Thallium	ND		7.7	0.92	mg/Kg	☼	07/24/24 07:00	08/06/24 13:34	4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**10**	**J**	33	5.3	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3
Antimony	ND		9.8	0.92	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3
Arsenic	ND		1.6	0.43	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3
Barium	**2.3**	**J**	8.2	0.39	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3
Beryllium	ND		0.82	0.053	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3
Cadmium	**0.043**	**J**	0.82	0.036	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3
Calcium	**15000**		820	7.2	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3
Chromium	**0.23**	**J**	1.6	0.23	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3
Cobalt	**0.29**	**J**	8.2	0.21	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3
Iron	**32**		16	9.5	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3
Lead	ND		1.6	0.36	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3
Lithium	ND		8.2	0.49	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3
Manganese	**74**		2.5	0.92	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3
Molybdenum	ND		6.6	0.27	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3
Selenium	ND		1.6	0.56	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3
Thallium	ND		5.7	0.69	mg/Kg	☼	07/25/24 07:00	08/06/24 15:39	3

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**45**		11	2.3	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1
Antimony	ND		3.3	0.31	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1
Arsenic	**0.61**		0.55	0.14	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1
Barium	**1.1**	**J**	2.7	0.13	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1
Beryllium	ND		0.27	0.016	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1
Cadmium	ND		0.27	0.012	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1
Calcium	**7.6**	**J**	270	1.6	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1
Chromium	**0.25**	**J**	0.55	0.077	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1
Cobalt	**1.1**	**J**	2.7	0.049	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1
Iron	**250**		5.5	3.2	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1
Lead	ND		0.55	0.12	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1
Lithium	ND		2.7	0.16	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1

Client Sample ID: APW 22S_20.5-22'
Lab Sample ID: 140-37375-8

Date Collected: 06/19/24 11:55
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 91.4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**100**	**B**	0.82	0.030	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1
Molybdenum	ND		2.2	0.090	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1
Selenium	ND		0.55	0.19	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1
Thallium	ND		1.9	0.23	mg/Kg	☼	07/26/24 07:00	08/06/24 17:45	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**300**		11	1.8	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1
Antimony	ND		3.3	0.49	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1
Arsenic	**2.4**		0.55	0.24	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1
Barium	**13**		2.7	0.13	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1
Beryllium	**0.055**	**J**	0.27	0.018	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1
Cadmium	**0.15**	**J**	0.27	0.012	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1
Calcium	**16000**		270	2.4	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1
Chromium	**1.3**	**B**	0.55	0.077	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1
Cobalt	**0.67**	**J**	2.7	0.058	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1
Iron	**3800**		5.5	3.2	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1
Lead	**2.2**		0.55	0.12	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1
Lithium	**0.96**	**J**	2.7	0.16	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1
Manganese	**88**		0.82	0.14	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1
Molybdenum	**0.23**	**J**	2.2	0.090	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1
Selenium	ND		0.55	0.51	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1
Thallium	ND		1.9	0.32	mg/Kg	☼	07/30/24 07:00	08/07/24 16:14	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**150**	**J B**	160	26	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5
Antimony	ND		49	4.6	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5
Arsenic	ND	*-	8.2	2.1	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5
Barium	**4.4**	**J**	41	2.0	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5
Beryllium	ND		4.1	0.34	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5
Cadmium	ND		4.1	0.18	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5
Calcium	**7300**	**B**	4100	12	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5
Chromium	**2.2**	**J**	8.2	1.1	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5
Cobalt	ND		41	0.66	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5
Iron	ND		82	48	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5
Lead	ND		8.2	1.8	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5
Lithium	**2.6**	**J B**	41	2.4	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5
Manganese	**7.0**	**J**	12	2.0	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5
Molybdenum	ND		33	1.4	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5
Selenium	ND		8.2	2.8	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5
Thallium	ND		29	3.8	mg/Kg	☼	08/02/24 07:00	08/07/24 18:19	5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1600**		11	1.8	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1
Antimony	ND		3.3	0.31	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1
Arsenic	**2.9**		0.55	0.16	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1
Barium	**5.2**		2.7	0.13	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1
Beryllium	**0.054**	**J**	0.27	0.013	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1

Client Sample ID: APW 22S_20.5-22'
Lab Sample ID: 140-37375-8

Date Collected: 06/19/24 11:55
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 91.4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.11	J	0.27	0.012	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1
Calcium	5000		270	2.3	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1
Chromium	3.0		0.55	0.077	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1
Cobalt	1.1	J	2.7	0.050	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1
Iron	4100		5.5	3.2	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1
Lead	1.3		0.55	0.12	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1
Lithium	3.4		2.7	0.16	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1
Manganese	50		0.82	0.27	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1
Molybdenum	0.12	J	2.2	0.11	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1
Selenium	ND		0.55	0.19	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1
Thallium	ND		1.9	0.23	mg/Kg	☼	08/02/24 07:30	08/07/24 20:24	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	29000		110	18	mg/Kg	☼	08/05/24 07:00	08/10/24 12:14	10
Antimony	ND		3.3	0.15	mg/Kg	☼	08/05/24 07:00	08/11/24 11:49	1
Arsenic	1.6		1.1	0.66	mg/Kg	☼	08/05/24 07:00	08/12/24 12:32	2
Barium	250		2.7	0.050	mg/Kg	☼	08/05/24 07:00	08/11/24 11:49	1
Beryllium	0.44		0.27	0.018	mg/Kg	☼	08/05/24 07:00	08/11/24 11:49	1
Cadmium	0.11	J	0.27	0.012	mg/Kg	☼	08/05/24 07:00	08/11/24 11:49	1
Calcium	3800		270	6.2	mg/Kg	☼	08/05/24 07:00	08/11/24 11:49	1
Chromium	5.7	B	0.55	0.077	mg/Kg	☼	08/05/24 07:00	08/11/24 11:49	1
Cobalt	0.49	J	5.5	0.057	mg/Kg	☼	08/05/24 07:00	08/12/24 12:32	2
Iron	2400		5.5	4.5	mg/Kg	☼	08/05/24 07:00	08/11/24 11:49	1
Lead	3.7		1.1	0.24	mg/Kg	☼	08/05/24 07:00	08/12/24 12:32	2
Lithium	4.8		2.7	0.16	mg/Kg	☼	08/05/24 07:00	08/11/24 11:49	1
Manganese	48		0.82	0.34	mg/Kg	☼	08/05/24 07:00	08/11/24 11:49	1
Molybdenum	0.12	J	2.2	0.090	mg/Kg	☼	08/05/24 07:00	08/11/24 11:49	1
Selenium	ND		1.1	0.37	mg/Kg	☼	08/05/24 07:00	08/12/24 12:32	2
Thallium	0.57	J	3.8	0.39	mg/Kg	☼	08/05/24 07:00	08/12/24 12:32	2

Method: SW846 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	31000		10	1.6	mg/Kg			08/14/24 18:56	1
Antimony	ND		3.0	0.14	mg/Kg			08/14/24 18:56	1
Arsenic	7.6		0.50	0.13	mg/Kg			08/14/24 18:56	1
Barium	280		2.5	0.12	mg/Kg			08/14/24 18:56	1
Beryllium	0.54		0.25	0.0075	mg/Kg			08/14/24 18:56	1
Cadmium	0.40		0.25	0.011	mg/Kg			08/14/24 18:56	1
Calcium	48000		250	0.74	mg/Kg			08/14/24 18:56	1
Chromium	13		0.50	0.070	mg/Kg			08/14/24 18:56	1
Cobalt	3.6		2.5	0.023	mg/Kg			08/14/24 18:56	1
Iron	11000		5.0	4.1	mg/Kg			08/14/24 18:56	1
Lead	7.3		0.50	0.11	mg/Kg			08/14/24 18:56	1
Lithium	12		2.5	0.15	mg/Kg			08/14/24 18:56	1
Manganese	370		0.75	0.052	mg/Kg			08/14/24 18:56	1
Molybdenum	0.47	J	2.0	0.082	mg/Kg			08/14/24 18:56	1
Selenium	ND		0.50	0.17	mg/Kg			08/14/24 18:56	1
Thallium	0.57	J	1.8	0.18	mg/Kg			08/14/24 18:56	1

Client: Ramboll Americas Engineering Solutions
Project/Site: Newton Nature & Extent SEP

Job ID: 140-37375-1

Client Sample ID: APW 22S_20.5-22'

Date Collected: 06/19/24 11:55
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-8

Matrix: Solid
Percent Solids: 91.4

Method: SW846 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	13000		110	18	mg/Kg	☼	08/05/24 08:00	08/10/24 14:00	10
Antimony	0.63	J	3.3	0.15	mg/Kg	☼	08/05/24 08:00	08/11/24 13:45	1
Arsenic	10		1.1	0.66	mg/Kg	☼	08/05/24 08:00	08/12/24 14:25	2
Barium	250		2.7	0.050	mg/Kg	☼	08/05/24 08:00	08/11/24 13:45	1
Beryllium	0.40		0.27	0.018	mg/Kg	☼	08/05/24 08:00	08/11/24 13:45	1
Cadmium	0.13	J	0.27	0.012	mg/Kg	☼	08/05/24 08:00	08/11/24 13:45	1
Calcium	47000		2700	62	mg/Kg	☼	08/05/24 08:00	08/10/24 14:00	10
Chromium	12	B	0.55	0.077	mg/Kg	☼	08/05/24 08:00	08/11/24 13:45	1
Cobalt	4.3	J	5.5	0.057	mg/Kg	☼	08/05/24 08:00	08/12/24 14:25	2
Iron	12000		5.5	4.5	mg/Kg	☼	08/05/24 08:00	08/11/24 13:45	1
Lead	7.9		1.1	0.24	mg/Kg	☼	08/05/24 08:00	08/12/24 14:25	2
Lithium	7.5		2.7	0.16	mg/Kg	☼	08/05/24 08:00	08/11/24 13:45	1
Manganese	470		0.82	0.34	mg/Kg	☼	08/05/24 08:00	08/11/24 13:45	1
Molybdenum	0.71	J	2.2	0.090	mg/Kg	☼	08/05/24 08:00	08/11/24 13:45	1
Selenium	ND		1.1	0.37	mg/Kg	☼	08/05/24 08:00	08/12/24 14:25	2
Thallium	0.99	J	3.8	0.39	mg/Kg	☼	08/05/24 08:00	08/12/24 14:25	2

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Loss on Ignition (SPCC Loss On Ignit.)	26		0.32	0.32	%			07/02/24 13:42	1

Client Sample ID: APW 23S_12-16'
Lab Sample ID: 140-37375-9

Date Collected: 06/19/24 17:50
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 84.4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		47	7.6	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4
Antimony	ND		14	1.3	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4
Arsenic	ND		2.4	0.62	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4
Barium	ND		12	0.57	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4
Beryllium	ND		1.2	0.36	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4
Cadmium	ND		1.2	0.076	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4
Calcium	**940**	**J**	1200	9.0	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4
Chromium	ND		2.4	0.33	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4
Cobalt	ND		12	0.21	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4
Iron	ND		24	14	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4
Lead	ND		2.4	0.52	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4
Lithium	ND		12	0.71	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4
Manganese	**0.36**	**J**	3.6	0.15	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4
Molybdenum	ND		9.5	0.39	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4
Selenium	ND		2.4	0.81	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4
Thallium	ND		8.3	0.99	mg/Kg	☼	07/24/24 07:00	08/06/24 13:39	4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**10**	**J**	36	5.7	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3
Antimony	ND		11	0.99	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3
Arsenic	ND		1.8	0.46	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3
Barium	**0.88**	**J**	8.9	0.43	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3
Beryllium	ND		0.89	0.057	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3
Cadmium	ND		0.89	0.039	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3
Calcium	**410**	**J**	890	7.8	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3
Chromium	ND		1.8	0.25	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3
Cobalt	ND		8.9	0.22	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3
Iron	ND		18	10	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3
Lead	ND		1.8	0.39	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3
Lithium	ND		8.9	0.53	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3
Manganese	**1.9**	**J**	2.7	0.99	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3
Molybdenum	ND		7.1	0.29	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3
Selenium	ND		1.8	0.60	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3
Thallium	ND		6.2	0.75	mg/Kg	☼	07/25/24 07:00	08/06/24 15:45	3

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**150**		12	2.5	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1
Antimony	ND		3.6	0.33	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1
Arsenic	**0.72**		0.59	0.15	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1
Barium	**1.0**	**J**	3.0	0.14	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1
Beryllium	**0.046**	**J**	0.30	0.018	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1
Cadmium	ND		0.30	0.013	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1
Calcium	**8.2**	**J**	300	1.8	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1
Chromium	**0.26**	**J**	0.59	0.083	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1
Cobalt	**1.5**	**J**	3.0	0.053	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1
Iron	**240**		5.9	3.4	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1
Lead	**0.56**	**J**	0.59	0.13	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1
Lithium	ND		3.0	0.18	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1

Client Sample ID: APW 23S_12-16'
Lab Sample ID: 140-37375-9

Date Collected: 06/19/24 17:50
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 84.4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**29**	**B**	0.89	0.032	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1
Molybdenum	**0.11**	**J**	2.4	0.097	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1
Selenium	ND		0.59	0.20	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1
Thallium	ND		2.1	0.25	mg/Kg	☼	07/26/24 07:00	08/06/24 17:50	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2700**		12	1.9	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1
Antimony	**0.54**	**J**	3.6	0.53	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1
Arsenic	**4.0**		0.59	0.26	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1
Barium	**25**		3.0	0.14	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1
Beryllium	**0.42**		0.30	0.019	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1
Cadmium	**0.68**		0.30	0.013	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1
Calcium	**340**		300	2.6	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1
Chromium	**6.3**	**B**	0.59	0.083	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1
Cobalt	**5.6**		3.0	0.063	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1
Iron	**20000**		5.9	3.4	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1
Lead	**6.4**		0.59	0.13	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1
Lithium	**5.2**		3.0	0.18	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1
Manganese	**110**		0.89	0.15	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1
Molybdenum	**1.2**	**J**	2.4	0.097	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1
Selenium	ND	L	0.59	0.56	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1
Thallium	ND		2.1	0.34	mg/Kg	☼	07/30/24 07:00	08/07/24 16:19	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**64**	**J B**	180	28	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5
Antimony	ND		53	5.0	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5
Arsenic	**2.9**	**J *-**	8.9	2.3	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5
Barium	**23**	**J**	44	2.1	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5
Beryllium	ND		4.4	0.37	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5
Cadmium	ND		4.4	0.19	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5
Calcium	**64**	**J B**	4400	13	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5
Chromium	**3.5**	**J**	8.9	1.2	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5
Cobalt	ND		44	0.71	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5
Iron	ND		89	52	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5
Lead	ND		8.9	2.0	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5
Lithium	ND		44	2.6	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5
Manganese	**3.8**	**J**	13	2.2	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5
Molybdenum	ND		36	1.5	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5
Selenium	ND		8.9	3.1	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5
Thallium	ND		31	4.1	mg/Kg	☼	08/02/24 07:00	08/07/24 18:24	5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**8100**		12	1.9	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1
Antimony	**0.55**	**J**	3.6	0.33	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1
Arsenic	**6.1**		0.59	0.18	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1
Barium	**24**		3.0	0.14	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1
Beryllium	**0.27**	**J**	0.30	0.014	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1

Client Sample ID: APW 23S_12-16'
Lab Sample ID: 140-37375-9

Date Collected: 06/19/24 17:50
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 84.4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.43		0.30	0.013	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1
Calcium	170	J	300	2.5	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1
Chromium	9.1		0.59	0.083	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1
Cobalt	3.8		3.0	0.054	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1
Iron	16000		5.9	3.4	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1
Lead	3.4		0.59	0.13	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1
Lithium	8.5		3.0	0.18	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1
Manganese	79		0.89	0.30	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1
Molybdenum	0.47	J	2.4	0.12	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1
Selenium	ND	L	0.59	0.20	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1
Thallium	ND		2.1	0.25	mg/Kg	☼	08/02/24 07:30	08/07/24 20:30	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	27000		120	19	mg/Kg	☼	08/05/24 07:00	08/10/24 12:19	10
Antimony	0.65	J	3.6	0.17	mg/Kg	☼	08/05/24 07:00	08/11/24 11:54	1
Arsenic	2.6		1.2	0.71	mg/Kg	☼	08/05/24 07:00	08/12/24 12:52	2
Barium	160		3.0	0.054	mg/Kg	☼	08/05/24 07:00	08/11/24 11:54	1
Beryllium	0.58		0.30	0.019	mg/Kg	☼	08/05/24 07:00	08/11/24 11:54	1
Cadmium	0.14	J	0.30	0.013	mg/Kg	☼	08/05/24 07:00	08/11/24 11:54	1
Calcium	680		300	6.8	mg/Kg	☼	08/05/24 07:00	08/11/24 11:54	1
Chromium	23	B	0.59	0.083	mg/Kg	☼	08/05/24 07:00	08/11/24 11:54	1
Cobalt	1.0	J	5.9	0.062	mg/Kg	☼	08/05/24 07:00	08/12/24 12:52	2
Iron	5800		5.9	4.9	mg/Kg	☼	08/05/24 07:00	08/11/24 11:54	1
Lead	1.1	J	1.2	0.26	mg/Kg	☼	08/05/24 07:00	08/12/24 12:52	2
Lithium	17		3.0	0.18	mg/Kg	☼	08/05/24 07:00	08/11/24 11:54	1
Manganese	35		0.89	0.37	mg/Kg	☼	08/05/24 07:00	08/11/24 11:54	1
Molybdenum	ND		2.4	0.097	mg/Kg	☼	08/05/24 07:00	08/11/24 11:54	1
Selenium	ND		1.2	0.40	mg/Kg	☼	08/05/24 07:00	08/12/24 12:52	2
Thallium	0.75	J	4.1	0.43	mg/Kg	☼	08/05/24 07:00	08/12/24 12:52	2

Method: SW846 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	38000		10	1.6	mg/Kg			08/14/24 18:56	1
Antimony	1.7	J	3.0	0.14	mg/Kg			08/14/24 18:56	1
Arsenic	16		0.50	0.13	mg/Kg			08/14/24 18:56	1
Barium	240		2.5	0.12	mg/Kg			08/14/24 18:56	1
Beryllium	1.3		0.25	0.0075	mg/Kg			08/14/24 18:56	1
Cadmium	1.3		0.25	0.011	mg/Kg			08/14/24 18:56	1
Calcium	2600		250	0.74	mg/Kg			08/14/24 18:56	1
Chromium	42		0.50	0.070	mg/Kg			08/14/24 18:56	1
Cobalt	12		2.5	0.023	mg/Kg			08/14/24 18:56	1
Iron	42000		5.0	4.1	mg/Kg			08/14/24 18:56	1
Lead	11		0.50	0.11	mg/Kg			08/14/24 18:56	1
Lithium	31		2.5	0.15	mg/Kg			08/14/24 18:56	1
Manganese	260		0.75	0.052	mg/Kg			08/14/24 18:56	1
Molybdenum	1.7	J	2.0	0.082	mg/Kg			08/14/24 18:56	1
Selenium	ND		0.50	0.17	mg/Kg			08/14/24 18:56	1
Thallium	0.75	J	1.8	0.18	mg/Kg			08/14/24 18:56	1

Client Sample ID: APW 23S_12-16'
Lab Sample ID: 140-37375-9

Date Collected: 06/19/24 17:50
Matrix: Solid

Date Received: 06/28/24 09:30
Percent Solids: 84.4

Method: SW846 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**50000**		120	19	mg/Kg	☼	08/05/24 08:00	08/10/24 14:05	10
Antimony	**1.2**	**J**	3.6	0.17	mg/Kg	☼	08/05/24 08:00	08/11/24 13:50	1
Arsenic	**6.8**		0.59	0.36	mg/Kg	☼	08/05/24 08:00	08/11/24 13:50	1
Barium	**330**		3.0	0.054	mg/Kg	☼	08/05/24 08:00	08/11/24 13:50	1
Beryllium	**1.2**		0.30	0.019	mg/Kg	☼	08/05/24 08:00	08/11/24 13:50	1
Cadmium	ND		0.30	0.013	mg/Kg	☼	08/05/24 08:00	08/11/24 13:50	1
Calcium	**5000**		3000	68	mg/Kg	☼	08/05/24 08:00	08/10/24 14:05	10
Chromium	**36**	**B**	0.59	0.083	mg/Kg	☼	08/05/24 08:00	08/11/24 13:50	1
Cobalt	**10**		5.9	0.062	mg/Kg	☼	08/05/24 08:00	08/12/24 14:30	2
Iron	**22000**		5.9	4.9	mg/Kg	☼	08/05/24 08:00	08/11/24 13:50	1
Lead	**12**		1.2	0.26	mg/Kg	☼	08/05/24 08:00	08/12/24 14:30	2
Lithium	**29**		3.0	0.18	mg/Kg	☼	08/05/24 08:00	08/11/24 13:50	1
Manganese	**240**		0.89	0.37	mg/Kg	☼	08/05/24 08:00	08/11/24 13:50	1
Molybdenum	**1.1**	**J**	2.4	0.097	mg/Kg	☼	08/05/24 08:00	08/11/24 13:50	1
Selenium	ND		0.59	0.20	mg/Kg	☼	08/05/24 08:00	08/11/24 13:50	1
Thallium	**0.86**	**J**	4.1	0.43	mg/Kg	☼	08/05/24 08:00	08/12/24 14:30	2

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Loss on Ignition (SPCC Loss On Ignit.)	**19**		0.31	0.31	%			07/02/24 13:42	1

Client Sample ID: APW 23_37-39'
Date Collected: 06/20/24 11:45
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-10
Matrix: Solid
Percent Solids: 85.9

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		47	7.5	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4
Antimony	ND		14	1.3	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4
Arsenic	ND		2.3	0.61	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4
Barium	**1.1**	**J**	12	0.56	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4
Beryllium	ND		1.2	0.36	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4
Cadmium	ND		1.2	0.075	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4
Calcium	**730**	**J**	1200	8.8	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4
Chromium	ND		2.3	0.33	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4
Cobalt	ND		12	0.21	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4
Iron	ND		23	14	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4
Lead	ND		2.3	0.51	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4
Lithium	ND		12	0.70	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4
Manganese	**9.0**		3.5	0.14	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4
Molybdenum	ND		9.3	0.38	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4
Selenium	ND		2.3	0.79	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4
Thallium	ND		8.2	0.98	mg/Kg	☼	07/24/24 07:00	08/06/24 13:44	4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**11**	**J**	35	5.6	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3
Antimony	ND		10	0.98	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3
Arsenic	ND		1.7	0.45	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3
Barium	**1.0**	**J**	8.7	0.42	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3
Beryllium	ND		0.87	0.056	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3
Cadmium	**0.077**	**J**	0.87	0.038	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3
Calcium	**19000**		870	7.7	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3
Chromium	ND		1.7	0.24	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3
Cobalt	ND		8.7	0.22	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3
Iron	**37**		17	10	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3
Lead	**0.51**	**J**	1.7	0.38	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3
Lithium	ND		8.7	0.52	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3
Manganese	**130**		2.6	0.98	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3
Molybdenum	ND		7.0	0.29	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3
Selenium	ND		1.7	0.59	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3
Thallium	ND		6.1	0.73	mg/Kg	☼	07/25/24 07:00	08/06/24 15:50	3

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**57**		12	2.4	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1
Antimony	ND		3.5	0.33	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1
Arsenic	**0.27**	**J**	0.58	0.15	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1
Barium	**0.99**	**J**	2.9	0.14	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1
Beryllium	**0.022**	**J**	0.29	0.017	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1
Cadmium	ND		0.29	0.013	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1
Calcium	**6.5**	**J**	290	1.7	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1
Chromium	**0.21**	**J**	0.58	0.082	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1
Cobalt	**0.052**	**J**	2.9	0.052	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1
Iron	**220**		5.8	3.4	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1
Lead	ND		0.58	0.13	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1
Lithium	ND		2.9	0.17	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1

Client Sample ID: APW 23_37-39'
Lab Sample ID: 140-37375-10
Date Collected: 06/20/24 11:45
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 85.9

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**22**	**B**	0.87	0.031	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1
Molybdenum	ND		2.3	0.095	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1
Selenium	ND		0.58	0.20	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1
Thallium	ND		2.0	0.24	mg/Kg	☼	07/26/24 07:00	08/06/24 17:55	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**310**		12	1.9	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1
Antimony	ND		3.5	0.52	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1
Arsenic	**0.47**	**J**	0.58	0.26	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1
Barium	**15**		2.9	0.14	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1
Beryllium	**0.056**	**J**	0.29	0.019	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1
Cadmium	**0.15**	**J**	0.29	0.013	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1
Calcium	**25000**		290	2.6	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1
Chromium	**1.2**	**B**	0.58	0.082	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1
Cobalt	**1.2**	**J**	2.9	0.062	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1
Iron	**3300**		5.8	3.4	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1
Lead	**2.2**		0.58	0.13	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1
Lithium	**1.1**	**J**	2.9	0.17	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1
Manganese	**87**		0.87	0.15	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1
Molybdenum	**0.25**	**J**	2.3	0.095	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1
Selenium	ND		0.58	0.55	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1
Thallium	ND		2.0	0.34	mg/Kg	☼	07/30/24 07:00	08/07/24 16:24	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**110**	**J B**	170	27	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5
Antimony	ND		52	4.9	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5
Arsenic	ND	*-	8.7	2.2	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5
Barium	**2.9**	**J**	44	2.1	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5
Beryllium	ND		4.4	0.37	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5
Cadmium	ND		4.4	0.19	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5
Calcium	**7100**	**B**	4400	13	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5
Chromium	**1.8**	**J**	8.7	1.2	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5
Cobalt	ND		44	0.70	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5
Iron	ND		87	51	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5
Lead	ND		8.7	1.9	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5
Lithium	ND		44	2.6	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5
Manganese	**2.8**	**J**	13	2.2	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5
Molybdenum	ND		35	1.5	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5
Selenium	ND		8.7	3.0	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5
Thallium	ND		31	4.1	mg/Kg	☼	08/02/24 07:00	08/07/24 18:29	5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2600**		12	1.9	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1
Antimony	**0.35**	**J**	3.5	0.33	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1
Arsenic	**3.5**		0.58	0.17	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1
Barium	**8.7**		2.9	0.14	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1
Beryllium	**0.10**	**J**	0.29	0.014	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1

Client Sample ID: APW 23_37-39'
Date Collected: 06/20/24 11:45
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-10
Matrix: Solid
Percent Solids: 85.9

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.25	J	0.29	0.013	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1
Calcium	4500		290	2.4	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1
Chromium	4.7		0.58	0.082	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1
Cobalt	3.3		2.9	0.054	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1
Iron	9500		5.8	3.4	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1
Lead	2.8		0.58	0.13	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1
Lithium	5.6		2.9	0.17	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1
Manganese	74		0.87	0.29	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1
Molybdenum	0.48	J	2.3	0.12	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1
Selenium	ND	L	0.58	0.20	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1
Thallium	ND		2.0	0.24	mg/Kg	☼	08/02/24 07:30	08/07/24 20:35	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	28000		120	19	mg/Kg	☼	08/05/24 07:00	08/10/24 12:24	10
Antimony	0.18	J	3.5	0.16	mg/Kg	☼	08/05/24 07:00	08/11/24 11:59	1
Arsenic	2.2		1.2	0.70	mg/Kg	☼	08/05/24 07:00	08/12/24 12:57	2
Barium	240		2.9	0.054	mg/Kg	☼	08/05/24 07:00	08/11/24 11:59	1
Beryllium	0.60		0.29	0.019	mg/Kg	☼	08/05/24 07:00	08/11/24 11:59	1
Cadmium	0.18	J	0.29	0.013	mg/Kg	☼	08/05/24 07:00	08/11/24 11:59	1
Calcium	3200		290	6.6	mg/Kg	☼	08/05/24 07:00	08/11/24 11:59	1
Chromium	13	B	0.58	0.082	mg/Kg	☼	08/05/24 07:00	08/11/24 11:59	1
Cobalt	0.83	J	5.8	0.061	mg/Kg	☼	08/05/24 07:00	08/12/24 12:57	2
Iron	3700		5.8	4.8	mg/Kg	☼	08/05/24 07:00	08/11/24 11:59	1
Lead	2.8		1.2	0.26	mg/Kg	☼	08/05/24 07:00	08/12/24 12:57	2
Lithium	7.6		2.9	0.17	mg/Kg	☼	08/05/24 07:00	08/11/24 11:59	1
Manganese	52		0.87	0.36	mg/Kg	☼	08/05/24 07:00	08/11/24 11:59	1
Molybdenum	ND		2.3	0.095	mg/Kg	☼	08/05/24 07:00	08/11/24 11:59	1
Selenium	ND		1.2	0.40	mg/Kg	☼	08/05/24 07:00	08/12/24 12:57	2
Thallium	0.73	J	4.1	0.42	mg/Kg	☼	08/05/24 07:00	08/12/24 12:57	2

Method: SW846 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	31000		10	1.6	mg/Kg			08/14/24 18:56	1
Antimony	0.53	J	3.0	0.14	mg/Kg			08/14/24 18:56	1
Arsenic	6.4		0.50	0.13	mg/Kg			08/14/24 18:56	1
Barium	270		2.5	0.12	mg/Kg			08/14/24 18:56	1
Beryllium	0.78		0.25	0.0075	mg/Kg			08/14/24 18:56	1
Cadmium	0.66		0.25	0.011	mg/Kg			08/14/24 18:56	1
Calcium	59000		250	0.74	mg/Kg			08/14/24 18:56	1
Chromium	21		0.50	0.070	mg/Kg			08/14/24 18:56	1
Cobalt	5.4		2.5	0.023	mg/Kg			08/14/24 18:56	1
Iron	17000		5.0	4.1	mg/Kg			08/14/24 18:56	1
Lead	8.2		0.50	0.11	mg/Kg			08/14/24 18:56	1
Lithium	14		2.5	0.15	mg/Kg			08/14/24 18:56	1
Manganese	380		0.75	0.052	mg/Kg			08/14/24 18:56	1
Molybdenum	0.73	J	2.0	0.082	mg/Kg			08/14/24 18:56	1
Selenium	ND		0.50	0.17	mg/Kg			08/14/24 18:56	1
Thallium	0.73	J	1.8	0.18	mg/Kg			08/14/24 18:56	1

Client Sample ID: APW 23_37-39'
Lab Sample ID: 140-37375-10

Date Collected: 06/20/24 11:45
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 85.9

Method: SW846 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	22000		120	19	mg/Kg	☼	08/05/24 08:00	08/10/24 14:10	10
Antimony	1.0	J	3.5	0.16	mg/Kg	☼	08/05/24 08:00	08/11/24 13:56	1
Arsenic	8.6		1.2	0.70	mg/Kg	☼	08/05/24 08:00	08/12/24 14:35	2
Barium	250		2.9	0.054	mg/Kg	☼	08/05/24 08:00	08/11/24 13:56	1
Beryllium	0.81		0.29	0.019	mg/Kg	☼	08/05/24 08:00	08/11/24 13:56	1
Cadmium	0.22	J	0.29	0.013	mg/Kg	☼	08/05/24 08:00	08/11/24 13:56	1
Calcium	45000		2900	66	mg/Kg	☼	08/05/24 08:00	08/10/24 14:10	10
Chromium	24	B	0.58	0.082	mg/Kg	☼	08/05/24 08:00	08/11/24 13:56	1
Cobalt	6.5		5.8	0.061	mg/Kg	☼	08/05/24 08:00	08/12/24 14:35	2
Iron	18000		5.8	4.8	mg/Kg	☼	08/05/24 08:00	08/11/24 13:56	1
Lead	8.5		1.2	0.26	mg/Kg	☼	08/05/24 08:00	08/12/24 14:35	2
Lithium	17		2.9	0.17	mg/Kg	☼	08/05/24 08:00	08/11/24 13:56	1
Manganese	370		0.87	0.36	mg/Kg	☼	08/05/24 08:00	08/11/24 13:56	1
Molybdenum	1.1	J	2.3	0.095	mg/Kg	☼	08/05/24 08:00	08/11/24 13:56	1
Selenium	ND		1.2	0.40	mg/Kg	☼	08/05/24 08:00	08/12/24 14:35	2
Thallium	1.1	J	4.1	0.42	mg/Kg	☼	08/05/24 08:00	08/12/24 14:35	2

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Loss on Ignition (SPCC Loss On Ignit.)	23		0.26	0.26	%			07/02/24 13:42	1

Default Detection Limits

Client: Ramboll Americas Engineering Solutions
Job ID: 140-37375-1
Project/Site: Newton Nature & Extent SEP

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Prep: 3010A

SEP: Exchangeable

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.077	mg/Kg
Cadmium	0.25	0.016	mg/Kg
Calcium	250	1.9	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.031	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Prep: 3010A

SEP: Carbonate

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Cadmium	0.25	0.011	mg/Kg
Calcium	250	2.2	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.063	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.28	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Prep: 3010A

SEP: Non-Crystalline

Analyte	RL	MDL	Units
Aluminum	10	2.1	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.015	mg/Kg
Cadmium	0.25	0.011	mg/Kg
Calcium	250	1.5	mg/Kg
Chromium	0.50	0.070	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 3 (Continued)

Prep: 3010A

SEP: Non-Crystalline

Analyte	RL	MDL	Units
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.027	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.45	mg/Kg
Arsenic	0.50	0.22	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Cadmium	0.25	0.011	mg/Kg
Calcium	250	2.2	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.053	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.13	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.47	mg/Kg
Thallium	1.8	0.29	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Prep: 3010A

SEP: Organic-Bound

Analyte	RL	MDL	Units
Aluminum	30	4.7	mg/Kg
Antimony	9.0	0.84	mg/Kg
Arsenic	1.5	0.38	mg/Kg
Barium	7.5	0.36	mg/Kg
Beryllium	0.75	0.063	mg/Kg
Cadmium	0.75	0.032	mg/Kg
Calcium	750	2.2	mg/Kg
Chromium	1.5	0.21	mg/Kg
Cobalt	7.5	0.12	mg/Kg
Iron	15	8.8	mg/Kg
Lead	1.5	0.33	mg/Kg
Lithium	7.5	0.44	mg/Kg
Manganese	2.3	0.37	mg/Kg
Molybdenum	6.0	0.25	mg/Kg
Selenium	1.5	0.52	mg/Kg
Thallium	5.3	0.70	mg/Kg

Default Detection Limits

Client: Ramboll Americas Engineering Solutions
Job ID: 140-37375-1
Project/Site: Newton Nature & Extent SEP

Method: 6010B SEP - SEP Metals (ICP) - Step 6

SEP: Acid/Sulfide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.15	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.012	mg/Kg
Cadmium	0.25	0.011	mg/Kg
Calcium	250	2.1	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.046	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.25	mg/Kg
Molybdenum	2.0	0.099	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Prep: Residual

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.14	mg/Kg
Arsenic	0.50	0.30	mg/Kg
Barium	2.5	0.046	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Cadmium	0.25	0.011	mg/Kg
Calcium	250	5.7	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.026	mg/Kg
Iron	5.0	4.1	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.31	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.18	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.14	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cadmium	0.25	0.011	mg/Kg
Calcium	250	0.74	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.023	mg/Kg
Iron	5.0	4.1	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7 (Continued)

Analyte	RL	MDL	Units
Manganese	0.75	0.052	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.18	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Prep: Total

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.14	mg/Kg
Arsenic	0.50	0.30	mg/Kg
Barium	2.5	0.046	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Cadmium	0.25	0.011	mg/Kg
Calcium	250	5.7	mg/Kg
Chromium	0.50	0.070	mg/Kg
Cobalt	2.5	0.026	mg/Kg
Iron	5.0	4.1	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.31	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.18	mg/Kg

General Chemistry

Analyte	RL	RL	Units
Loss on Ignition	0.50	0.50	%

Method: 6010B - SEP Metals (ICP) - Total

Lab Sample ID: MB 140-89085/18-A
Matrix: Solid
Analysis Batch: 89783

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 89085

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		08/05/24 08:00	08/10/24 11:05	1
Antimony	ND		3.0	0.14	mg/Kg		08/05/24 08:00	08/10/24 11:05	1
Arsenic	ND		0.50	0.30	mg/Kg		08/05/24 08:00	08/10/24 11:05	1
Barium	ND		2.5	0.046	mg/Kg		08/05/24 08:00	08/10/24 11:05	1
Beryllium	ND		0.25	0.016	mg/Kg		08/05/24 08:00	08/10/24 11:05	1
Cadmium	ND		0.25	0.011	mg/Kg		08/05/24 08:00	08/10/24 11:05	1
Calcium	ND		250	5.7	mg/Kg		08/05/24 08:00	08/10/24 11:05	1
Chromium	0.0740	J	0.50	0.070	mg/Kg		08/05/24 08:00	08/10/24 11:05	1
Cobalt	ND		2.5	0.026	mg/Kg		08/05/24 08:00	08/10/24 11:05	1
Iron	ND		5.0	4.1	mg/Kg		08/05/24 08:00	08/10/24 11:05	1
Lead	ND		0.50	0.11	mg/Kg		08/05/24 08:00	08/10/24 11:05	1
Lithium	ND		2.5	0.15	mg/Kg		08/05/24 08:00	08/10/24 11:05	1
Manganese	ND		0.75	0.31	mg/Kg		08/05/24 08:00	08/10/24 11:05	1
Molybdenum	ND		2.0	0.082	mg/Kg		08/05/24 08:00	08/10/24 11:05	1
Selenium	ND		0.50	0.17	mg/Kg		08/05/24 08:00	08/10/24 11:05	1
Thallium	ND		1.8	0.18	mg/Kg		08/05/24 08:00	08/10/24 11:05	1

Lab Sample ID: MB 140-89085/18-A
Matrix: Solid
Analysis Batch: 89793

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 89085

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		08/05/24 08:00	08/11/24 10:40	1
Antimony	ND		3.0	0.14	mg/Kg		08/05/24 08:00	08/11/24 10:40	1
Arsenic	ND		0.50	0.30	mg/Kg		08/05/24 08:00	08/11/24 10:40	1
Barium	ND		2.5	0.046	mg/Kg		08/05/24 08:00	08/11/24 10:40	1
Beryllium	ND		0.25	0.016	mg/Kg		08/05/24 08:00	08/11/24 10:40	1
Cadmium	ND		0.25	0.011	mg/Kg		08/05/24 08:00	08/11/24 10:40	1
Calcium	ND		250	5.7	mg/Kg		08/05/24 08:00	08/11/24 10:40	1
Chromium	0.0905	J	0.50	0.070	mg/Kg		08/05/24 08:00	08/11/24 10:40	1
Cobalt	ND		2.5	0.026	mg/Kg		08/05/24 08:00	08/11/24 10:40	1
Iron	ND		5.0	4.1	mg/Kg		08/05/24 08:00	08/11/24 10:40	1
Lead	ND		0.50	0.11	mg/Kg		08/05/24 08:00	08/11/24 10:40	1
Lithium	ND		2.5	0.15	mg/Kg		08/05/24 08:00	08/11/24 10:40	1
Manganese	ND		0.75	0.31	mg/Kg		08/05/24 08:00	08/11/24 10:40	1
Molybdenum	ND		2.0	0.082	mg/Kg		08/05/24 08:00	08/11/24 10:40	1
Selenium	ND		0.50	0.17	mg/Kg		08/05/24 08:00	08/11/24 10:40	1
Thallium	ND		1.8	0.18	mg/Kg		08/05/24 08:00	08/11/24 10:40	1

Lab Sample ID: LCS 140-89085/19-A
Matrix: Solid
Analysis Batch: 89783

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 89085

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	98.9		mg/Kg		99	80 - 120
Antimony	25.0	25.1		mg/Kg		100	80 - 125
Arsenic	5.00	5.09		mg/Kg		102	80 - 120
Barium	5.00	5.06		mg/Kg		101	80 - 120
Beryllium	2.50	2.56		mg/Kg		103	80 - 120

Method: 6010B - SEP Metals (ICP) - Total (Continued)

Lab Sample ID: LCS 140-89085/19-A
Matrix: Solid
Analysis Batch: 89783

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 89085

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cadmium	2.50	2.60		mg/Kg		104	80 - 125
Calcium	2500	2570		mg/Kg		103	80 - 120
Chromium	10.0	10.6		mg/Kg		106	80 - 120
Cobalt	5.00	5.24		mg/Kg		105	80 - 125
Iron	50.0	52.7		mg/Kg		105	80 - 120
Lead	5.00	5.06		mg/Kg		101	80 - 120
Lithium	5.00	5.33		mg/Kg		107	80 - 120
Manganese	5.00	5.37		mg/Kg		107	80 - 120
Molybdenum	25.0	26.1		mg/Kg		104	80 - 125
Selenium	7.50	7.31		mg/Kg		97	80 - 120
Thallium	20.0	20.7		mg/Kg		104	80 - 120

Lab Sample ID: LCS 140-89085/19-A
Matrix: Solid
Analysis Batch: 89793

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 89085

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	98.4		mg/Kg		98	80 - 120
Antimony	25.0	24.7		mg/Kg		99	80 - 125
Arsenic	5.00	5.14		mg/Kg		103	80 - 120
Barium	5.00	4.96		mg/Kg		99	80 - 120
Beryllium	2.50	2.53		mg/Kg		101	80 - 120
Cadmium	2.50	2.54		mg/Kg		102	80 - 125
Calcium	2500	2520		mg/Kg		101	80 - 120
Chromium	10.0	10.6		mg/Kg		106	80 - 120
Cobalt	5.00	5.22		mg/Kg		104	80 - 125
Iron	50.0	52.0		mg/Kg		104	80 - 120
Lead	5.00	5.02		mg/Kg		100	80 - 120
Lithium	5.00	5.07		mg/Kg		101	80 - 120
Manganese	5.00	5.27		mg/Kg		105	80 - 120
Molybdenum	25.0	25.7		mg/Kg		103	80 - 125
Selenium	7.50	7.16		mg/Kg		95	80 - 120
Thallium	20.0	20.7		mg/Kg		103	80 - 120

Lab Sample ID: LCSD 140-89085/20-A
Matrix: Solid
Analysis Batch: 89783

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 89085

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	100	100		mg/Kg		100	80 - 120	1	30
Antimony	25.0	25.7		mg/Kg		103	80 - 125	3	30
Arsenic	5.00	5.16		mg/Kg		103	80 - 120	1	30
Barium	5.00	5.14		mg/Kg		103	80 - 120	2	30
Beryllium	2.50	2.61		mg/Kg		104	80 - 120	2	30
Cadmium	2.50	2.64		mg/Kg		105	80 - 125	1	30
Calcium	2500	2620		mg/Kg		105	80 - 120	2	30
Chromium	10.0	10.8		mg/Kg		108	80 - 120	2	30
Cobalt	5.00	5.33		mg/Kg		107	80 - 125	2	30
Iron	50.0	53.7		mg/Kg		107	80 - 120	2	30

Method: 6010B - SEP Metals (ICP) - Total (Continued)

Lab Sample ID: LCSD 140-89085/20-A
Matrix: Solid
Analysis Batch: 89783

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 89085

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead			5.00	5.11		mg/Kg		102	80 - 120	1	30
Lithium			5.00	5.42		mg/Kg		108	80 - 120	2	30
Manganese			5.00	5.46		mg/Kg		109	80 - 120	2	30
Molybdenum			25.0	26.7		mg/Kg		107	80 - 125	2	30
Selenium			7.50	7.37		mg/Kg		98	80 - 120	1	30
Thallium			20.0	21.1		mg/Kg		106	80 - 120	2	30

Lab Sample ID: LCSD 140-89085/20-A
Matrix: Solid
Analysis Batch: 89793

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 89085

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum			100	99.6		mg/Kg		100	80 - 120	1	30
Antimony			25.0	25.4		mg/Kg		101	80 - 125	2	30
Arsenic			5.00	5.22		mg/Kg		104	80 - 120	2	30
Barium			5.00	5.10		mg/Kg		102	80 - 120	3	30
Beryllium			2.50	2.57		mg/Kg		103	80 - 120	2	30
Cadmium			2.50	2.60		mg/Kg		104	80 - 125	2	30
Calcium			2500	2580		mg/Kg		103	80 - 120	2	30
Chromium			10.0	10.8		mg/Kg		108	80 - 120	2	30
Cobalt			5.00	5.32		mg/Kg		106	80 - 125	2	30
Iron			50.0	52.8		mg/Kg		106	80 - 120	2	30
Lead			5.00	5.10		mg/Kg		102	80 - 120	2	30
Lithium			5.00	5.21		mg/Kg		104	80 - 120	3	30
Manganese			5.00	5.34		mg/Kg		107	80 - 120	1	30
Molybdenum			25.0	26.3		mg/Kg		105	80 - 125	2	30
Selenium			7.50	7.39		mg/Kg		98	80 - 120	3	30
Thallium			20.0	21.2		mg/Kg		106	80 - 120	2	30

Lab Sample ID: 140-37375-2 DU
Matrix: Solid
Analysis Batch: 89783

Client Sample ID: APW 19S_16-18'
Prep Type: Total/NA
Prep Batch: 89085

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	9100			7970		mg/Kg	☼			14	30
Calcium	51000			56800		mg/Kg	☼			11	30

Lab Sample ID: 140-37375-2 DU
Matrix: Solid
Analysis Batch: 89793

Client Sample ID: APW 19S_16-18'
Prep Type: Total/NA
Prep Batch: 89085

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Antimony	1.2	J		1.14	J	mg/Kg	☼			3	30
Arsenic	5.2			5.77		mg/Kg	☼			11	30
Barium	300			288		mg/Kg	☼			4	30
Beryllium	0.78			0.814		mg/Kg	☼			4	30
Cadmium	0.14	J		0.154	J	mg/Kg	☼			8	30
Chromium	29	B		29.2		mg/Kg	☼			1	30
Cobalt	6.2			6.58		mg/Kg	☼			5	30

Method: 6010B - SEP Metals (ICP) - Total (Continued)

Lab Sample ID: 140-37375-2 DU
Matrix: Solid
Analysis Batch: 89793

Client Sample ID: APW 19S_16-18'
Prep Type: Total/NA
Prep Batch: 89085

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Iron	15000			17100		mg/Kg	☼			12	30
Lead	9.3			10.0		mg/Kg	☼			7	30
Lithium	19			19.9		mg/Kg	☼			7	30
Manganese	320			332		mg/Kg	☼			4	30
Molybdenum	1.1	J		1.12	J	mg/Kg	☼			6	30
Selenium	ND	L		ND	L	mg/Kg	☼			NC	30
Thallium	1.1	J		0.953	J	mg/Kg	☼			17	30

Method: 6010B SEP - SEP Metals (ICP)

Lab Sample ID: MB 140-89089/18-B ^4
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: Method Blank
Prep Type: Step 1
Prep Batch: 89126

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		07/24/24 07:00	08/06/24 12:25	4
Antimony	ND		12	1.1	mg/Kg		07/24/24 07:00	08/06/24 12:25	4
Arsenic	ND		2.0	0.52	mg/Kg		07/24/24 07:00	08/06/24 12:25	4
Barium	ND		10	0.48	mg/Kg		07/24/24 07:00	08/06/24 12:25	4
Beryllium	ND		1.0	0.31	mg/Kg		07/24/24 07:00	08/06/24 12:25	4
Cadmium	ND		1.0	0.064	mg/Kg		07/24/24 07:00	08/06/24 12:25	4
Calcium	ND		1000	7.6	mg/Kg		07/24/24 07:00	08/06/24 12:25	4
Chromium	ND		2.0	0.28	mg/Kg		07/24/24 07:00	08/06/24 12:25	4
Cobalt	ND		10	0.18	mg/Kg		07/24/24 07:00	08/06/24 12:25	4
Iron	ND		20	12	mg/Kg		07/24/24 07:00	08/06/24 12:25	4
Lead	ND		2.0	0.44	mg/Kg		07/24/24 07:00	08/06/24 12:25	4
Lithium	ND		10	0.60	mg/Kg		07/24/24 07:00	08/06/24 12:25	4
Manganese	ND		3.0	0.12	mg/Kg		07/24/24 07:00	08/06/24 12:25	4
Molybdenum	ND		8.0	0.33	mg/Kg		07/24/24 07:00	08/06/24 12:25	4
Selenium	ND		2.0	0.68	mg/Kg		07/24/24 07:00	08/06/24 12:25	4
Thallium	ND		7.0	0.84	mg/Kg		07/24/24 07:00	08/06/24 12:25	4

Lab Sample ID: LCS 140-89089/19-B ^5
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 89126

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Aluminum			100	92.0		mg/Kg		92	80 - 120		
Antimony			25.0	22.8		mg/Kg		91	80 - 120		
Arsenic			5.00	4.80		mg/Kg		96	80 - 120		
Barium			5.00	4.47	J	mg/Kg		89	80 - 120		
Beryllium			2.50	2.40		mg/Kg		96	80 - 120		
Cadmium			2.50	2.19		mg/Kg		88	80 - 120		
Calcium			2500	2210		mg/Kg		88	80 - 120		
Chromium			10.0	9.32		mg/Kg		93	80 - 120		
Cobalt			5.00	4.72	J	mg/Kg		94	80 - 120		
Iron			50.0	47.1		mg/Kg		94	80 - 120		
Lead			5.00	4.50		mg/Kg		90	80 - 120		
Lithium			5.00	4.71	J	mg/Kg		94	80 - 120		

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-89089/19-B ^5
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 89126

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Manganese			5.00	4.78		mg/Kg		96	80 - 120		
Molybdenum			25.0	22.9		mg/Kg		91	80 - 120		
Selenium			7.50	6.63		mg/Kg		88	80 - 120		
Thallium			20.0	18.4		mg/Kg		92	80 - 120		

Lab Sample ID: LCSD 140-89089/20-B ^5
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 1
Prep Batch: 89126

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum			100	94.1		mg/Kg		94	80 - 120	2	30
Antimony			25.0	22.9		mg/Kg		92	80 - 120	0	30
Arsenic			5.00	4.72		mg/Kg		94	80 - 120	2	30
Barium			5.00	4.49	J	mg/Kg		90	80 - 120	1	30
Beryllium			2.50	2.41		mg/Kg		96	80 - 120	0	30
Cadmium			2.50	2.20		mg/Kg		88	80 - 120	0	30
Calcium			2500	2220		mg/Kg		89	80 - 120	0	30
Chromium			10.0	9.45		mg/Kg		94	80 - 120	1	30
Cobalt			5.00	4.69	J	mg/Kg		94	80 - 120	1	30
Iron			50.0	47.1		mg/Kg		94	80 - 120	0	30
Lead			5.00	4.61		mg/Kg		92	80 - 120	2	30
Lithium			5.00	4.91	J	mg/Kg		98	80 - 120	4	30
Manganese			5.00	4.84		mg/Kg		97	80 - 120	1	30
Molybdenum			25.0	22.8		mg/Kg		91	80 - 120	0	30
Selenium			7.50	6.35		mg/Kg		85	80 - 120	4	30
Thallium			20.0	18.6		mg/Kg		93	80 - 120	1	30

Lab Sample ID: 140-37375-2 DU
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: APW 19S_16-18'
Prep Type: Step 1
Prep Batch: 89126

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	ND			ND		mg/Kg	☼			NC	30
Antimony	ND			ND		mg/Kg	☼			NC	30
Arsenic	ND			ND		mg/Kg	☼			NC	30
Barium	ND			ND		mg/Kg	☼			NC	30
Beryllium	ND			ND		mg/Kg	☼			NC	30
Cadmium	ND			ND		mg/Kg	☼			NC	30
Calcium	1000	J		1210		mg/Kg	☼			19	30
Chromium	ND			ND		mg/Kg	☼			NC	30
Cobalt	ND			ND		mg/Kg	☼			NC	30
Iron	ND			ND		mg/Kg	☼			NC	30
Lead	ND			ND		mg/Kg	☼			NC	30
Lithium	ND			ND		mg/Kg	☼			NC	30
Manganese	6.8			7.91		mg/Kg	☼			14	30
Molybdenum	ND			ND		mg/Kg	☼			NC	30
Selenium	ND			ND		mg/Kg	☼			NC	30
Thallium	ND			ND		mg/Kg	☼			NC	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-89137/18-B ^3
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: Method Blank
Prep Type: Step 2
Prep Batch: 89175

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		30	4.8	mg/Kg		07/25/24 07:00	08/06/24 14:28	3
Antimony	ND		9.0	0.84	mg/Kg		07/25/24 07:00	08/06/24 14:28	3
Arsenic	ND		1.5	0.39	mg/Kg		07/25/24 07:00	08/06/24 14:28	3
Barium	ND		7.5	0.36	mg/Kg		07/25/24 07:00	08/06/24 14:28	3
Beryllium	ND		0.75	0.048	mg/Kg		07/25/24 07:00	08/06/24 14:28	3
Cadmium	ND		0.75	0.033	mg/Kg		07/25/24 07:00	08/06/24 14:28	3
Calcium	ND		750	6.6	mg/Kg		07/25/24 07:00	08/06/24 14:28	3
Chromium	ND		1.5	0.21	mg/Kg		07/25/24 07:00	08/06/24 14:28	3
Cobalt	ND		7.5	0.19	mg/Kg		07/25/24 07:00	08/06/24 14:28	3
Iron	ND		15	8.7	mg/Kg		07/25/24 07:00	08/06/24 14:28	3
Lead	ND		1.5	0.33	mg/Kg		07/25/24 07:00	08/06/24 14:28	3
Lithium	ND		7.5	0.45	mg/Kg		07/25/24 07:00	08/06/24 14:28	3
Manganese	ND		2.3	0.84	mg/Kg		07/25/24 07:00	08/06/24 14:28	3
Molybdenum	ND		6.0	0.25	mg/Kg		07/25/24 07:00	08/06/24 14:28	3
Selenium	ND		1.5	0.51	mg/Kg		07/25/24 07:00	08/06/24 14:28	3
Thallium	ND		5.3	0.63	mg/Kg		07/25/24 07:00	08/06/24 14:28	3

Lab Sample ID: LCS 140-89137/19-B ^5
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: Lab Control Sample
Prep Type: Step 2
Prep Batch: 89175

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	ND		mg/Kg		0.5	
Antimony	25.0	19.6		mg/Kg		78	70 - 120
Arsenic	5.00	4.01		mg/Kg		80	60 - 120
Barium	5.00	2.03	J	mg/Kg		41	30 - 60
Beryllium	2.50	1.35		mg/Kg		54	40 - 70
Cadmium	2.50	2.26		mg/Kg		90	80 - 120
Calcium	2500	663	J	mg/Kg		27	10 - 40
Chromium	10.0	8.24		mg/Kg		82	60 - 120
Cobalt	5.00	4.69	J	mg/Kg		94	80 - 120
Iron	50.0	ND		mg/Kg		4	
Lead	5.00	4.01		mg/Kg		80	70 - 120
Lithium	5.00	4.57	J	mg/Kg		91	80 - 120
Manganese	5.00	4.82		mg/Kg		96	80 - 120
Molybdenum	25.0	19.7		mg/Kg		79	70 - 120
Selenium	7.50	6.20		mg/Kg		83	70 - 120
Thallium	20.0	18.3		mg/Kg		92	80 - 120

Lab Sample ID: LCSD 140-89137/20-B ^5
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 2
Prep Batch: 89175

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	100	ND		mg/Kg		2		102	
Antimony	25.0	20.0		mg/Kg		80	70 - 120	2	30
Arsenic	5.00	3.82		mg/Kg		76	60 - 120	5	30
Barium	5.00	2.11	J	mg/Kg		42	30 - 60	4	30
Beryllium	2.50	1.37		mg/Kg		55	40 - 70	1	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-89137/20-B ^5
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 2
Prep Batch: 89175

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Cadmium			2.50	2.30		mg/Kg		92	80 - 120	2	30
Calcium			2500	673	J	mg/Kg		27	10 - 40	2	30
Chromium			10.0	8.32		mg/Kg		83	60 - 120	1	30
Cobalt			5.00	4.81	J	mg/Kg		96	80 - 120	3	30
Iron			50.0	ND		mg/Kg		3		14	
Lead			5.00	4.29		mg/Kg		86	70 - 120	7	30
Lithium			5.00	4.97	J	mg/Kg		99	80 - 120	8	30
Manganese			5.00	4.92		mg/Kg		98	80 - 120	2	30
Molybdenum			25.0	20.1		mg/Kg		81	70 - 120	2	30
Selenium			7.50	6.65		mg/Kg		89	70 - 120	7	30
Thallium			20.0	19.2		mg/Kg		96	80 - 120	4	30

Lab Sample ID: 140-37375-2 DU
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: APW 19S_16-18'
Prep Type: Step 2
Prep Batch: 89175

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	23	J		24.1	J	mg/Kg	☼			6	
Antimony	ND			ND		mg/Kg	☼			NC	30
Arsenic	ND			ND		mg/Kg	☼			NC	30
Barium	3.9	J		4.02	J	mg/Kg	☼			3	30
Beryllium	ND			ND		mg/Kg	☼			NC	30
Cadmium	0.063	J		0.0505	J	mg/Kg	☼			22	30
Calcium	19000			19500		mg/Kg	☼			3	30
Chromium	0.39	J		0.458	J	mg/Kg	☼			16	30
Cobalt	0.88	J		0.655	J	mg/Kg	☼			29	30
Iron	46			45.1		mg/Kg	☼			2	
Lead	0.90	J		0.536	J F5	mg/Kg	☼			51	30
Lithium	ND			0.583	J	mg/Kg	☼			NC	30
Manganese	120			129		mg/Kg	☼			4	30
Molybdenum	ND			ND		mg/Kg	☼			NC	30
Selenium	ND			ND		mg/Kg	☼			NC	30
Thallium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: MB 140-89192/18-B
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: Method Blank
Prep Type: Step 3
Prep Batch: 89225

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	2.1	mg/Kg		07/26/24 07:00	08/06/24 16:35	1
Antimony	ND		3.0	0.28	mg/Kg		07/26/24 07:00	08/06/24 16:35	1
Arsenic	ND		0.50	0.13	mg/Kg		07/26/24 07:00	08/06/24 16:35	1
Barium	ND		2.5	0.12	mg/Kg		07/26/24 07:00	08/06/24 16:35	1
Beryllium	ND		0.25	0.015	mg/Kg		07/26/24 07:00	08/06/24 16:35	1
Cadmium	ND		0.25	0.011	mg/Kg		07/26/24 07:00	08/06/24 16:35	1
Calcium	ND		250	1.5	mg/Kg		07/26/24 07:00	08/06/24 16:35	1
Chromium	ND		0.50	0.070	mg/Kg		07/26/24 07:00	08/06/24 16:35	1
Cobalt	ND		2.5	0.045	mg/Kg		07/26/24 07:00	08/06/24 16:35	1
Iron	ND		5.0	2.9	mg/Kg		07/26/24 07:00	08/06/24 16:35	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-89192/18-B
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: Method Blank
Prep Type: Step 3
Prep Batch: 89225

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.50	0.11	mg/Kg		07/26/24 07:00	08/06/24 16:35	1
Lithium	ND		2.5	0.15	mg/Kg		07/26/24 07:00	08/06/24 16:35	1
Manganese	0.0885	J	0.75	0.027	mg/Kg		07/26/24 07:00	08/06/24 16:35	1
Molybdenum	ND		2.0	0.082	mg/Kg		07/26/24 07:00	08/06/24 16:35	1
Selenium	ND		0.50	0.17	mg/Kg		07/26/24 07:00	08/06/24 16:35	1
Thallium	ND		1.8	0.21	mg/Kg		07/26/24 07:00	08/06/24 16:35	1

Lab Sample ID: LCS 140-89192/19-B
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: Lab Control Sample
Prep Type: Step 3
Prep Batch: 89225

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	93.0		mg/Kg		93	80 - 120
Antimony	25.0	23.1		mg/Kg		92	80 - 120
Arsenic	5.00	4.53		mg/Kg		91	80 - 120
Barium	5.00	4.72		mg/Kg		94	70 - 120
Beryllium	2.50	2.53		mg/Kg		101	80 - 120
Cadmium	2.50	1.60		mg/Kg		64	10 - 120
Calcium	2500	44.6	J	mg/Kg		2	
Chromium	10.0	9.82		mg/Kg		98	80 - 120
Cobalt	5.00	5.02		mg/Kg		100	80 - 120
Iron	50.0	49.8		mg/Kg		100	80 - 120
Lead	5.00	ND		mg/Kg		0.9	
Lithium	5.00	4.67		mg/Kg		93	80 - 120
Manganese	5.00	5.07		mg/Kg		101	80 - 120
Molybdenum	25.0	23.5		mg/Kg		94	80 - 120
Selenium	7.50	7.05		mg/Kg		94	80 - 120
Thallium	20.0	19.5		mg/Kg		98	80 - 120

Lab Sample ID: LCSD 140-89192/20-B
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 3
Prep Batch: 89225

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	100	93.9		mg/Kg		94	80 - 120	1	30
Antimony	25.0	23.1		mg/Kg		92	80 - 120	0	30
Arsenic	5.00	4.62		mg/Kg		92	80 - 120	2	30
Barium	5.00	4.74		mg/Kg		95	70 - 120	0	30
Beryllium	2.50	2.52		mg/Kg		101	80 - 120	0	30
Cadmium	2.50	1.60		mg/Kg		64	10 - 120	0	30
Calcium	2500	45.1	J	mg/Kg		2		1	
Chromium	10.0	9.82		mg/Kg		98	80 - 120	0	30
Cobalt	5.00	5.05		mg/Kg		101	80 - 120	0	30
Iron	50.0	49.9		mg/Kg		100	80 - 120	0	30
Lead	5.00	0.110	J	mg/Kg		2		82	
Lithium	5.00	4.73		mg/Kg		95	80 - 120	1	30
Manganese	5.00	5.05		mg/Kg		101	80 - 120	0	30
Molybdenum	25.0	23.6		mg/Kg		94	80 - 120	1	30
Selenium	7.50	7.14		mg/Kg		95	80 - 120	1	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-89192/20-B
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 3
Prep Batch: 89225

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Thallium			20.0	19.7		mg/Kg		98	80 - 120	1	30

Lab Sample ID: 140-37375-2 DU
Matrix: Solid
Analysis Batch: 89629

Client Sample ID: APW 19S_16-18'
Prep Type: Step 3
Prep Batch: 89225

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	120			120		mg/Kg	☼			3	30
Antimony	ND			ND		mg/Kg	☼			NC	30
Arsenic	0.27	J		0.291	J	mg/Kg	☼			6	30
Barium	1.4	J		1.26	J	mg/Kg	☼			8	30
Beryllium	ND			ND		mg/Kg	☼			NC	30
Cadmium	ND			ND		mg/Kg	☼			NC	30
Calcium	8.6	J		9.86	J	mg/Kg	☼			14	
Chromium	0.93			0.974		mg/Kg	☼			5	30
Cobalt	0.96	J		0.910	J	mg/Kg	☼			6	30
Iron	340			347		mg/Kg	☼			2	30
Lead	ND			ND		mg/Kg	☼			NC	
Lithium	0.24	J		0.209	J	mg/Kg	☼			13	30
Manganese	36	B		44.4		mg/Kg	☼			21	30
Molybdenum	0.15	J		0.130	J	mg/Kg	☼			15	30
Selenium	ND			ND		mg/Kg	☼			NC	30
Thallium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: MB 140-89248/18-B
Matrix: Solid
Analysis Batch: 89677

Client Sample ID: Method Blank
Prep Type: Step 4
Prep Batch: 89333

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		07/30/24 07:00	08/07/24 15:05	1
Antimony	ND		3.0	0.45	mg/Kg		07/30/24 07:00	08/07/24 15:05	1
Arsenic	ND		0.50	0.22	mg/Kg		07/30/24 07:00	08/07/24 15:05	1
Barium	ND		2.5	0.12	mg/Kg		07/30/24 07:00	08/07/24 15:05	1
Beryllium	ND		0.25	0.016	mg/Kg		07/30/24 07:00	08/07/24 15:05	1
Cadmium	ND		0.25	0.011	mg/Kg		07/30/24 07:00	08/07/24 15:05	1
Calcium	ND		250	2.2	mg/Kg		07/30/24 07:00	08/07/24 15:05	1
Chromium	0.144	J	0.50	0.070	mg/Kg		07/30/24 07:00	08/07/24 15:05	1
Cobalt	ND		2.5	0.053	mg/Kg		07/30/24 07:00	08/07/24 15:05	1
Iron	ND		5.0	2.9	mg/Kg		07/30/24 07:00	08/07/24 15:05	1
Lead	ND		0.50	0.11	mg/Kg		07/30/24 07:00	08/07/24 15:05	1
Lithium	ND		2.5	0.15	mg/Kg		07/30/24 07:00	08/07/24 15:05	1
Manganese	ND		0.75	0.13	mg/Kg		07/30/24 07:00	08/07/24 15:05	1
Molybdenum	ND		2.0	0.082	mg/Kg		07/30/24 07:00	08/07/24 15:05	1
Selenium	ND		0.50	0.47	mg/Kg		07/30/24 07:00	08/07/24 15:05	1
Thallium	ND		1.8	0.29	mg/Kg		07/30/24 07:00	08/07/24 15:05	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-89248/19-B
Matrix: Solid
Analysis Batch: 89677

Client Sample ID: Lab Control Sample
Prep Type: Step 4
Prep Batch: 89333

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Aluminum			100	87.3		mg/Kg		87	80 - 120		
Antimony			25.0	22.5		mg/Kg		90	80 - 130		
Arsenic			5.00	4.68		mg/Kg		94	80 - 130		
Barium			5.00	4.45		mg/Kg		89	80 - 120		
Beryllium			2.50	2.33		mg/Kg		93	80 - 120		
Cadmium			2.50	2.19		mg/Kg		87	80 - 120		
Calcium			2500	2140		mg/Kg		86	80 - 120		
Chromium			10.0	8.97		mg/Kg		90	80 - 120		
Cobalt			5.00	4.64		mg/Kg		93	80 - 120		
Iron			50.0	44.9		mg/Kg		90	80 - 120		
Lead			5.00	4.22		mg/Kg		84	80 - 120		
Lithium			5.00	4.65		mg/Kg		93	80 - 120		
Manganese			5.00	4.49		mg/Kg		90	80 - 120		
Molybdenum			25.0	22.8		mg/Kg		91	80 - 120		
Selenium			7.50	ND		mg/Kg		5			
Thallium			20.0	17.1		mg/Kg		85	80 - 120		

Lab Sample ID: LCSD 140-89248/20-B
Matrix: Solid
Analysis Batch: 89677

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 4
Prep Batch: 89333

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum			100	90.3		mg/Kg		90	80 - 120	3	30
Antimony			25.0	22.8		mg/Kg		91	80 - 130	1	30
Arsenic			5.00	4.84		mg/Kg		97	80 - 130	3	30
Barium			5.00	4.56		mg/Kg		91	80 - 120	2	30
Beryllium			2.50	2.39		mg/Kg		96	80 - 120	2	30
Cadmium			2.50	2.23		mg/Kg		89	80 - 120	2	30
Calcium			2500	2180		mg/Kg		87	80 - 120	2	30
Chromium			10.0	9.17		mg/Kg		92	80 - 120	2	30
Cobalt			5.00	4.74		mg/Kg		95	80 - 120	2	30
Iron			50.0	45.8		mg/Kg		92	80 - 120	2	30
Lead			5.00	4.31		mg/Kg		86	80 - 120	2	30
Lithium			5.00	4.81		mg/Kg		96	80 - 120	3	30
Manganese			5.00	4.60		mg/Kg		92	80 - 120	2	30
Molybdenum			25.0	23.1		mg/Kg		93	80 - 120	2	30
Selenium			7.50	ND		mg/Kg		6		20	
Thallium			20.0	17.9		mg/Kg		89	80 - 120	4	30

Lab Sample ID: 140-37375-2 DU
Matrix: Solid
Analysis Batch: 89677

Client Sample ID: APW 19S_16-18'
Prep Type: Step 4
Prep Batch: 89333

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	660			640		mg/Kg	☼			2	30
Antimony	ND			ND		mg/Kg	☼			NC	30
Arsenic	1.3			1.35		mg/Kg	☼			6	30
Barium	17			18.6		mg/Kg	☼			7	30
Beryllium	0.15	J		0.149	J	mg/Kg	☼			0.8	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-37375-2 DU
Matrix: Solid
Analysis Batch: 89677

Client Sample ID: APW 19S_16-18'
Prep Type: Step 4
Prep Batch: 89333

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cadmium	0.19	J	0.201	J	mg/Kg	☼	6	30
Calcium	12000		13000		mg/Kg	☼	5	30
Chromium	2.5	B	2.62		mg/Kg	☼	3	30
Cobalt	1.4	J	1.41	J	mg/Kg	☼	0.2	30
Iron	4900		5000		mg/Kg	☼	1	30
Lead	3.6		3.64		mg/Kg	☼	2	30
Lithium	2.3	J	2.24	J	mg/Kg	☼	2	30
Manganese	75		81.4		mg/Kg	☼	8	30
Molybdenum	0.41	J	0.433	J	mg/Kg	☼	5	30
Selenium	ND		ND		mg/Kg	☼	NC	
Thallium	ND		ND		mg/Kg	☼	NC	30

Lab Sample ID: MB 140-89294/18-B ^5
Matrix: Solid
Analysis Batch: 89677

Client Sample ID: Method Blank
Prep Type: Step 5
Prep Batch: 89471

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	26.7	J	150	24	mg/Kg		08/02/24 07:00	08/07/24 17:08	5
Antimony	ND		45	4.2	mg/Kg		08/02/24 07:00	08/07/24 17:08	5
Arsenic	ND		7.5	1.9	mg/Kg		08/02/24 07:00	08/07/24 17:08	5
Barium	ND		38	1.8	mg/Kg		08/02/24 07:00	08/07/24 17:08	5
Beryllium	ND		3.8	0.32	mg/Kg		08/02/24 07:00	08/07/24 17:08	5
Cadmium	ND		3.8	0.16	mg/Kg		08/02/24 07:00	08/07/24 17:08	5
Calcium	14.2	J	3800	11	mg/Kg		08/02/24 07:00	08/07/24 17:08	5
Chromium	ND		7.5	1.1	mg/Kg		08/02/24 07:00	08/07/24 17:08	5
Cobalt	ND		38	0.60	mg/Kg		08/02/24 07:00	08/07/24 17:08	5
Iron	ND		75	44	mg/Kg		08/02/24 07:00	08/07/24 17:08	5
Lead	ND		7.5	1.7	mg/Kg		08/02/24 07:00	08/07/24 17:08	5
Lithium	2.69	J	38	2.2	mg/Kg		08/02/24 07:00	08/07/24 17:08	5
Manganese	ND		11	1.9	mg/Kg		08/02/24 07:00	08/07/24 17:08	5
Molybdenum	ND		30	1.3	mg/Kg		08/02/24 07:00	08/07/24 17:08	5
Selenium	ND		7.5	2.6	mg/Kg		08/02/24 07:00	08/07/24 17:08	5
Thallium	ND		26	3.5	mg/Kg		08/02/24 07:00	08/07/24 17:08	5

Lab Sample ID: LCS 140-89294/19-B ^5
Matrix: Solid
Analysis Batch: 89677

Client Sample ID: Lab Control Sample
Prep Type: Step 5
Prep Batch: 89471

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	300	ND		mg/Kg		6	
Antimony	75.0	71.3		mg/Kg		95	80 - 120
Arsenic	15.0	9.35		mg/Kg		62	60 - 100
Barium	15.0	7.44	J	mg/Kg		50	40 - 70
Beryllium	7.50	3.41	J	mg/Kg		46	40 - 70
Cadmium	7.50	6.96		mg/Kg		93	80 - 130
Calcium	7500	1910	J	mg/Kg		26	20 - 50
Chromium	30.0	29.3		mg/Kg		98	80 - 130
Cobalt	15.0	3.22	J	mg/Kg		21	1 - 60
Iron	150	ND		mg/Kg		0.9	

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-89294/19-B ^5
Matrix: Solid
Analysis Batch: 89677

Client Sample ID: Lab Control Sample
Prep Type: Step 5
Prep Batch: 89471

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead			15.0	9.93		mg/Kg		66	40 - 80		
Lithium			15.0	17.1	J	mg/Kg		114	80 - 150		
Manganese			15.0	3.11	J	mg/Kg		21	1 - 60		
Molybdenum			75.0	52.1		mg/Kg		69	60 - 100		
Selenium			22.5	24.1		mg/Kg		107	80 - 140		
Thallium			60.0	10.7	J	mg/Kg		18			

Lab Sample ID: LCSD 140-89294/20-B ^5
Matrix: Solid
Analysis Batch: 89677

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 5
Prep Batch: 89471

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum			300	ND		mg/Kg		5		7	
Antimony			75.0	72.3		mg/Kg		96	80 - 120	1	30
Arsenic			15.0	8.78	*-	mg/Kg		59	60 - 100	6	30
Barium			15.0	7.83	J	mg/Kg		52	40 - 70	5	30
Beryllium			7.50	3.04	J	mg/Kg		41	40 - 70	12	30
Cadmium			7.50	7.12		mg/Kg		95	80 - 130	2	30
Calcium			7500	1970	J	mg/Kg		26	20 - 50	3	30
Chromium			30.0	30.0		mg/Kg		100	80 - 130	2	30
Cobalt			15.0	3.23	J	mg/Kg		22	1 - 60	0	30
Iron			150	ND		mg/Kg		-0.5		775	
Lead			15.0	9.00		mg/Kg		60	40 - 80	10	30
Lithium			15.0	17.0	J	mg/Kg		113	80 - 150	1	30
Manganese			15.0	3.63	J	mg/Kg		24	1 - 60	16	30
Molybdenum			75.0	51.2		mg/Kg		68	60 - 100	2	30
Selenium			22.5	23.2		mg/Kg		103	80 - 140	4	30
Thallium			60.0	3.71	J	mg/Kg		6		97	

Lab Sample ID: 140-37375-2 DU
Matrix: Solid
Analysis Batch: 89677

Client Sample ID: APW 19S_16-18'
Prep Type: Step 5
Prep Batch: 89471

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	160	J B		176		mg/Kg	☼			8	
Antimony	ND			ND		mg/Kg	☼			NC	30
Arsenic	ND	*-		ND	*-	mg/Kg	☼			NC	30
Barium	5.2	J		9.51	J F5	mg/Kg	☼			59	30
Beryllium	ND			ND		mg/Kg	☼			NC	30
Cadmium	ND			ND		mg/Kg	☼			NC	30
Calcium	8000	B		8740		mg/Kg	☼			9	30
Chromium	2.6	J		2.53	J	mg/Kg	☼			3	30
Cobalt	ND			ND		mg/Kg	☼			NC	30
Iron	ND			ND		mg/Kg	☼			NC	
Lead	ND			ND		mg/Kg	☼			NC	30
Lithium	2.8	J B		ND		mg/Kg	☼			NC	30
Manganese	2.5	J		2.89	J	mg/Kg	☼			13	30
Molybdenum	ND			ND		mg/Kg	☼			NC	30
Selenium	ND			ND		mg/Kg	☼			NC	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-37375-2 DU
Matrix: Solid
Analysis Batch: 89677

Client Sample ID: APW 19S_16-18'
Prep Type: Step 5
Prep Batch: 89471

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Thallium	ND		ND		mg/Kg	☼	NC	

Lab Sample ID: MB 140-89474/18-A
Matrix: Solid
Analysis Batch: 89677

Client Sample ID: Method Blank
Prep Type: Step 6
Prep Batch: 89474

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		08/02/24 07:30	08/07/24 19:15	1
Antimony	ND		3.0	0.28	mg/Kg		08/02/24 07:30	08/07/24 19:15	1
Arsenic	ND		0.50	0.15	mg/Kg		08/02/24 07:30	08/07/24 19:15	1
Barium	ND		2.5	0.12	mg/Kg		08/02/24 07:30	08/07/24 19:15	1
Beryllium	ND		0.25	0.012	mg/Kg		08/02/24 07:30	08/07/24 19:15	1
Cadmium	ND		0.25	0.011	mg/Kg		08/02/24 07:30	08/07/24 19:15	1
Calcium	ND		250	2.1	mg/Kg		08/02/24 07:30	08/07/24 19:15	1
Chromium	ND		0.50	0.070	mg/Kg		08/02/24 07:30	08/07/24 19:15	1
Cobalt	ND		2.5	0.046	mg/Kg		08/02/24 07:30	08/07/24 19:15	1
Iron	ND		5.0	2.9	mg/Kg		08/02/24 07:30	08/07/24 19:15	1
Lead	ND		0.50	0.11	mg/Kg		08/02/24 07:30	08/07/24 19:15	1
Lithium	ND		2.5	0.15	mg/Kg		08/02/24 07:30	08/07/24 19:15	1
Manganese	ND		0.75	0.25	mg/Kg		08/02/24 07:30	08/07/24 19:15	1
Molybdenum	ND		2.0	0.099	mg/Kg		08/02/24 07:30	08/07/24 19:15	1
Selenium	ND		0.50	0.17	mg/Kg		08/02/24 07:30	08/07/24 19:15	1
Thallium	ND		1.8	0.21	mg/Kg		08/02/24 07:30	08/07/24 19:15	1

Lab Sample ID: LCS 140-89474/19-A
Matrix: Solid
Analysis Batch: 89677

Client Sample ID: Lab Control Sample
Prep Type: Step 6
Prep Batch: 89474

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	93.1		mg/Kg		93	80 - 120
Antimony	25.0	24.1		mg/Kg		96	80 - 120
Arsenic	5.00	4.70		mg/Kg		94	80 - 120
Barium	5.00	4.65		mg/Kg		93	80 - 120
Beryllium	2.50	2.43		mg/Kg		97	80 - 120
Cadmium	2.50	2.34		mg/Kg		93	80 - 120
Calcium	2500	2300		mg/Kg		92	80 - 120
Chromium	10.0	9.36		mg/Kg		94	80 - 120
Cobalt	5.00	4.90		mg/Kg		98	80 - 120
Iron	50.0	46.8		mg/Kg		94	80 - 120
Lead	5.00	4.54		mg/Kg		91	80 - 120
Lithium	5.00	4.86		mg/Kg		97	80 - 120
Manganese	5.00	4.72		mg/Kg		94	80 - 120
Molybdenum	25.0	23.6		mg/Kg		94	80 - 120
Selenium	7.50	7.38		mg/Kg		98	80 - 120
Thallium	20.0	19.7		mg/Kg		98	80 - 120

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-89474/20-A
Matrix: Solid
Analysis Batch: 89677

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 6
Prep Batch: 89474

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum			100	94.9		mg/Kg		95	80 - 120	2	30
Antimony			25.0	24.3		mg/Kg		97	80 - 120	1	30
Arsenic			5.00	4.79		mg/Kg		96	80 - 120	2	30
Barium			5.00	4.71		mg/Kg		94	80 - 120	1	30
Beryllium			2.50	2.48		mg/Kg		99	80 - 120	2	30
Cadmium			2.50	2.39		mg/Kg		96	80 - 120	2	30
Calcium			2500	2290		mg/Kg		92	80 - 120	0	30
Chromium			10.0	9.57		mg/Kg		96	80 - 120	2	30
Cobalt			5.00	5.01		mg/Kg		100	80 - 120	2	30
Iron			50.0	47.3		mg/Kg		95	80 - 120	1	30
Lead			5.00	4.63		mg/Kg		93	80 - 120	2	30
Lithium			5.00	4.95		mg/Kg		99	80 - 120	2	30
Manganese			5.00	4.83		mg/Kg		97	80 - 120	2	30
Molybdenum			25.0	23.8		mg/Kg		95	80 - 120	1	30
Selenium			7.50	7.53		mg/Kg		100	80 - 120	2	30
Thallium			20.0	20.0		mg/Kg		100	80 - 120	2	30

Lab Sample ID: 140-37375-2 DU
Matrix: Solid
Analysis Batch: 89677

Client Sample ID: APW 19S_16-18'
Prep Type: Step 6
Prep Batch: 89474

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	4000			3840		mg/Kg	☼			5	30
Antimony	0.34	J		0.360	J	mg/Kg	☼			4	30
Arsenic	2.1			2.18		mg/Kg	☼			6	30
Barium	9.9			10.5		mg/Kg	☼			6	30
Beryllium	0.13	J		0.131	J	mg/Kg	☼			3	30
Cadmium	0.20	J		0.195	J	mg/Kg	☼			4	30
Calcium	7500			7120		mg/Kg	☼			6	30
Chromium	6.2			5.98		mg/Kg	☼			3	30
Cobalt	2.3	J		2.23	J	mg/Kg	☼			1	30
Iron	7000			6840		mg/Kg	☼			2	30
Lead	1.8			1.84		mg/Kg	☼			0	30
Lithium	7.4			7.13		mg/Kg	☼			4	30
Manganese	62			61.4		mg/Kg	☼			0.5	30
Molybdenum	0.15	J		0.162	J	mg/Kg	☼			7	30
Selenium	ND			ND		mg/Kg	☼			NC	30
Thallium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: MB 140-89496/18-A
Matrix: Solid
Analysis Batch: 89783

Client Sample ID: Method Blank
Prep Type: Step 7
Prep Batch: 89496

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		08/05/24 07:00	08/10/24 10:51	1
Antimony	ND		3.0	0.14	mg/Kg		08/05/24 07:00	08/10/24 10:51	1
Arsenic	ND		0.50	0.30	mg/Kg		08/05/24 07:00	08/10/24 10:51	1
Barium	ND		2.5	0.046	mg/Kg		08/05/24 07:00	08/10/24 10:51	1
Beryllium	ND		0.25	0.016	mg/Kg		08/05/24 07:00	08/10/24 10:51	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-89496/18-A
Matrix: Solid
Analysis Batch: 89783

Client Sample ID: Method Blank
Prep Type: Step 7
Prep Batch: 89496

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		0.25	0.011	mg/Kg		08/05/24 07:00	08/10/24 10:51	1
Calcium	ND		250	5.7	mg/Kg		08/05/24 07:00	08/10/24 10:51	1
Chromium	ND		0.50	0.070	mg/Kg		08/05/24 07:00	08/10/24 10:51	1
Cobalt	ND		2.5	0.026	mg/Kg		08/05/24 07:00	08/10/24 10:51	1
Iron	ND		5.0	4.1	mg/Kg		08/05/24 07:00	08/10/24 10:51	1
Lead	ND		0.50	0.11	mg/Kg		08/05/24 07:00	08/10/24 10:51	1
Lithium	ND		2.5	0.15	mg/Kg		08/05/24 07:00	08/10/24 10:51	1
Manganese	ND		0.75	0.31	mg/Kg		08/05/24 07:00	08/10/24 10:51	1
Molybdenum	ND		2.0	0.082	mg/Kg		08/05/24 07:00	08/10/24 10:51	1
Selenium	ND		0.50	0.17	mg/Kg		08/05/24 07:00	08/10/24 10:51	1
Thallium	ND		1.8	0.18	mg/Kg		08/05/24 07:00	08/10/24 10:51	1

Lab Sample ID: MB 140-89496/18-A
Matrix: Solid
Analysis Batch: 89793

Client Sample ID: Method Blank
Prep Type: Step 7
Prep Batch: 89496

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		08/05/24 07:00	08/11/24 10:25	1
Antimony	ND		3.0	0.14	mg/Kg		08/05/24 07:00	08/11/24 10:25	1
Arsenic	ND		0.50	0.30	mg/Kg		08/05/24 07:00	08/11/24 10:25	1
Barium	ND		2.5	0.046	mg/Kg		08/05/24 07:00	08/11/24 10:25	1
Beryllium	ND		0.25	0.016	mg/Kg		08/05/24 07:00	08/11/24 10:25	1
Cadmium	ND		0.25	0.011	mg/Kg		08/05/24 07:00	08/11/24 10:25	1
Calcium	ND		250	5.7	mg/Kg		08/05/24 07:00	08/11/24 10:25	1
Chromium	0.0775	J	0.50	0.070	mg/Kg		08/05/24 07:00	08/11/24 10:25	1
Cobalt	ND		2.5	0.026	mg/Kg		08/05/24 07:00	08/11/24 10:25	1
Iron	ND		5.0	4.1	mg/Kg		08/05/24 07:00	08/11/24 10:25	1
Lead	ND		0.50	0.11	mg/Kg		08/05/24 07:00	08/11/24 10:25	1
Lithium	ND		2.5	0.15	mg/Kg		08/05/24 07:00	08/11/24 10:25	1
Manganese	ND		0.75	0.31	mg/Kg		08/05/24 07:00	08/11/24 10:25	1
Molybdenum	ND		2.0	0.082	mg/Kg		08/05/24 07:00	08/11/24 10:25	1
Selenium	ND		0.50	0.17	mg/Kg		08/05/24 07:00	08/11/24 10:25	1
Thallium	ND		1.8	0.18	mg/Kg		08/05/24 07:00	08/11/24 10:25	1

Lab Sample ID: LCS 140-89496/19-A
Matrix: Solid
Analysis Batch: 89783

Client Sample ID: Lab Control Sample
Prep Type: Step 7
Prep Batch: 89496

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	99.7		mg/Kg		100	80 - 120
Antimony	25.0	25.6		mg/Kg		102	80 - 125
Arsenic	5.00	5.15		mg/Kg		103	80 - 120
Barium	5.00	5.11		mg/Kg		102	80 - 120
Beryllium	2.50	2.59		mg/Kg		103	80 - 120
Cadmium	2.50	2.62		mg/Kg		105	80 - 125
Calcium	2500	2620		mg/Kg		105	80 - 120
Chromium	10.0	10.7		mg/Kg		107	80 - 120
Cobalt	5.00	5.30		mg/Kg		106	80 - 125
Iron	50.0	53.2		mg/Kg		106	80 - 120

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-89496/19-A
Matrix: Solid
Analysis Batch: 89783

Client Sample ID: Lab Control Sample
Prep Type: Step 7
Prep Batch: 89496

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Lead	5.00	5.05		mg/Kg		101	80 - 120
Lithium	5.00	5.27		mg/Kg		105	80 - 120
Manganese	5.00	5.41		mg/Kg		108	80 - 120
Molybdenum	25.0	26.5		mg/Kg		106	80 - 125
Selenium	7.50	7.40		mg/Kg		99	80 - 120
Thallium	20.0	20.9		mg/Kg		105	80 - 120

Lab Sample ID: LCS 140-89496/19-A
Matrix: Solid
Analysis Batch: 89793

Client Sample ID: Lab Control Sample
Prep Type: Step 7
Prep Batch: 89496

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	99.6		mg/Kg		100	80 - 120
Antimony	25.0	25.3		mg/Kg		101	80 - 125
Arsenic	5.00	5.27		mg/Kg		105	80 - 120
Barium	5.00	5.02		mg/Kg		100	80 - 120
Beryllium	2.50	2.53		mg/Kg		101	80 - 120
Cadmium	2.50	2.60		mg/Kg		104	80 - 125
Calcium	2500	2560		mg/Kg		102	80 - 120
Chromium	10.0	10.6		mg/Kg		106	80 - 120
Cobalt	5.00	5.29		mg/Kg		106	80 - 125
Iron	50.0	52.3		mg/Kg		105	80 - 120
Lead	5.00	5.08		mg/Kg		102	80 - 120
Lithium	5.00	5.04		mg/Kg		101	80 - 120
Manganese	5.00	5.27		mg/Kg		105	80 - 120
Molybdenum	25.0	26.2		mg/Kg		105	80 - 125
Selenium	7.50	7.27		mg/Kg		97	80 - 120
Thallium	20.0	21.0		mg/Kg		105	80 - 120

Lab Sample ID: LCSD 140-89496/20-A
Matrix: Solid
Analysis Batch: 89783

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 7
Prep Batch: 89496

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	100	100		mg/Kg		100	80 - 120	1	30
Antimony	25.0	25.8		mg/Kg		103	80 - 125	1	30
Arsenic	5.00	5.17		mg/Kg		103	80 - 120	0	30
Barium	5.00	5.18		mg/Kg		104	80 - 120	1	30
Beryllium	2.50	2.61		mg/Kg		104	80 - 120	1	30
Cadmium	2.50	2.63		mg/Kg		105	80 - 125	0	30
Calcium	2500	2650		mg/Kg		106	80 - 120	1	30
Chromium	10.0	10.8		mg/Kg		108	80 - 120	1	30
Cobalt	5.00	5.34		mg/Kg		107	80 - 125	1	30
Iron	50.0	53.6		mg/Kg		107	80 - 120	1	30
Lead	5.00	5.08		mg/Kg		102	80 - 120	1	30
Lithium	5.00	5.38		mg/Kg		108	80 - 120	2	30
Manganese	5.00	5.46		mg/Kg		109	80 - 120	1	30
Molybdenum	25.0	26.9		mg/Kg		107	80 - 125	1	30
Selenium	7.50	7.46		mg/Kg		99	80 - 120	1	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-89496/20-A
Matrix: Solid
Analysis Batch: 89783

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 7
Prep Batch: 89496

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Thallium			20.0	21.1		mg/Kg		105	80 - 120	1	30

Lab Sample ID: LCSD 140-89496/20-A
Matrix: Solid
Analysis Batch: 89793

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 7
Prep Batch: 89496

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum			100	98.7		mg/Kg		99	80 - 120	1	30
Antimony			25.0	25.4		mg/Kg		102	80 - 125	0	30
Arsenic			5.00	5.27		mg/Kg		105	80 - 120	0	30
Barium			5.00	5.09		mg/Kg		102	80 - 120	1	30
Beryllium			2.50	2.60		mg/Kg		104	80 - 120	3	30
Cadmium			2.50	2.61		mg/Kg		104	80 - 125	0	30
Calcium			2500	2580		mg/Kg		103	80 - 120	1	30
Chromium			10.0	10.7		mg/Kg		107	80 - 120	1	30
Cobalt			5.00	5.32		mg/Kg		106	80 - 125	1	30
Iron			50.0	52.4		mg/Kg		105	80 - 120	0	30
Lead			5.00	5.11		mg/Kg		102	80 - 120	1	30
Lithium			5.00	5.22		mg/Kg		104	80 - 120	3	30
Manganese			5.00	5.37		mg/Kg		107	80 - 120	2	30
Molybdenum			25.0	26.4		mg/Kg		105	80 - 125	1	30
Selenium			7.50	7.39		mg/Kg		99	80 - 120	2	30
Thallium			20.0	21.2		mg/Kg		106	80 - 120	1	30

Lab Sample ID: 140-37375-2 DU
Matrix: Solid
Analysis Batch: 89783

Client Sample ID: APW 19S_16-18'
Prep Type: Step 7
Prep Batch: 89496

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	21000			21600		mg/Kg	☼			5	30

Lab Sample ID: 140-37375-2 DU
Matrix: Solid
Analysis Batch: 89793

Client Sample ID: APW 19S_16-18'
Prep Type: Step 7
Prep Batch: 89496

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Antimony	0.47	J		0.344	J F5	mg/Kg	☼			32	30
Barium	210			217		mg/Kg	☼			4	30
Beryllium	0.56			0.575		mg/Kg	☼			3	30
Cadmium	0.11	J		0.144	J	mg/Kg	☼			27	30
Calcium	1900			1830		mg/Kg	☼			5	30
Chromium	18	B		18.5		mg/Kg	☼			3	30
Iron	4300			4410		mg/Kg	☼			2	30
Lithium	12			14.0		mg/Kg	☼			12	30
Manganese	48			43.9		mg/Kg	☼			9	30
Molybdenum	ND			ND		mg/Kg	☼			NC	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-37375-2 DU
Matrix: Solid
Analysis Batch: 89842

Client Sample ID: APW 19S_16-18'
Prep Type: Step 7
Prep Batch: 89496

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Arsenic	1.8			1.90		mg/Kg	☼			4	30
Cobalt	0.83	J		0.824	J	mg/Kg	☼			0.3	30
Lead	2.4			2.74		mg/Kg	☼			13	30
Selenium	ND			ND		mg/Kg	☼			NC	30
Thallium	ND			0.671	J	mg/Kg	☼			NC	30

Method: Loss On Ignit. - Loss On Ignition

Lab Sample ID: MB 140-88351/1
Matrix: Solid
Analysis Batch: 88351

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Loss on Ignition	ND		0.49	0.49	%			07/02/24 13:38	1

Lab Sample ID: 140-37375-2 DU
Matrix: Solid
Analysis Batch: 88351

Client Sample ID: APW 19S_16-18'
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Loss on Ignition	23			22.7		%				2	10

Metals

Prep Batch: 89085

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Total/NA	Solid	Total	
140-37375-2	APW 19S_16-18'	Total/NA	Solid	Total	
140-37375-3	APW 20S_14-16'	Total/NA	Solid	Total	
140-37375-4	APW 20S_20-22'	Total/NA	Solid	Total	
140-37375-5	APW 21S_8-10'	Total/NA	Solid	Total	
140-37375-6	APW 21S_14-16'	Total/NA	Solid	Total	
140-37375-7	APW 22S_9-11'	Total/NA	Solid	Total	
140-37375-8	APW 22S_20.5-22'	Total/NA	Solid	Total	
140-37375-9	APW 23S_12-16'	Total/NA	Solid	Total	
140-37375-10	APW 23_37-39'	Total/NA	Solid	Total	
MB 140-89085/18-A	Method Blank	Total/NA	Solid	Total	
LCS 140-89085/19-A	Lab Control Sample	Total/NA	Solid	Total	
LCSD 140-89085/20-A	Lab Control Sample Dup	Total/NA	Solid	Total	
140-37375-2 DU	APW 19S_16-18'	Total/NA	Solid	Total	

SEP Batch: 89089

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 1	Solid	Exchangeable	
140-37375-2	APW 19S_16-18'	Step 1	Solid	Exchangeable	
140-37375-3	APW 20S_14-16'	Step 1	Solid	Exchangeable	
140-37375-4	APW 20S_20-22'	Step 1	Solid	Exchangeable	
140-37375-5	APW 21S_8-10'	Step 1	Solid	Exchangeable	
140-37375-6	APW 21S_14-16'	Step 1	Solid	Exchangeable	
140-37375-7	APW 22S_9-11'	Step 1	Solid	Exchangeable	
140-37375-8	APW 22S_20.5-22'	Step 1	Solid	Exchangeable	
140-37375-9	APW 23S_12-16'	Step 1	Solid	Exchangeable	
140-37375-10	APW 23_37-39'	Step 1	Solid	Exchangeable	
MB 140-89089/18-B ^4	Method Blank	Step 1	Solid	Exchangeable	
LCS 140-89089/19-B ^5	Lab Control Sample	Step 1	Solid	Exchangeable	
LCSD 140-89089/20-B ^5	Lab Control Sample Dup	Step 1	Solid	Exchangeable	
140-37375-2 DU	APW 19S_16-18'	Step 1	Solid	Exchangeable	

Prep Batch: 89126

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 1	Solid	3010A	89089
140-37375-2	APW 19S_16-18'	Step 1	Solid	3010A	89089
140-37375-3	APW 20S_14-16'	Step 1	Solid	3010A	89089
140-37375-4	APW 20S_20-22'	Step 1	Solid	3010A	89089
140-37375-5	APW 21S_8-10'	Step 1	Solid	3010A	89089
140-37375-6	APW 21S_14-16'	Step 1	Solid	3010A	89089
140-37375-7	APW 22S_9-11'	Step 1	Solid	3010A	89089
140-37375-8	APW 22S_20.5-22'	Step 1	Solid	3010A	89089
140-37375-9	APW 23S_12-16'	Step 1	Solid	3010A	89089
140-37375-10	APW 23_37-39'	Step 1	Solid	3010A	89089
MB 140-89089/18-B ^4	Method Blank	Step 1	Solid	3010A	89089
LCS 140-89089/19-B ^5	Lab Control Sample	Step 1	Solid	3010A	89089
LCSD 140-89089/20-B ^5	Lab Control Sample Dup	Step 1	Solid	3010A	89089
140-37375-2 DU	APW 19S_16-18'	Step 1	Solid	3010A	89089

Metals

SEP Batch: 89137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 2	Solid	Carbonate	
140-37375-2	APW 19S_16-18'	Step 2	Solid	Carbonate	
140-37375-3	APW 20S_14-16'	Step 2	Solid	Carbonate	
140-37375-4	APW 20S_20-22'	Step 2	Solid	Carbonate	
140-37375-5	APW 21S_8-10'	Step 2	Solid	Carbonate	
140-37375-6	APW 21S_14-16'	Step 2	Solid	Carbonate	
140-37375-7	APW 22S_9-11'	Step 2	Solid	Carbonate	
140-37375-8	APW 22S_20.5-22'	Step 2	Solid	Carbonate	
140-37375-9	APW 23S_12-16'	Step 2	Solid	Carbonate	
140-37375-10	APW 23_37-39'	Step 2	Solid	Carbonate	
MB 140-89137/18-B ^3	Method Blank	Step 2	Solid	Carbonate	
LCS 140-89137/19-B ^5	Lab Control Sample	Step 2	Solid	Carbonate	
LCSD 140-89137/20-B ^5	Lab Control Sample Dup	Step 2	Solid	Carbonate	
140-37375-2 DU	APW 19S_16-18'	Step 2	Solid	Carbonate	

Prep Batch: 89175

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 2	Solid	3010A	89137
140-37375-2	APW 19S_16-18'	Step 2	Solid	3010A	89137
140-37375-3	APW 20S_14-16'	Step 2	Solid	3010A	89137
140-37375-4	APW 20S_20-22'	Step 2	Solid	3010A	89137
140-37375-5	APW 21S_8-10'	Step 2	Solid	3010A	89137
140-37375-6	APW 21S_14-16'	Step 2	Solid	3010A	89137
140-37375-7	APW 22S_9-11'	Step 2	Solid	3010A	89137
140-37375-8	APW 22S_20.5-22'	Step 2	Solid	3010A	89137
140-37375-9	APW 23S_12-16'	Step 2	Solid	3010A	89137
140-37375-10	APW 23_37-39'	Step 2	Solid	3010A	89137
MB 140-89137/18-B ^3	Method Blank	Step 2	Solid	3010A	89137
LCS 140-89137/19-B ^5	Lab Control Sample	Step 2	Solid	3010A	89137
LCSD 140-89137/20-B ^5	Lab Control Sample Dup	Step 2	Solid	3010A	89137
140-37375-2 DU	APW 19S_16-18'	Step 2	Solid	3010A	89137

SEP Batch: 89192

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 3	Solid	Non-Crystalline	
140-37375-2	APW 19S_16-18'	Step 3	Solid	Non-Crystalline	
140-37375-3	APW 20S_14-16'	Step 3	Solid	Non-Crystalline	
140-37375-4	APW 20S_20-22'	Step 3	Solid	Non-Crystalline	
140-37375-5	APW 21S_8-10'	Step 3	Solid	Non-Crystalline	
140-37375-6	APW 21S_14-16'	Step 3	Solid	Non-Crystalline	
140-37375-7	APW 22S_9-11'	Step 3	Solid	Non-Crystalline	
140-37375-8	APW 22S_20.5-22'	Step 3	Solid	Non-Crystalline	
140-37375-9	APW 23S_12-16'	Step 3	Solid	Non-Crystalline	
140-37375-10	APW 23_37-39'	Step 3	Solid	Non-Crystalline	
MB 140-89192/18-B	Method Blank	Step 3	Solid	Non-Crystalline	
LCS 140-89192/19-B	Lab Control Sample	Step 3	Solid	Non-Crystalline	
LCSD 140-89192/20-B	Lab Control Sample Dup	Step 3	Solid	Non-Crystalline	
140-37375-2 DU	APW 19S_16-18'	Step 3	Solid	Non-Crystalline	

Metals

Prep Batch: 89225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 3	Solid	3010A	89192
140-37375-2	APW 19S_16-18'	Step 3	Solid	3010A	89192
140-37375-3	APW 20S_14-16'	Step 3	Solid	3010A	89192
140-37375-4	APW 20S_20-22'	Step 3	Solid	3010A	89192
140-37375-5	APW 21S_8-10'	Step 3	Solid	3010A	89192
140-37375-6	APW 21S_14-16'	Step 3	Solid	3010A	89192
140-37375-7	APW 22S_9-11'	Step 3	Solid	3010A	89192
140-37375-8	APW 22S_20.5-22'	Step 3	Solid	3010A	89192
140-37375-9	APW 23S_12-16'	Step 3	Solid	3010A	89192
140-37375-10	APW 23_37-39'	Step 3	Solid	3010A	89192
MB 140-89192/18-B	Method Blank	Step 3	Solid	3010A	89192
LCS 140-89192/19-B	Lab Control Sample	Step 3	Solid	3010A	89192
LCSD 140-89192/20-B	Lab Control Sample Dup	Step 3	Solid	3010A	89192
140-37375-2 DU	APW 19S_16-18'	Step 3	Solid	3010A	89192

SEP Batch: 89248

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 4	Solid	Metal Hydroxide	
140-37375-2	APW 19S_16-18'	Step 4	Solid	Metal Hydroxide	
140-37375-3	APW 20S_14-16'	Step 4	Solid	Metal Hydroxide	
140-37375-4	APW 20S_20-22'	Step 4	Solid	Metal Hydroxide	
140-37375-5	APW 21S_8-10'	Step 4	Solid	Metal Hydroxide	
140-37375-6	APW 21S_14-16'	Step 4	Solid	Metal Hydroxide	
140-37375-7	APW 22S_9-11'	Step 4	Solid	Metal Hydroxide	
140-37375-8	APW 22S_20.5-22'	Step 4	Solid	Metal Hydroxide	
140-37375-9	APW 23S_12-16'	Step 4	Solid	Metal Hydroxide	
140-37375-10	APW 23_37-39'	Step 4	Solid	Metal Hydroxide	
MB 140-89248/18-B	Method Blank	Step 4	Solid	Metal Hydroxide	
LCS 140-89248/19-B	Lab Control Sample	Step 4	Solid	Metal Hydroxide	
LCSD 140-89248/20-B	Lab Control Sample Dup	Step 4	Solid	Metal Hydroxide	
140-37375-2 DU	APW 19S_16-18'	Step 4	Solid	Metal Hydroxide	

SEP Batch: 89294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 5	Solid	Organic-Bound	
140-37375-2	APW 19S_16-18'	Step 5	Solid	Organic-Bound	
140-37375-3	APW 20S_14-16'	Step 5	Solid	Organic-Bound	
140-37375-4	APW 20S_20-22'	Step 5	Solid	Organic-Bound	
140-37375-5	APW 21S_8-10'	Step 5	Solid	Organic-Bound	
140-37375-6	APW 21S_14-16'	Step 5	Solid	Organic-Bound	
140-37375-7	APW 22S_9-11'	Step 5	Solid	Organic-Bound	
140-37375-8	APW 22S_20.5-22'	Step 5	Solid	Organic-Bound	
140-37375-9	APW 23S_12-16'	Step 5	Solid	Organic-Bound	
140-37375-10	APW 23_37-39'	Step 5	Solid	Organic-Bound	
MB 140-89294/18-B ^5	Method Blank	Step 5	Solid	Organic-Bound	
LCS 140-89294/19-B ^5	Lab Control Sample	Step 5	Solid	Organic-Bound	
LCSD 140-89294/20-B ^5	Lab Control Sample Dup	Step 5	Solid	Organic-Bound	
140-37375-2 DU	APW 19S_16-18'	Step 5	Solid	Organic-Bound	

Metals

Prep Batch: 89333

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 4	Solid	3010A	89248
140-37375-2	APW 19S_16-18'	Step 4	Solid	3010A	89248
140-37375-3	APW 20S_14-16'	Step 4	Solid	3010A	89248
140-37375-4	APW 20S_20-22'	Step 4	Solid	3010A	89248
140-37375-5	APW 21S_8-10'	Step 4	Solid	3010A	89248
140-37375-6	APW 21S_14-16'	Step 4	Solid	3010A	89248
140-37375-7	APW 22S_9-11'	Step 4	Solid	3010A	89248
140-37375-8	APW 22S_20.5-22'	Step 4	Solid	3010A	89248
140-37375-9	APW 23S_12-16'	Step 4	Solid	3010A	89248
140-37375-10	APW 23_37-39'	Step 4	Solid	3010A	89248
MB 140-89248/18-B	Method Blank	Step 4	Solid	3010A	89248
LCS 140-89248/19-B	Lab Control Sample	Step 4	Solid	3010A	89248
LCSD 140-89248/20-B	Lab Control Sample Dup	Step 4	Solid	3010A	89248
140-37375-2 DU	APW 19S_16-18'	Step 4	Solid	3010A	89248

Prep Batch: 89471

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 5	Solid	3010A	89294
140-37375-2	APW 19S_16-18'	Step 5	Solid	3010A	89294
140-37375-3	APW 20S_14-16'	Step 5	Solid	3010A	89294
140-37375-4	APW 20S_20-22'	Step 5	Solid	3010A	89294
140-37375-5	APW 21S_8-10'	Step 5	Solid	3010A	89294
140-37375-6	APW 21S_14-16'	Step 5	Solid	3010A	89294
140-37375-7	APW 22S_9-11'	Step 5	Solid	3010A	89294
140-37375-8	APW 22S_20.5-22'	Step 5	Solid	3010A	89294
140-37375-9	APW 23S_12-16'	Step 5	Solid	3010A	89294
140-37375-10	APW 23_37-39'	Step 5	Solid	3010A	89294
MB 140-89294/18-B ^5	Method Blank	Step 5	Solid	3010A	89294
LCS 140-89294/19-B ^5	Lab Control Sample	Step 5	Solid	3010A	89294
LCSD 140-89294/20-B ^5	Lab Control Sample Dup	Step 5	Solid	3010A	89294
140-37375-2 DU	APW 19S_16-18'	Step 5	Solid	3010A	89294

SEP Batch: 89474

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 6	Solid	Acid/Sulfide	
140-37375-2	APW 19S_16-18'	Step 6	Solid	Acid/Sulfide	
140-37375-3	APW 20S_14-16'	Step 6	Solid	Acid/Sulfide	
140-37375-4	APW 20S_20-22'	Step 6	Solid	Acid/Sulfide	
140-37375-5	APW 21S_8-10'	Step 6	Solid	Acid/Sulfide	
140-37375-6	APW 21S_14-16'	Step 6	Solid	Acid/Sulfide	
140-37375-7	APW 22S_9-11'	Step 6	Solid	Acid/Sulfide	
140-37375-8	APW 22S_20.5-22'	Step 6	Solid	Acid/Sulfide	
140-37375-9	APW 23S_12-16'	Step 6	Solid	Acid/Sulfide	
140-37375-10	APW 23_37-39'	Step 6	Solid	Acid/Sulfide	
MB 140-89474/18-A	Method Blank	Step 6	Solid	Acid/Sulfide	
LCS 140-89474/19-A	Lab Control Sample	Step 6	Solid	Acid/Sulfide	
LCSD 140-89474/20-A	Lab Control Sample Dup	Step 6	Solid	Acid/Sulfide	
140-37375-2 DU	APW 19S_16-18'	Step 6	Solid	Acid/Sulfide	

Metals

Prep Batch: 89496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 7	Solid	Residual	
140-37375-2	APW 19S_16-18'	Step 7	Solid	Residual	
140-37375-3	APW 20S_14-16'	Step 7	Solid	Residual	
140-37375-4	APW 20S_20-22'	Step 7	Solid	Residual	
140-37375-5	APW 21S_8-10'	Step 7	Solid	Residual	
140-37375-6	APW 21S_14-16'	Step 7	Solid	Residual	
140-37375-7	APW 22S_9-11'	Step 7	Solid	Residual	
140-37375-8	APW 22S_20.5-22'	Step 7	Solid	Residual	
140-37375-9	APW 23S_12-16'	Step 7	Solid	Residual	
140-37375-10	APW 23_37-39'	Step 7	Solid	Residual	
MB 140-89496/18-A	Method Blank	Step 7	Solid	Residual	
LCS 140-89496/19-A	Lab Control Sample	Step 7	Solid	Residual	
LCSD 140-89496/20-A	Lab Control Sample Dup	Step 7	Solid	Residual	
140-37375-2 DU	APW 19S_16-18'	Step 7	Solid	Residual	

Analysis Batch: 89629

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 1	Solid	6010B SEP	89126
140-37375-1	APW 19S_7.5-8.2'	Step 2	Solid	6010B SEP	89175
140-37375-1	APW 19S_7.5-8.2'	Step 3	Solid	6010B SEP	89225
140-37375-2	APW 19S_16-18'	Step 1	Solid	6010B SEP	89126
140-37375-2	APW 19S_16-18'	Step 2	Solid	6010B SEP	89175
140-37375-2	APW 19S_16-18'	Step 3	Solid	6010B SEP	89225
140-37375-3	APW 20S_14-16'	Step 1	Solid	6010B SEP	89126
140-37375-3	APW 20S_14-16'	Step 2	Solid	6010B SEP	89175
140-37375-3	APW 20S_14-16'	Step 3	Solid	6010B SEP	89225
140-37375-4	APW 20S_20-22'	Step 1	Solid	6010B SEP	89126
140-37375-4	APW 20S_20-22'	Step 2	Solid	6010B SEP	89175
140-37375-4	APW 20S_20-22'	Step 3	Solid	6010B SEP	89225
140-37375-5	APW 21S_8-10'	Step 1	Solid	6010B SEP	89126
140-37375-5	APW 21S_8-10'	Step 2	Solid	6010B SEP	89175
140-37375-5	APW 21S_8-10'	Step 3	Solid	6010B SEP	89225
140-37375-6	APW 21S_14-16'	Step 1	Solid	6010B SEP	89126
140-37375-6	APW 21S_14-16'	Step 2	Solid	6010B SEP	89175
140-37375-6	APW 21S_14-16'	Step 3	Solid	6010B SEP	89225
140-37375-7	APW 22S_9-11'	Step 1	Solid	6010B SEP	89126
140-37375-7	APW 22S_9-11'	Step 2	Solid	6010B SEP	89175
140-37375-7	APW 22S_9-11'	Step 3	Solid	6010B SEP	89225
140-37375-8	APW 22S_20.5-22'	Step 1	Solid	6010B SEP	89126
140-37375-8	APW 22S_20.5-22'	Step 2	Solid	6010B SEP	89175
140-37375-8	APW 22S_20.5-22'	Step 3	Solid	6010B SEP	89225
140-37375-9	APW 23S_12-16'	Step 1	Solid	6010B SEP	89126
140-37375-9	APW 23S_12-16'	Step 2	Solid	6010B SEP	89175
140-37375-9	APW 23S_12-16'	Step 3	Solid	6010B SEP	89225
140-37375-10	APW 23_37-39'	Step 1	Solid	6010B SEP	89126
140-37375-10	APW 23_37-39'	Step 2	Solid	6010B SEP	89175
140-37375-10	APW 23_37-39'	Step 3	Solid	6010B SEP	89225
MB 140-89089/18-B ^4	Method Blank	Step 1	Solid	6010B SEP	89126
MB 140-89137/18-B ^3	Method Blank	Step 2	Solid	6010B SEP	89175
MB 140-89192/18-B	Method Blank	Step 3	Solid	6010B SEP	89225
LCS 140-89089/19-B ^5	Lab Control Sample	Step 1	Solid	6010B SEP	89126

Metals (Continued)

Analysis Batch: 89629 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 140-89137/19-B ^5	Lab Control Sample	Step 2	Solid	6010B SEP	89175
LCS 140-89192/19-B	Lab Control Sample	Step 3	Solid	6010B SEP	89225
LCSD 140-89089/20-B ^5	Lab Control Sample Dup	Step 1	Solid	6010B SEP	89126
LCSD 140-89137/20-B ^5	Lab Control Sample Dup	Step 2	Solid	6010B SEP	89175
LCSD 140-89192/20-B	Lab Control Sample Dup	Step 3	Solid	6010B SEP	89225
140-37375-2 DU	APW 19S_16-18'	Step 1	Solid	6010B SEP	89126
140-37375-2 DU	APW 19S_16-18'	Step 2	Solid	6010B SEP	89175
140-37375-2 DU	APW 19S_16-18'	Step 3	Solid	6010B SEP	89225

Analysis Batch: 89677

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 4	Solid	6010B SEP	89333
140-37375-1	APW 19S_7.5-8.2'	Step 5	Solid	6010B SEP	89471
140-37375-1	APW 19S_7.5-8.2'	Step 6	Solid	6010B SEP	89474
140-37375-2	APW 19S_16-18'	Step 4	Solid	6010B SEP	89333
140-37375-2	APW 19S_16-18'	Step 5	Solid	6010B SEP	89471
140-37375-2	APW 19S_16-18'	Step 6	Solid	6010B SEP	89474
140-37375-3	APW 20S_14-16'	Step 4	Solid	6010B SEP	89333
140-37375-3	APW 20S_14-16'	Step 5	Solid	6010B SEP	89471
140-37375-3	APW 20S_14-16'	Step 6	Solid	6010B SEP	89474
140-37375-4	APW 20S_20-22'	Step 4	Solid	6010B SEP	89333
140-37375-4	APW 20S_20-22'	Step 5	Solid	6010B SEP	89471
140-37375-4	APW 20S_20-22'	Step 6	Solid	6010B SEP	89474
140-37375-5	APW 21S_8-10'	Step 4	Solid	6010B SEP	89333
140-37375-5	APW 21S_8-10'	Step 5	Solid	6010B SEP	89471
140-37375-5	APW 21S_8-10'	Step 6	Solid	6010B SEP	89474
140-37375-6	APW 21S_14-16'	Step 4	Solid	6010B SEP	89333
140-37375-6	APW 21S_14-16'	Step 5	Solid	6010B SEP	89471
140-37375-6	APW 21S_14-16'	Step 6	Solid	6010B SEP	89474
140-37375-7	APW 22S_9-11'	Step 4	Solid	6010B SEP	89333
140-37375-7	APW 22S_9-11'	Step 5	Solid	6010B SEP	89471
140-37375-7	APW 22S_9-11'	Step 6	Solid	6010B SEP	89474
140-37375-8	APW 22S_20.5-22'	Step 4	Solid	6010B SEP	89333
140-37375-8	APW 22S_20.5-22'	Step 5	Solid	6010B SEP	89471
140-37375-8	APW 22S_20.5-22'	Step 6	Solid	6010B SEP	89474
140-37375-9	APW 23S_12-16'	Step 4	Solid	6010B SEP	89333
140-37375-9	APW 23S_12-16'	Step 5	Solid	6010B SEP	89471
140-37375-9	APW 23S_12-16'	Step 6	Solid	6010B SEP	89474
140-37375-10	APW 23_37-39'	Step 4	Solid	6010B SEP	89333
140-37375-10	APW 23_37-39'	Step 5	Solid	6010B SEP	89471
140-37375-10	APW 23_37-39'	Step 6	Solid	6010B SEP	89474
MB 140-89248/18-B	Method Blank	Step 4	Solid	6010B SEP	89333
MB 140-89294/18-B ^5	Method Blank	Step 5	Solid	6010B SEP	89471
MB 140-89474/18-A	Method Blank	Step 6	Solid	6010B SEP	89474
LCS 140-89248/19-B	Lab Control Sample	Step 4	Solid	6010B SEP	89333
LCS 140-89294/19-B ^5	Lab Control Sample	Step 5	Solid	6010B SEP	89471
LCS 140-89474/19-A	Lab Control Sample	Step 6	Solid	6010B SEP	89474
LCSD 140-89248/20-B	Lab Control Sample Dup	Step 4	Solid	6010B SEP	89333
LCSD 140-89294/20-B ^5	Lab Control Sample Dup	Step 5	Solid	6010B SEP	89471
LCSD 140-89474/20-A	Lab Control Sample Dup	Step 6	Solid	6010B SEP	89474
140-37375-2 DU	APW 19S_16-18'	Step 4	Solid	6010B SEP	89333

Metals (Continued)

Analysis Batch: 89677 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-2 DU	APW 19S_16-18'	Step 5	Solid	6010B SEP	89471
140-37375-2 DU	APW 19S_16-18'	Step 6	Solid	6010B SEP	89474

Analysis Batch: 89783

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 7	Solid	6010B SEP	89496
140-37375-1	APW 19S_7.5-8.2'	Total/NA	Solid	6010B	89085
140-37375-2	APW 19S_16-18'	Step 7	Solid	6010B SEP	89496
140-37375-2	APW 19S_16-18'	Total/NA	Solid	6010B	89085
140-37375-3	APW 20S_14-16'	Step 7	Solid	6010B SEP	89496
140-37375-3	APW 20S_14-16'	Total/NA	Solid	6010B	89085
140-37375-4	APW 20S_20-22'	Step 7	Solid	6010B SEP	89496
140-37375-4	APW 20S_20-22'	Total/NA	Solid	6010B	89085
140-37375-5	APW 21S_8-10'	Step 7	Solid	6010B SEP	89496
140-37375-5	APW 21S_8-10'	Total/NA	Solid	6010B	89085
140-37375-6	APW 21S_14-16'	Step 7	Solid	6010B SEP	89496
140-37375-6	APW 21S_14-16'	Total/NA	Solid	6010B	89085
140-37375-7	APW 22S_9-11'	Step 7	Solid	6010B SEP	89496
140-37375-7	APW 22S_9-11'	Total/NA	Solid	6010B	89085
140-37375-8	APW 22S_20.5-22'	Step 7	Solid	6010B SEP	89496
140-37375-8	APW 22S_20.5-22'	Total/NA	Solid	6010B	89085
140-37375-9	APW 23S_12-16'	Step 7	Solid	6010B SEP	89496
140-37375-9	APW 23S_12-16'	Total/NA	Solid	6010B	89085
140-37375-10	APW 23_37-39'	Step 7	Solid	6010B SEP	89496
140-37375-10	APW 23_37-39'	Total/NA	Solid	6010B	89085
MB 140-89085/18-A	Method Blank	Total/NA	Solid	6010B	89085
MB 140-89496/18-A	Method Blank	Step 7	Solid	6010B SEP	89496
LCS 140-89085/19-A	Lab Control Sample	Total/NA	Solid	6010B	89085
LCS 140-89496/19-A	Lab Control Sample	Step 7	Solid	6010B SEP	89496
LCSD 140-89085/20-A	Lab Control Sample Dup	Total/NA	Solid	6010B	89085
LCSD 140-89496/20-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	89496
140-37375-2 DU	APW 19S_16-18'	Step 7	Solid	6010B SEP	89496
140-37375-2 DU	APW 19S_16-18'	Total/NA	Solid	6010B	89085

Analysis Batch: 89793

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 7	Solid	6010B SEP	89496
140-37375-1	APW 19S_7.5-8.2'	Total/NA	Solid	6010B	89085
140-37375-2	APW 19S_16-18'	Step 7	Solid	6010B SEP	89496
140-37375-2	APW 19S_16-18'	Total/NA	Solid	6010B	89085
140-37375-3	APW 20S_14-16'	Step 7	Solid	6010B SEP	89496
140-37375-3	APW 20S_14-16'	Total/NA	Solid	6010B	89085
140-37375-4	APW 20S_20-22'	Step 7	Solid	6010B SEP	89496
140-37375-4	APW 20S_20-22'	Total/NA	Solid	6010B	89085
140-37375-5	APW 21S_8-10'	Step 7	Solid	6010B SEP	89496
140-37375-5	APW 21S_8-10'	Total/NA	Solid	6010B	89085
140-37375-6	APW 21S_14-16'	Step 7	Solid	6010B SEP	89496
140-37375-6	APW 21S_14-16'	Total/NA	Solid	6010B	89085
140-37375-7	APW 22S_9-11'	Step 7	Solid	6010B SEP	89496
140-37375-7	APW 22S_9-11'	Total/NA	Solid	6010B	89085
140-37375-8	APW 22S_20.5-22'	Step 7	Solid	6010B SEP	89496

Metals (Continued)

Analysis Batch: 89793 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-8	APW 22S_20.5-22'	Total/NA	Solid	6010B	89085
140-37375-9	APW 23S_12-16'	Step 7	Solid	6010B SEP	89496
140-37375-9	APW 23S_12-16'	Total/NA	Solid	6010B	89085
140-37375-10	APW 23_37-39'	Step 7	Solid	6010B SEP	89496
140-37375-10	APW 23_37-39'	Total/NA	Solid	6010B	89085
MB 140-89085/18-A	Method Blank	Total/NA	Solid	6010B	89085
MB 140-89496/18-A	Method Blank	Step 7	Solid	6010B SEP	89496
LCS 140-89085/19-A	Lab Control Sample	Total/NA	Solid	6010B	89085
LCS 140-89496/19-A	Lab Control Sample	Step 7	Solid	6010B SEP	89496
LCSD 140-89085/20-A	Lab Control Sample Dup	Total/NA	Solid	6010B	89085
LCSD 140-89496/20-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	89496
140-37375-2 DU	APW 19S_16-18'	Step 7	Solid	6010B SEP	89496
140-37375-2 DU	APW 19S_16-18'	Total/NA	Solid	6010B	89085

Analysis Batch: 89842

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Step 7	Solid	6010B SEP	89496
140-37375-1	APW 19S_7.5-8.2'	Total/NA	Solid	6010B	89085
140-37375-2	APW 19S_16-18'	Step 7	Solid	6010B SEP	89496
140-37375-3	APW 20S_14-16'	Step 7	Solid	6010B SEP	89496
140-37375-4	APW 20S_20-22'	Step 7	Solid	6010B SEP	89496
140-37375-5	APW 21S_8-10'	Step 7	Solid	6010B SEP	89496
140-37375-5	APW 21S_8-10'	Total/NA	Solid	6010B	89085
140-37375-6	APW 21S_14-16'	Step 7	Solid	6010B SEP	89496
140-37375-6	APW 21S_14-16'	Total/NA	Solid	6010B	89085
140-37375-7	APW 22S_9-11'	Step 7	Solid	6010B SEP	89496
140-37375-7	APW 22S_9-11'	Total/NA	Solid	6010B	89085
140-37375-8	APW 22S_20.5-22'	Step 7	Solid	6010B SEP	89496
140-37375-8	APW 22S_20.5-22'	Total/NA	Solid	6010B	89085
140-37375-9	APW 23S_12-16'	Step 7	Solid	6010B SEP	89496
140-37375-9	APW 23S_12-16'	Total/NA	Solid	6010B	89085
140-37375-10	APW 23_37-39'	Step 7	Solid	6010B SEP	89496
140-37375-10	APW 23_37-39'	Total/NA	Solid	6010B	89085
140-37375-2 DU	APW 19S_16-18'	Step 7	Solid	6010B SEP	89496

Analysis Batch: 89970

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Sum of Steps 1-7	Solid	6010B SEP	
140-37375-2	APW 19S_16-18'	Sum of Steps 1-7	Solid	6010B SEP	
140-37375-3	APW 20S_14-16'	Sum of Steps 1-7	Solid	6010B SEP	
140-37375-4	APW 20S_20-22'	Sum of Steps 1-7	Solid	6010B SEP	
140-37375-5	APW 21S_8-10'	Sum of Steps 1-7	Solid	6010B SEP	
140-37375-6	APW 21S_14-16'	Sum of Steps 1-7	Solid	6010B SEP	
140-37375-7	APW 22S_9-11'	Sum of Steps 1-7	Solid	6010B SEP	
140-37375-8	APW 22S_20.5-22'	Sum of Steps 1-7	Solid	6010B SEP	
140-37375-9	APW 23S_12-16'	Sum of Steps 1-7	Solid	6010B SEP	
140-37375-10	APW 23_37-39'	Sum of Steps 1-7	Solid	6010B SEP	

General Chemistry

Analysis Batch: 88351

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Total/NA	Solid	Loss On Ignit.	
140-37375-2	APW 19S_16-18'	Total/NA	Solid	Loss On Ignit.	
140-37375-3	APW 20S_14-16'	Total/NA	Solid	Loss On Ignit.	
140-37375-4	APW 20S_20-22'	Total/NA	Solid	Loss On Ignit.	
140-37375-5	APW 21S_8-10'	Total/NA	Solid	Loss On Ignit.	
140-37375-6	APW 21S_14-16'	Total/NA	Solid	Loss On Ignit.	
140-37375-7	APW 22S_9-11'	Total/NA	Solid	Loss On Ignit.	
140-37375-8	APW 22S_20.5-22'	Total/NA	Solid	Loss On Ignit.	
140-37375-9	APW 23S_12-16'	Total/NA	Solid	Loss On Ignit.	
140-37375-10	APW 23_37-39'	Total/NA	Solid	Loss On Ignit.	
MB 140-88351/1	Method Blank	Total/NA	Solid	Loss On Ignit.	
LCS 140-88351/2	Lab Control Sample	Total/NA	Solid	Loss On Ignit.	
LCSD 140-88351/3	Lab Control Sample Dup	Total/NA	Solid	Loss On Ignit.	
140-37375-2 DU	APW 19S_16-18'	Total/NA	Solid	Loss On Ignit.	

Analysis Batch: 88450

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-37375-1	APW 19S_7.5-8.2'	Total/NA	Solid	Moisture	
140-37375-2	APW 19S_16-18'	Total/NA	Solid	Moisture	
140-37375-3	APW 20S_14-16'	Total/NA	Solid	Moisture	
140-37375-4	APW 20S_20-22'	Total/NA	Solid	Moisture	
140-37375-5	APW 21S_8-10'	Total/NA	Solid	Moisture	
140-37375-6	APW 21S_14-16'	Total/NA	Solid	Moisture	
140-37375-7	APW 22S_9-11'	Total/NA	Solid	Moisture	
140-37375-8	APW 22S_20.5-22'	Total/NA	Solid	Moisture	
140-37375-9	APW 23S_12-16'	Total/NA	Solid	Moisture	
140-37375-10	APW 23_37-39'	Total/NA	Solid	Moisture	
140-37375-2 DU	APW 19S_16-18'	Total/NA	Solid	Moisture	

Client Sample ID: APW 19S_7.5-8.2'

Lab Sample ID: 140-37375-1

Date Collected: 06/18/24 16:20

Matrix: Solid

Date Received: 06/28/24 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			89970	08/14/24 18:56	KNC	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Loss On Ignit.		1	1.3488 g	1 g	88351	07/02/24 13:38	SJF	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			88450	07/08/24 08:59	SJF	EET KNX
	Instrument ID: NOEQUIP									

Client Sample ID: APW 19S_7.5-8.2'

Lab Sample ID: 140-37375-1

Date Collected: 06/18/24 16:20

Matrix: Solid

Date Received: 06/28/24 09:30

Percent Solids: 91.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		10			89783	08/10/24 13:07	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89793	08/11/24 12:47	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		2			89842	08/12/24 14:05	KNC	EET KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	89089	07/23/24 08:00	JDM	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	89126	07/24/24 07:00	JDM	EET KNX
Step 1	Analysis	6010B SEP		4			89629	08/06/24 12:40	KNC	EET KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	89137	07/24/24 08:00	JDM	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	89175	07/25/24 07:00	JDM	EET KNX
Step 2	Analysis	6010B SEP		3			89629	08/06/24 14:43	KNC	EET KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	89192	07/25/24 08:00	JDM	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	89225	07/26/24 07:00	JDM	EET KNX
Step 3	Analysis	6010B SEP		1			89629	08/06/24 16:49	KNC	EET KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	89248	07/26/24 07:00	JDM	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	89333	07/30/24 07:00	JDM	EET KNX
Step 4	Analysis	6010B SEP		1			89677	08/07/24 15:19	KNC	EET KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	89294	07/29/24 07:00	JDM	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	89471	08/02/24 07:00	JDM	EET KNX
Step 5	Analysis	6010B SEP		5			89677	08/07/24 17:23	KNC	EET KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	89474	08/02/24 07:30	JDM	EET KNX
Step 6	Analysis	6010B SEP		1			89677	08/07/24 19:29	KNC	EET KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Ramboll Americas Engineering Solutions
Project/Site: Newton Nature & Extent SEP

Job ID: 140-37375-1

Client Sample ID: APW 19S_7.5-8.2'
Date Collected: 06/18/24 16:20
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-1
Matrix: Solid
Percent Solids: 91.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		10			89783	08/10/24 11:20	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89793	08/11/24 10:55	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		2			89842	08/12/24 11:53	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: APW 19S_16-18'
Date Collected: 06/18/24 16:30
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			89970	08/14/24 18:56	KNC	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Loss On Ignit.		1	2.0571 g	1 g	88351	07/02/24 13:38	SJF	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			88450	07/08/24 08:59	SJF	EET KNX
	Instrument ID: NOEQUIP									

Client Sample ID: APW 19S_16-18'
Date Collected: 06/18/24 16:30
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-2
Matrix: Solid
Percent Solids: 86.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		10			89783	08/10/24 13:12	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89793	08/11/24 12:53	KNC	EET KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	89089	07/23/24 08:00	JDM	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	89126	07/24/24 07:00	JDM	EET KNX
Step 1	Analysis	6010B SEP		4			89629	08/06/24 12:45	KNC	EET KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	89137	07/24/24 08:00	JDM	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	89175	07/25/24 07:00	JDM	EET KNX
Step 2	Analysis	6010B SEP		3			89629	08/06/24 14:49	KNC	EET KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	89192	07/25/24 08:00	JDM	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	89225	07/26/24 07:00	JDM	EET KNX
Step 3	Analysis	6010B SEP		1			89629	08/06/24 16:54	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: APW 19S_16-18'

Lab Sample ID: 140-37375-2
Date Collected: 06/18/24 16:30
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 86.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	89248	07/26/24 07:00	JDM	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	89333	07/30/24 07:00	JDM	EET KNX
Step 4	Analysis	6010B SEP		1			89677	08/07/24 15:24	KNC	EET KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	89294	07/29/24 07:00	JDM	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	89471	08/02/24 07:00	JDM	EET KNX
Step 5	Analysis	6010B SEP		5			89677	08/07/24 17:28	KNC	EET KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	89474	08/02/24 07:30	JDM	EET KNX
Step 6	Analysis	6010B SEP		1			89677	08/07/24 19:34	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		10			89783	08/10/24 11:25	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89793	08/11/24 11:00	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		2			89842	08/12/24 11:58	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: APW 20S_14-16'

Lab Sample ID: 140-37375-3
Date Collected: 06/18/24 11:00
Matrix: Solid
Date Received: 06/28/24 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			89970	08/14/24 18:56	KNC	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Loss On Ignit.		1	1.7380 g	1 g	88351	07/02/24 13:38	SJF	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			88450	07/08/24 08:59	SJF	EET KNX
	Instrument ID: NOEQUIP									

Client Sample ID: APW 20S_14-16'

Lab Sample ID: 140-37375-3
Date Collected: 06/18/24 11:00
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 93.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		10			89783	08/10/24 13:21	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89793	08/11/24 13:03	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: APW 20S_14-16'

Date Collected: 06/18/24 11:00
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-3

Matrix: Solid
Percent Solids: 93.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	89089	07/23/24 08:00	JDM	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	89126	07/24/24 07:00	JDM	EET KNX
Step 1	Analysis	6010B SEP		4			89629	08/06/24 12:55	KNC	EET KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	89137	07/24/24 08:00	JDM	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	89175	07/25/24 07:00	JDM	EET KNX
Step 2	Analysis	6010B SEP		3			89629	08/06/24 14:59	KNC	EET KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	89192	07/25/24 08:00	JDM	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	89225	07/26/24 07:00	JDM	EET KNX
Step 3	Analysis	6010B SEP		1			89629	08/06/24 17:04	KNC	EET KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	89248	07/26/24 07:00	JDM	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	89333	07/30/24 07:00	JDM	EET KNX
Step 4	Analysis	6010B SEP		1			89677	08/07/24 15:34	KNC	EET KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	89294	07/29/24 07:00	JDM	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	89471	08/02/24 07:00	JDM	EET KNX
Step 5	Analysis	6010B SEP		5			89677	08/07/24 17:39	KNC	EET KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	89474	08/02/24 07:30	JDM	EET KNX
Step 6	Analysis	6010B SEP		1			89677	08/07/24 19:44	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		10			89783	08/10/24 11:49	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89793	08/11/24 11:24	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		2			89842	08/12/24 12:08	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: APW 20S_20-22'

Date Collected: 06/18/24 11:10
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-4

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			89970	08/14/24 18:56	KNC	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Loss On Ignit.		1	1.2046 g	1 g	88351	07/02/24 13:38	SJF	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			88450	07/08/24 08:59	SJF	EET KNX
	Instrument ID: NOEQUIP									

Client Sample ID: APW 20S_20-22'

Date Collected: 06/18/24 11:10
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-4

Matrix: Solid
Percent Solids: 90.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		10			89783	08/10/24 13:26	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89793	08/11/24 13:09	KNC	EET KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	89089	07/23/24 08:00	JDM	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	89126	07/24/24 07:00	JDM	EET KNX
Step 1	Analysis	6010B SEP		4			89629	08/06/24 13:00	KNC	EET KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	89137	07/24/24 08:00	JDM	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	89175	07/25/24 07:00	JDM	EET KNX
Step 2	Analysis	6010B SEP		3			89629	08/06/24 15:04	KNC	EET KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	89192	07/25/24 08:00	JDM	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	89225	07/26/24 07:00	JDM	EET KNX
Step 3	Analysis	6010B SEP		1			89629	08/06/24 17:24	KNC	EET KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	89248	07/26/24 07:00	JDM	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	89333	07/30/24 07:00	JDM	EET KNX
Step 4	Analysis	6010B SEP		1			89677	08/07/24 15:39	KNC	EET KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	89294	07/29/24 07:00	JDM	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	89471	08/02/24 07:00	JDM	EET KNX
Step 5	Analysis	6010B SEP		5			89677	08/07/24 17:44	KNC	EET KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	89474	08/02/24 07:30	JDM	EET KNX
Step 6	Analysis	6010B SEP		1			89677	08/07/24 20:04	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		10			89783	08/10/24 11:54	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89793	08/11/24 11:29	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		2			89842	08/12/24 12:13	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: APW 21S_8-10'

Date Collected: 06/18/24 18:50
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-5

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			89970	08/14/24 18:56	KNC	EET KNX
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Ramboll Americas Engineering Solutions
Project/Site: Newton Nature & Extent SEP

Job ID: 140-37375-1

Client Sample ID: APW 21S_8-10'

Date Collected: 06/18/24 18:50
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-5

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Loss On Ignit.		1	1.6417 g	1 g	88351	07/02/24 13:38	SJF	EET KNX
Total/NA	Analysis	Moisture		1			88450	07/08/24 08:59	SJF	EET KNX
	Instrument ID: NOEQUIP									

Client Sample ID: APW 21S_8-10'

Date Collected: 06/18/24 18:50
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-5

Matrix: Solid
Percent Solids: 87.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		10			89783	08/10/24 13:46	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89793	08/11/24 13:29	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		2			89842	08/12/24 14:10	KNC	EET KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	89089	07/23/24 08:00	JDM	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	89126	07/24/24 07:00	JDM	EET KNX
Step 1	Analysis	6010B SEP		4			89629	08/06/24 13:04	KNC	EET KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	89137	07/24/24 08:00	JDM	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	89175	07/25/24 07:00	JDM	EET KNX
Step 2	Analysis	6010B SEP		3			89629	08/06/24 15:24	KNC	EET KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	89192	07/25/24 08:00	JDM	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	89225	07/26/24 07:00	JDM	EET KNX
Step 3	Analysis	6010B SEP		1			89629	08/06/24 17:29	KNC	EET KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	89248	07/26/24 07:00	JDM	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	89333	07/30/24 07:00	JDM	EET KNX
Step 4	Analysis	6010B SEP		1			89677	08/07/24 15:44	KNC	EET KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	89294	07/29/24 07:00	JDM	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	89471	08/02/24 07:00	JDM	EET KNX
Step 5	Analysis	6010B SEP		5			89677	08/07/24 18:04	KNC	EET KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	89474	08/02/24 07:30	JDM	EET KNX
Step 6	Analysis	6010B SEP		1			89677	08/07/24 20:09	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		10			89783	08/10/24 11:59	KNC	EET KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Ramboll Americas Engineering Solutions
Project/Site: Newton Nature & Extent SEP

Job ID: 140-37375-1

Client Sample ID: APW 21S_8-10'

Lab Sample ID: 140-37375-5
Date Collected: 06/18/24 18:50
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 87.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89793	08/11/24 11:34	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		2			89842	08/12/24 12:17	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: APW 21S_14-16'

Lab Sample ID: 140-37375-6
Date Collected: 06/18/24 18:55
Matrix: Solid
Date Received: 06/28/24 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			89970	08/14/24 18:56	KNC	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Loss On Ignit.		1	1.1741 g	1 g	88351	07/02/24 13:38	SJF	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			88450	07/08/24 08:59	SJF	EET KNX
	Instrument ID: NOEQUIP									

Client Sample ID: APW 21S_14-16'

Lab Sample ID: 140-37375-6
Date Collected: 06/18/24 18:55
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 92.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		10			89783	08/10/24 13:51	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89793	08/11/24 13:34	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		2			89842	08/12/24 14:15	KNC	EET KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	89089	07/23/24 08:00	JDM	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	89126	07/24/24 07:00	JDM	EET KNX
Step 1	Analysis	6010B SEP		4			89629	08/06/24 13:24	KNC	EET KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	89137	07/24/24 08:00	JDM	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	89175	07/25/24 07:00	JDM	EET KNX
Step 2	Analysis	6010B SEP		3			89629	08/06/24 15:29	KNC	EET KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	89192	07/25/24 08:00	JDM	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	89225	07/26/24 07:00	JDM	EET KNX
Step 3	Analysis	6010B SEP		1			89629	08/06/24 17:35	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: APW 21S_14-16'

Lab Sample ID: 140-37375-6
Date Collected: 06/18/24 18:55
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 92.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	89248	07/26/24 07:00	JDM	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	89333	07/30/24 07:00	JDM	EET KNX
Step 4	Analysis	6010B SEP		1			89677	08/07/24 16:04	KNC	EET KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	89294	07/29/24 07:00	JDM	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	89471	08/02/24 07:00	JDM	EET KNX
Step 5	Analysis	6010B SEP		5			89677	08/07/24 18:09	KNC	EET KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	89474	08/02/24 07:30	JDM	EET KNX
Step 6	Analysis	6010B SEP		1			89677	08/07/24 20:14	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		10			89783	08/10/24 12:04	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89793	08/11/24 11:39	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		2			89842	08/12/24 12:22	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: APW 22S_9-11'

Lab Sample ID: 140-37375-7
Date Collected: 06/19/24 11:45
Matrix: Solid
Date Received: 06/28/24 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			89970	08/14/24 18:56	KNC	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Loss On Ignit.		1	1.4109 g	1 g	88351	07/02/24 13:42	SJF	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			88450	07/08/24 08:59	SJF	EET KNX
	Instrument ID: NOEQUIP									

Client Sample ID: APW 22S_9-11'

Lab Sample ID: 140-37375-7
Date Collected: 06/19/24 11:45
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 85.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		10			89783	08/10/24 13:56	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89793	08/11/24 13:40	KNC	EET KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Ramboll Americas Engineering Solutions
Project/Site: Newton Nature & Extent SEP

Job ID: 140-37375-1

Client Sample ID: APW 22S_9-11'

Date Collected: 06/19/24 11:45
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-7

Matrix: Solid
Percent Solids: 85.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		2			89842	08/12/24 14:20	KNC	EET KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	89089	07/23/24 08:00	JDM	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	89126	07/24/24 07:00	JDM	EET KNX
Step 1	Analysis	6010B SEP		4			89629	08/06/24 13:29	KNC	EET KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	89137	07/24/24 08:00	JDM	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	89175	07/25/24 07:00	JDM	EET KNX
Step 2	Analysis	6010B SEP		3			89629	08/06/24 15:34	KNC	EET KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	89192	07/25/24 08:00	JDM	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	89225	07/26/24 07:00	JDM	EET KNX
Step 3	Analysis	6010B SEP		1			89629	08/06/24 17:40	KNC	EET KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	89248	07/26/24 07:00	JDM	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	89333	07/30/24 07:00	JDM	EET KNX
Step 4	Analysis	6010B SEP		1			89677	08/07/24 16:09	KNC	EET KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	89294	07/29/24 07:00	JDM	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	89471	08/02/24 07:00	JDM	EET KNX
Step 5	Analysis	6010B SEP		5			89677	08/07/24 18:14	KNC	EET KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	89474	08/02/24 07:30	JDM	EET KNX
Step 6	Analysis	6010B SEP		1			89677	08/07/24 20:20	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		10			89783	08/10/24 12:09	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89793	08/11/24 11:44	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		2			89842	08/12/24 12:27	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: APW 22S_20.5-22'

Date Collected: 06/19/24 11:55
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-8

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			89970	08/14/24 18:56	KNC	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Loss On Ignit.		1	1.5826 g	1 g	88351	07/02/24 13:42	SJF	EET KNX
	Instrument ID: NOEQUIP									

Client Sample ID: APW 22S_20.5-22'

Lab Sample ID: 140-37375-8

Date Collected: 06/19/24 11:55

Matrix: Solid

Date Received: 06/28/24 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			88450	07/08/24 08:59	SJF	EET KNX

Client Sample ID: APW 22S_20.5-22'

Lab Sample ID: 140-37375-8

Date Collected: 06/19/24 11:55

Matrix: Solid

Date Received: 06/28/24 09:30

Percent Solids: 91.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		10			89783	08/10/24 14:00	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89793	08/11/24 13:45	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		2			89842	08/12/24 14:25	KNC	EET KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	89089	07/23/24 08:00	JDM	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	89126	07/24/24 07:00	JDM	EET KNX
Step 1	Analysis	6010B SEP		4			89629	08/06/24 13:34	KNC	EET KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	89137	07/24/24 08:00	JDM	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	89175	07/25/24 07:00	JDM	EET KNX
Step 2	Analysis	6010B SEP		3			89629	08/06/24 15:39	KNC	EET KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	89192	07/25/24 08:00	JDM	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	89225	07/26/24 07:00	JDM	EET KNX
Step 3	Analysis	6010B SEP		1			89629	08/06/24 17:45	KNC	EET KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	89248	07/26/24 07:00	JDM	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	89333	07/30/24 07:00	JDM	EET KNX
Step 4	Analysis	6010B SEP		1			89677	08/07/24 16:14	KNC	EET KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	89294	07/29/24 07:00	JDM	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	89471	08/02/24 07:00	JDM	EET KNX
Step 5	Analysis	6010B SEP		5			89677	08/07/24 18:19	KNC	EET KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	89474	08/02/24 07:30	JDM	EET KNX
Step 6	Analysis	6010B SEP		1			89677	08/07/24 20:24	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		10			89783	08/10/24 12:14	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89793	08/11/24 11:49	KNC	EET KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Ramboll Americas Engineering Solutions
Job ID: 140-37375-1
Project/Site: Newton Nature & Extent SEP

Client Sample ID: APW 22S_20.5-22'
Lab Sample ID: 140-37375-8
Date Collected: 06/19/24 11:55
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 91.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		2			89842	08/12/24 12:32	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: APW 23S_12-16'
Lab Sample ID: 140-37375-9
Date Collected: 06/19/24 17:50
Matrix: Solid
Date Received: 06/28/24 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			89970	08/14/24 18:56	KNC	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Loss On Ignit.		1	1.5952 g	1 g	88351	07/02/24 13:42	SJF	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			88450	07/08/24 08:59	SJF	EET KNX
	Instrument ID: NOEQUIP									

Client Sample ID: APW 23S_12-16'
Lab Sample ID: 140-37375-9
Date Collected: 06/19/24 17:50
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 84.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		10			89783	08/10/24 14:05	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89793	08/11/24 13:50	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		2			89842	08/12/24 14:30	KNC	EET KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	89089	07/23/24 08:00	JDM	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	89126	07/24/24 07:00	JDM	EET KNX
Step 1	Analysis	6010B SEP		4			89629	08/06/24 13:39	KNC	EET KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	89137	07/24/24 08:00	JDM	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	89175	07/25/24 07:00	JDM	EET KNX
Step 2	Analysis	6010B SEP		3			89629	08/06/24 15:45	KNC	EET KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	89192	07/25/24 08:00	JDM	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	89225	07/26/24 07:00	JDM	EET KNX
Step 3	Analysis	6010B SEP		1			89629	08/06/24 17:50	KNC	EET KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	89248	07/26/24 07:00	JDM	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	89333	07/30/24 07:00	JDM	EET KNX
Step 4	Analysis	6010B SEP		1			89677	08/07/24 16:19	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: APW 23S_12-16'

Lab Sample ID: 140-37375-9
Date Collected: 06/19/24 17:50
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 84.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	89294	07/29/24 07:00	JDM	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	89471	08/02/24 07:00	JDM	EET KNX
Step 5	Analysis	6010B SEP		5			89677	08/07/24 18:24	KNC	EET KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	89474	08/02/24 07:30	JDM	EET KNX
Step 6	Analysis	6010B SEP		1			89677	08/07/24 20:30	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		10			89783	08/10/24 12:19	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89793	08/11/24 11:54	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		2			89842	08/12/24 12:52	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: APW 23_37-39'

Lab Sample ID: 140-37375-10
Date Collected: 06/20/24 11:45
Matrix: Solid
Date Received: 06/28/24 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			89970	08/14/24 18:56	KNC	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Loss On Ignit.		1	1.9275 g	1 g	88351	07/02/24 13:42	SJF	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			88450	07/08/24 08:59	SJF	EET KNX
	Instrument ID: NOEQUIP									

Client Sample ID: APW 23_37-39'

Lab Sample ID: 140-37375-10
Date Collected: 06/20/24 11:45
Matrix: Solid
Date Received: 06/28/24 09:30
Percent Solids: 85.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		10			89783	08/10/24 14:10	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89793	08/11/24 13:56	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		2			89842	08/12/24 14:35	KNC	EET KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Ramboll Americas Engineering Solutions
Project/Site: Newton Nature & Extent SEP

Job ID: 140-37375-1

Client Sample ID: APW 23_37-39'

Date Collected: 06/20/24 11:45
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-10

Matrix: Solid
Percent Solids: 85.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	89089	07/23/24 08:00	JDM	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	89126	07/24/24 07:00	JDM	EET KNX
Step 1	Analysis	6010B SEP		4			89629	08/06/24 13:44	KNC	EET KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	89137	07/24/24 08:00	JDM	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	89175	07/25/24 07:00	JDM	EET KNX
Step 2	Analysis	6010B SEP		3			89629	08/06/24 15:50	KNC	EET KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	89192	07/25/24 08:00	JDM	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	89225	07/26/24 07:00	JDM	EET KNX
Step 3	Analysis	6010B SEP		1			89629	08/06/24 17:55	KNC	EET KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	89248	07/26/24 07:00	JDM	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	89333	07/30/24 07:00	JDM	EET KNX
Step 4	Analysis	6010B SEP		1			89677	08/07/24 16:24	KNC	EET KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	89294	07/29/24 07:00	JDM	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	89471	08/02/24 07:00	JDM	EET KNX
Step 5	Analysis	6010B SEP		5			89677	08/07/24 18:29	KNC	EET KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	89474	08/02/24 07:30	JDM	EET KNX
Step 6	Analysis	6010B SEP		1			89677	08/07/24 20:35	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		10			89783	08/10/24 12:24	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89793	08/11/24 11:59	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		2			89842	08/12/24 12:57	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Date Collected: N/A
Date Received: N/A

Lab Sample ID: MB 140-88351/1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Loss On Ignit.		1	1.0123 g	1 g	88351	07/02/24 13:38	SJF	EET KNX
	Instrument ID: NOEQUIP									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-89085/18-A

Date Collected: N/A
Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89783	08/10/24 11:05	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89793	08/11/24 10:40	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-89089/18-B ^4

Date Collected: N/A
Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	89089	07/23/24 08:00	JDM	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	89126	07/24/24 07:00	JDM	EET KNX
Step 1	Analysis	6010B SEP		4			89629	08/06/24 12:25	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-89137/18-B ^3

Date Collected: N/A
Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	89137	07/24/24 08:00	JDM	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	89175	07/25/24 07:00	JDM	EET KNX
Step 2	Analysis	6010B SEP		3			89629	08/06/24 14:28	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-89192/18-B

Date Collected: N/A
Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	89192	07/25/24 08:00	JDM	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	89225	07/26/24 07:00	JDM	EET KNX
Step 3	Analysis	6010B SEP		1			89629	08/06/24 16:35	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-89248/18-B

Date Collected: N/A
Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	89248	07/26/24 07:00	JDM	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	89333	07/30/24 07:00	JDM	EET KNX
Step 4	Analysis	6010B SEP		1			89677	08/07/24 15:05	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-89294/18-B ^5

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	89294	07/29/24 07:00	JDM	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	89471	08/02/24 07:00	JDM	EET KNX
Step 5	Analysis	6010B SEP		5			89677	08/07/24 17:08	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-89474/18-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	89474	08/02/24 07:30	JDM	EET KNX
Step 6	Analysis	6010B SEP		1			89677	08/07/24 19:15	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-89496/18-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89783	08/10/24 10:51	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89793	08/11/24 10:25	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-88351/2

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Loss On Ignit.		1	1.0543 g	1 g	88351	07/02/24 13:38	SJF	EET KNX
	Instrument ID: NOEQUIP									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-89085/19-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89783	08/10/24 11:11	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89793	08/11/24 10:45	KNC	EET KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Ramboll Americas Engineering Solutions
Project/Site: Newton Nature & Extent SEP

Job ID: 140-37375-1

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-89089/19-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	89089	07/23/24 08:00	JDM	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	89126	07/24/24 07:00	JDM	EET KNX
Step 1	Analysis	6010B SEP		5			89629	08/06/24 12:30	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-89137/19-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	89137	07/24/24 08:00	JDM	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	89175	07/25/24 07:00	JDM	EET KNX
Step 2	Analysis	6010B SEP		5			89629	08/06/24 14:33	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-89192/19-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	89192	07/25/24 08:00	JDM	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	89225	07/26/24 07:00	JDM	EET KNX
Step 3	Analysis	6010B SEP		1			89629	08/06/24 16:40	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-89248/19-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	89248	07/26/24 07:00	JDM	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	89333	07/30/24 07:00	JDM	EET KNX
Step 4	Analysis	6010B SEP		1			89677	08/07/24 15:10	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-89294/19-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	89294	07/29/24 07:00	JDM	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	89471	08/02/24 07:00	JDM	EET KNX
Step 5	Analysis	6010B SEP		5			89677	08/07/24 17:13	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-89474/19-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	89474	08/02/24 07:30	JDM	EET KNX
Step 6	Analysis	6010B SEP		1			89677	08/07/24 19:20	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-89496/19-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89783	08/10/24 10:56	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89793	08/11/24 10:30	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-88351/3
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Loss On Ignit.		1	1.3115 g	1 g	88351	07/02/24 13:38	SJF	EET KNX
	Instrument ID: NOEQUIP									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-89085/20-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89783	08/10/24 11:15	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89793	08/11/24 10:50	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-89089/20-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	89089	07/23/24 08:00	JDM	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	89126	07/24/24 07:00	JDM	EET KNX
Step 1	Analysis	6010B SEP		5			89629	08/06/24 12:35	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-89137/20-B ^5

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	89137	07/24/24 08:00	JDM	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	89175	07/25/24 07:00	JDM	EET KNX
Step 2	Analysis	6010B SEP		5			89629	08/06/24 14:38	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-89192/20-B

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	89192	07/25/24 08:00	JDM	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	89225	07/26/24 07:00	JDM	EET KNX
Step 3	Analysis	6010B SEP		1			89629	08/06/24 16:45	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-89248/20-B

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	89248	07/26/24 07:00	JDM	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	89333	07/30/24 07:00	JDM	EET KNX
Step 4	Analysis	6010B SEP		1			89677	08/07/24 15:15	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-89294/20-B ^5

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	89294	07/29/24 07:00	JDM	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	89471	08/02/24 07:00	JDM	EET KNX
Step 5	Analysis	6010B SEP		5			89677	08/07/24 17:18	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-89474/20-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	89474	08/02/24 07:30	JDM	EET KNX
Step 6	Analysis	6010B SEP		1			89677	08/07/24 19:24	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-89496/20-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89783	08/10/24 11:01	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89793	08/11/24 10:35	KNC	EET KNX
	Instrument ID: DUO									

Client Sample ID: APW 19S_16-18'

Lab Sample ID: 140-37375-2 DU

Date Collected: 06/18/24 16:30

Matrix: Solid

Date Received: 06/28/24 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Loss On Ignit.		1	2.0628 g	1 g	88351	07/02/24 13:38	SJF	EET KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			88450	07/08/24 08:59	SJF	EET KNX
	Instrument ID: NOEQUIP									

Client Sample ID: APW 19S_16-18'

Lab Sample ID: 140-37375-2 DU

Date Collected: 06/18/24 16:30

Matrix: Solid

Date Received: 06/28/24 09:30

Percent Solids: 86.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		10			89783	08/10/24 13:16	KNC	EET KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	89085	08/05/24 08:00	JDM	EET KNX
Total/NA	Analysis	6010B		1			89793	08/11/24 12:58	KNC	EET KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	89089	07/23/24 08:00	JDM	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	89126	07/24/24 07:00	JDM	EET KNX
Step 1	Analysis	6010B SEP		4			89629	08/06/24 12:50	KNC	EET KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	89137	07/24/24 08:00	JDM	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	89175	07/25/24 07:00	JDM	EET KNX
Step 2	Analysis	6010B SEP		3			89629	08/06/24 14:54	KNC	EET KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	89192	07/25/24 08:00	JDM	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	89225	07/26/24 07:00	JDM	EET KNX
Step 3	Analysis	6010B SEP		1			89629	08/06/24 16:59	KNC	EET KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	89248	07/26/24 07:00	JDM	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	89333	07/30/24 07:00	JDM	EET KNX
Step 4	Analysis	6010B SEP		1			89677	08/07/24 15:29	KNC	EET KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Ramboll Americas Engineering Solutions
Project/Site: Newton Nature & Extent SEP

Job ID: 140-37375-1

Client Sample ID: APW 19S_16-18'

Date Collected: 06/18/24 16:30
Date Received: 06/28/24 09:30

Lab Sample ID: 140-37375-2 DU

Matrix: Solid
Percent Solids: 86.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	89294	07/29/24 07:00	JDM	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	89471	08/02/24 07:00	JDM	EET KNX
Step 5	Analysis	6010B SEP		5			89677	08/07/24 17:34	KNC	EET KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	89474	08/02/24 07:30	JDM	EET KNX
Step 6	Analysis	6010B SEP		1			89677	08/07/24 19:39	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		10			89783	08/10/24 11:30	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		1			89793	08/11/24 11:05	KNC	EET KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	89496	08/05/24 07:00	JDM	EET KNX
Step 7	Analysis	6010B SEP		2			89842	08/12/24 12:03	KNC	EET KNX
	Instrument ID: DUO									

Laboratory References:
EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: Ramboll Americas Engineering Solutions
Job ID: 140-37375-1
Project/Site: Newton Nature & Extent SEP

Laboratory: Eurofins Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-25
ANAB	Dept. of Energy	L2311.01	02-13-25
ANAB	ISO/IEC 17025	L2311	02-13-25
Arkansas DEQ	State	88-0688	06-17-25
Colorado	State	TN00009	02-28-25
Connecticut	State	PH-0223	10-01-26
Florida	NELAP	E87177	06-30-25
Georgia (DW)	State	906	07-27-25
Hawaii	State	NA	07-27-25
Kansas	NELAP	E-10349	10-31-24
Kentucky (DW)	State	90101	12-31-24
Louisiana (All)	NELAP	83979	06-30-25
Louisiana (DW)	State	LA019	12-31-24
Maryland	State	277	03-31-25
Michigan	State	9933	07-27-25
Nevada	State	TN00009	10-31-24
New Hampshire	NELAP	2999	01-17-25
New Jersey	NELAP	TN001	06-30-25
New York	NELAP	10781	03-31-25
North Carolina (DW)	State	21705	07-31-25
North Carolina (WW/SW)	State	64	12-31-24
Oklahoma	State	9415	08-31-24
Oregon	NELAP	TNI0189	01-01-25
Pennsylvania	NELAP	68-00576	12-31-24
Tennessee	State	02014	07-27-25
Texas	NELAP	T104704380-23-18	08-31-24
US Fish & Wildlife	US Federal Programs	058448	07-31-25
USDA	US Federal Programs	525-22-279-18762	10-06-25
Utah	NELAP	TN00009	07-31-24 *
Virginia	NELAP	460176	09-14-24
Washington	State	C593	01-19-25
West Virginia (DW)	State	9955C	12-31-24
West Virginia DEP	State	345	04-30-25
Wisconsin	State	998044300	08-31-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Ramboll Americas Engineering Solutions
Job ID: 140-37375-1
Project/Site: Newton Nature & Extent SEP

Method	Method Description	Protocol	Laboratory
6010B	SEP Metals (ICP) - Total	SW846	EET KNX
6010B SEP	SEP Metals (ICP)	SW846	EET KNX
Loss On Ignit.	Loss On Ignition	SPCC	EET KNX
Moisture	Percent Moisture	EPA	EET KNX
3010A	Preparation, Total Metals	SW846	EET KNX
Acid/Sulfide	Sequential Extraction Procedure, Acid/Sulfide Fraction	TAL-KNOX	EET KNX
Carbonate	Sequential Extraction Procedure, Carbonate Fraction	TAL-KNOX	EET KNX
Exchangeable	Sequential Extraction Procedure, Exchangeable Fraction	TAL-KNOX	EET KNX
Metal Hydroxide	Sequential Extraction Procedure, Metal Hydroxide Fraction	TAL-KNOX	EET KNX
Non-Crystalline	Sequential Extraction Procedure, Non-crystalline Materials	TAL-KNOX	EET KNX
Organic-Bound	Sequential Extraction Procedure, Organic Bound Fraction	TAL-KNOX	EET KNX
Residual	Sequential Extraction Procedure, Residual Fraction	TAL-KNOX	EET KNX
Total	Preparation, Total Material	TAL-KNOX	EET KNX

Protocol References:

EPA = US Environmental Protection Agency
SPCC = Society for Protective Coatings
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-KNOX = TestAmerica Laboratories, Knoxville, Facility Standard Operating Procedure.

Laboratory References:

EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Eurofins Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

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Client Information	Sampler: Michael Davis	Lab PM: Henry, Ryan	Carrier Tracking No(s):	COC No: 140-14132-3683.1
Client Contact: Michael Davis	Phone: 708-415-7367	E-Mail: WilliamR.Henry@et.eurofinsus.com	State of Origin: IL	Page: Page 1 of 2
Company: Ramboll Americas Engineering Solutions	PWSID:			Job #:
Address: 333 W Wacker Drive Suite 1050	Due Date Requested:			
City: Chicago	TAT Requested (days): Standard			
State, Zip: IL, 60606	Compliance Project: Δ Yes Δ No			
Phone: 708-415-7367	PO #: ~~4940108210~~ 1940009388			
Email: mdavis@ramboll.com	WO #:			
Project Name: ~~Kincaid Nature & Extent SEP~~ NEWTON N+E	Project #: ~~44087449~~ 1940108208			
Site: Newton Power Plant	SSOW#:			

Analysis Requested

Preservation Codes: N - None

140-37375 Chain of Custody

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	LossOnIgnition - Loss on Ignition	6010B_SEP - 7-Step SEP	Total Number of cont	Special Instructions/Note:
			Preservation Code:				N	N		
APW19S_7.5-8.2'	6/18/24	1620	G	S			X	X	1	
APW19S_16-18'	6/18/24	1630					X	X	1	
APW20S_14-16'	6/18/24	1100					X	X	1	
APW20S_20-22'	6/18/24	1110					X	X	1	
APW21S_8-10'	6/18/24	1850					X	X	1	
APW21S_14-16'	6/18/24	1855					X	X	1	
APW22S_9-11'	6/19/24	1145					X	X	1	
APW22S_20.5-22'	6/19/24	1155					X	X	1	
APW23S_12-16'	6/19/24	1750					X	X	1	
APW23_37-39'	6/20/24	1145					X	X	1	

Other:

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☒ Archive For ( ) Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: Michael Davis	Date/Time: 6/25/24 1400	Company: Ramboll	Received by: [signature] Date/Time: 6.28.24 09:31 Company: ETNKX
Relinquished by:	Date/Time:	Company	Received by: Date/Time: Company
Relinquished by:	Date/Time:	Company	Received by: Date/Time: Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

140072448

Ver: 04/02/2024

8/15/2024

EUROFINS KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ Containers, Broken
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?	✓			☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID :_____ Correction factor: _____			✓	☐ Cooler Out of Temp, Client Contacted, Proceed/Cancel ☐ Cooler Out of Temp, Same Day Receipt
5. Were all of the sample containers received intact?	✓			☐ Containers, Broken
6. Were samples received in appropriate containers?	✓			☐ Containers, Improper; Client Contacted; Proceed/Cancel
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ COC & Samples Do Not Match ☐ COC Incorrect/Incomplete ☐ COC Not Received
8. Were all of the samples listed on the COC received?	✓			☐ Sample Received, Not on COC ☐ Sample on COC, Not Received
9. Is the date/time of sample collection noted?	✓			☐ COC; No Date/Time; Client Contacted
10. Was the sampler identified on the COC?	✓			☐ Sampler Not Listed on COC
11. Is the client and project name/# identified?	✓			☐ COC Incorrect/Incomplete
12. Are tests/parameters listed for each sample?	✓			☐ COC No tests on COC
13. Is the matrix of the samples noted?	✓			☐ COC Incorrect/Incomplete
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ COC Incorrect/Incomplete
15. Were samples received within holding time?	✓			☐ Holding Time - Receipt
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ pH Adjusted, pH Included (See box 16A) ☐ Incorrect Preservative
17. Were VOA samples received without headspace?			✓	☐ Headspace (VOA only)
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number: _____			✓	☐ Residual Chlorine
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

CUSTODY SEALS INTACT
RECEIVED AMBIENT RT 20.0/CT 20.1'C
NKD 6.28.24
COOLER FED EX 777100SD 1426 SD

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: 140077448 PM Instructions: _____

Sample Receiving Associate: [signature] Date: 6.28.24

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For:
Bryan Donaldson
Ramboll Americas Engineering Solutions, Inc.
333 W. Wacker Drive Suite 1050
Chicago, IL 60606

RE:
Eurofins Built Environment Testing – Pasadena, Texas
XRD Mineral Characterization of Drill Cores by Clay Mineral Scan
Project ID: Newton
Project #: PO No. 194009386
EMLab ID: 3657496

Approved By:

Scott M. Ward, Ph.D.

Analyst: Carlos Duane Salinas

Eurofins Built Environment Testing (EBET) is an analytical laboratory accredited for the analysis of asbestos in air and bulk samples by X-Ray Powder Diffraction (XRD), Analytical Transmission Electron Microscopy (ATEM), and Polarized Light Microscopy (PLM) by the National Voluntary Laboratory Accreditation Program (NVLAP) {Lab Code 200525 (Houston) and Lab Code 600120 (Pasadena)}, and the American Industrial Hygiene Association Lab Code 157714 (Pasadena)}.

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. The results relate only to the samples as received and tested. The results include an inherent uncertainty of measurement associated with estimating percentages by the analytical method utilized.

Eurofins Built Environement Testing located in Pasadena, TX, a member of the Eurofins Built Environment Testing group of companies, shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor

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Report: 3657496

Mineralogy of Drill Core Samples
XRD (Clay Mineral) Analysis
Project Name: Newton
Project #: PO No. 194009386

For:

Bryan Donaldson
Ramboll Americas Engineering Solutions, Inc.
333 W. Wacker Drive Suite 1050
Chicago, IL 60606

By:

Carlos Duane Salinas
Technical Expert
Eurofins Built Environmental Testing
3113 Red Bluff Road
Pasadena, Texas 77503

June 26, 2024

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June 26, 2024

Bryan Donaldson
Ramboll Americas Engineering Solutions, Inc.
333 W. Wacker Drive Suite 1050
Chicago, IL 60606

Dear Bryan,

Eurofins Built Environment Testing (EBET) is an analytical laboratory accredited for the analysis of asbestos in air and bulk samples by X-Ray Powder Diffraction (XRD), Analytical Transmission Electron Microscopy (ATEM), and Polarized Light Microscopy (PLM) by the National Voluntary Laboratory Accreditation Program (NVLAP) {Lab Code 200525 (Houston) and Lab Code 600120 (Pasadena)}, and the American Industrial Hygiene Association Laboratory Accreditation Program (AIHA-LAP,LLC) {Lab Code 157714 (Pasadena)}.

EBET received seven (3) samples on May 23, 2024, to determine their mineralogy by X-Ray Powder Diffraction (XRD). The samples were drill cores consisting mostly of silty soil with some pebbles, contained in individually labeled 1 gallon plastic zip lock bags. The chain of custody matched the labeled sample ID's as follows:

Client Sample Number	**EMLab Number**
N-SB-04/CL (12-18) - Grab	3657496-1CM
N-SB-05/(10.1-16.6) - Grab	3657496-2CM
N-SB-02/ML (12.5-20) - Grab	3657496-3CM

EBET prepped and analyzed these samples using X-Ray Powder Diffraction.

3657496 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. EBET will not discuss any part of this study with personnel other than those authorized by the client. The results described in this report only apply to the samples analyzed. This report shall not be reproduced except in full, without written approval from EBET. The samples will be kept in our secure storage facility for a minimum of three (3) months from the report date.

Sample Preparation

A representative grab sample from each sample bag was collected and placed into a 100 ml plastic screw cap container, filled with DI water and then shaken and wet sieved through a 400 Tyler Mesh (38 um) sieve. This process was repeated on the grab sample until all the material <38 um in size passed through the sieve. The <38 um material was collected in a 150 ml Pyrex beaker and placed into our drying oven overnight at a temperature of 110 degrees Celsius. The dried samples were then milled in a McCrone XRD Micro Mill for 15 minutes, utilizing agate grinding elements, to produce powders that were then prepped and scanned in our Cubix3/Panalytical XRD using a mineral scan program.

The results of this study can be found in the attached documents. If you should have any questions about this report, please feel free to call us at 713-290-0223.

Sincerely,

Carlos Duane Salinas
Technical Expert
EBET – Pasadena, Texas

Mineralogy Report – June 2024.

This report was prepared at the request of Carlos Salinas, Technical Expert at Eurofins Built Environment Testing

I. Quantitative XRD analysis of powder samples

Table 1 - Scans of the following samples were evaluated.

Sample ID	
7496-1CM~1	Drill core samples
7496-2CM~1	Drill core samples
7496-3CM~1	Drill core samples

For QXRD analysis the software High score plus version 2.0.1 available from Malvern Panalytical was used.

II. Instrument and measurement conditions

Cubix3/PANalytical

Instrument settings:
Tube: Ceramic Cu long fine focus
Radiation: Copper (Cu)
Diffractometer radius: 200mm
Sample stage: Sample spinner stage

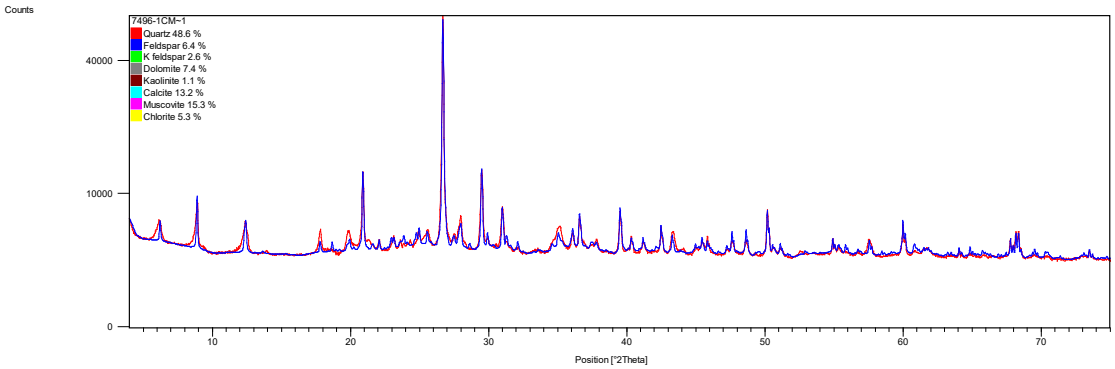
Incident optics:
BBHD
Divergence slit: Fixed 1/2 °
Soller slit: 0.04 radians
Mask: 10mm
Anti scatter slit: Fixed 2°

Diffracted optics:
Soller slit: 0.04 radians
Filter: Not present
Anti scatter slit: Fixed 5.5°
Detector: X'Celerator

Measurement conditions:
Applied power: 45KV, 40mA
Scan range: 4-75º 2Theta
Step size 0,016 º 2Theta
Time per step: 4.82sec
Scan type: continuous

III. QXRD analysis of Drill core samples:

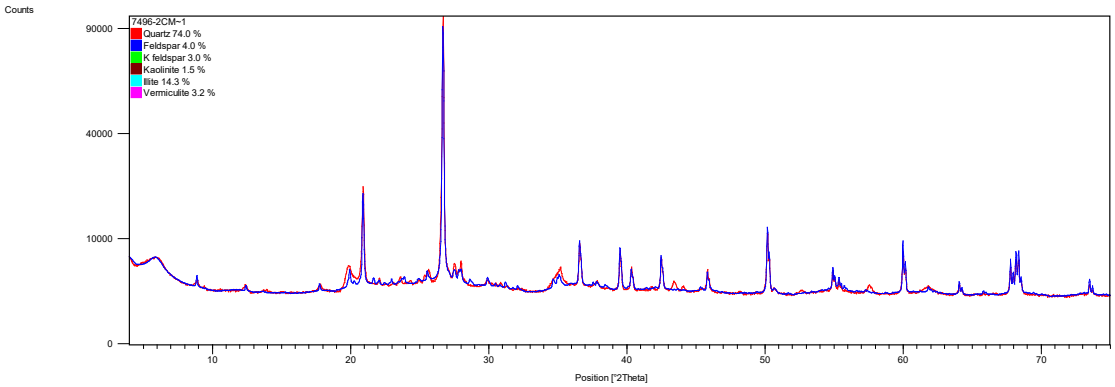
1) Sample 7496-1CM~1



Phase	Formula	%
Quartz	SiO2	48.6
Feldspar	(Na,Ca)(Si,Al)4O8	6.4
K-feldspar	KAlSi3O8	2.6
Mica	KAl2(Si3Al)O10(OH,F)2	15.3
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	5.3
Calcite	CaCO3	13.2
Dolomite	CaMg(CO3)2	7.4
Kaolinite	Al2Si2O5(OH)4	1.1

Figure 1 – Results of X-ray diffraction - 7496-1CM~1

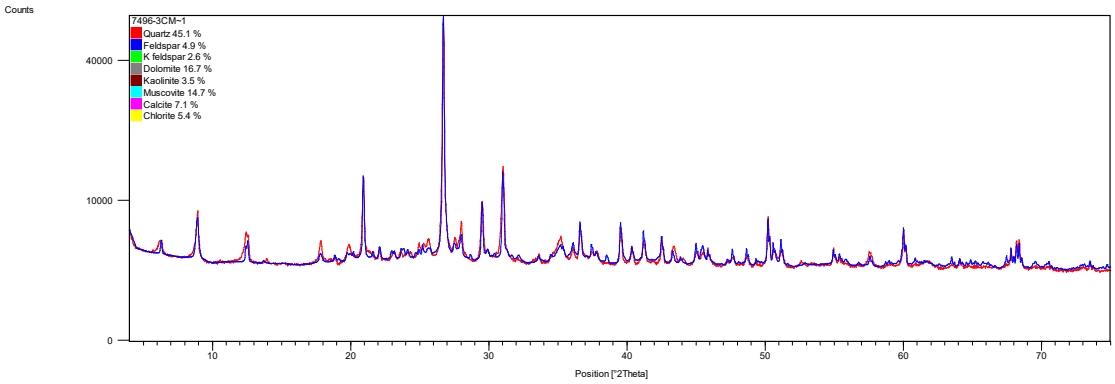
2) Sample 7496-2CM~1



Phase	Formula	%
Quartz	SiO2	74.0
Feldspar	(Na,Ca)(Si,Al)4O8	4.0
K-feldspar	KAlSi3O8	3.0
Mica	KAl2(Si3Al)O10(OH,F)2	14.3
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	3.2
Kaolinite	Al2Si2O5(OH)4	1.5

Figure 2 – Results of X-ray diffraction - 7496-2CM~1

3) Sample 7496-3CM~1



Phase	Formula	%
Quartz	SiO2	45.1
Feldspar	(Na,Ca)(Si,Al)4O8	4.9
K-feldspar	KAlSi3O8	2.6
Mica	KAl2(Si3Al)O10(OH,F)2	14.7
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	5.4
Calcite	CaCO3	7.1
Dolomite	CaMg(CO3)2	16.7
Kaolinite	Al2Si2O5(OH)4	3.5

Figure 3 – Results of X-ray diffraction - 7496-3CM~1

4) All samples comparison

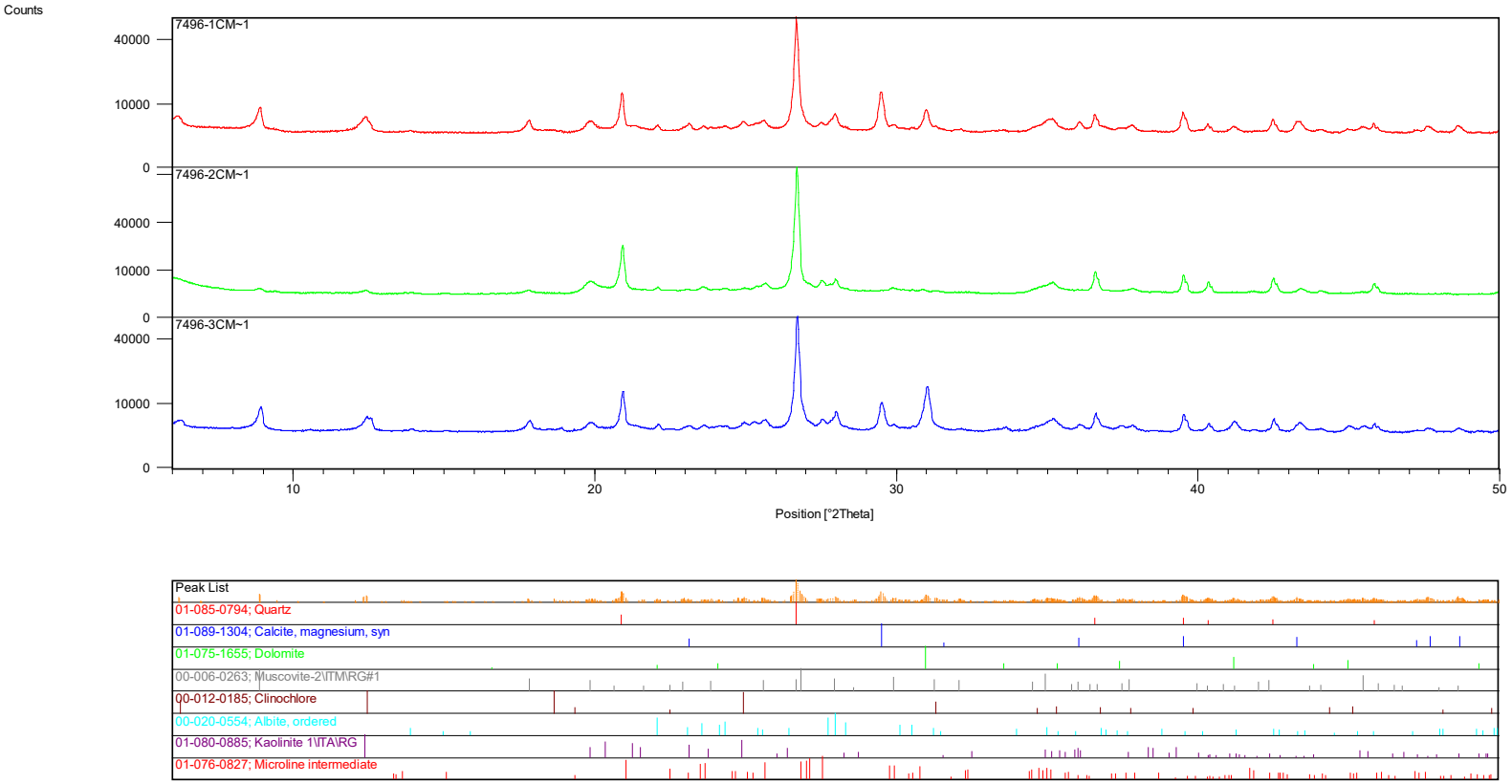


Figure 8 - The comparison of the x-ray diffraction (XRD) results

Sample	%							
	Quartz	Feldspar	K-feldspar	Mica	Chlorite/Vermiculite	Calcite	Dolomite	Kaolinite
7496-1CM~1	48.6	6.4	2.6	15.3	5.3	13.2	7.4	1.1
7496-2CM~1	74.0	4.0	3.0	14.3	3.2			1.5
7496-3CM~1	45.1	4.9	2.6	14.7	5.4	7.1	16.7	3.5

IV. Comments

The samples have similar mineralogy, with differences in their proportions, composed mainly of quartz, feldspar, mica, kaolinite, chlorite, vermiculite, dolomite and calcite. Sample 2 is distinguished by the absence of carbonates.
It is necessary to validate the quantification by XRD with other techniques, preferably chemical analysis. The orientation of clay mineral particles affects the XRD intensities of powdered samples. The most clay mineral particles exhibit platy characteristics, and some preparation methods can often produce preferred orientation of clay minerals.

Elaborated by:
Angela Nair Avelar
PhD, Geologist - Applied Mineralogy and Development Process

Márcia Mika Saito
MSC, Geologist – Geometallurgical and Applied Mineralogy

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Report for:

Michael Davis
Ramboll Americas Engineering Solutions, Inc
333 W. Wacker Drive, Suite 2700
Chicago, IL 60606

Regarding: Eurofins J3 Resources, Inc.
Project: 1940108208; Newton Nature & Extent
EML ID: 3695099

Approved by:

Business Unit Manager
Scott Ward

Dates of Analysis:
Misc. sub-contracted analysis: 09-09-2024

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the samples as received and tested.

Eurofins J3 Resources, Inc. ("the Company"), a member of the Eurofins Built Environment Testing group of companies, shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

---

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For:
Michael Davis
Ramboll Americas Engineering Solutions, Inc.
333 W. Wacker Dr., Suite 1050
Chicago, IL 60606

RE:
Eurofins Built Environment Testing – Pasadena, Texas
XRD Mineral Characterization of Drill Core by Full and Clay Mineral Scans
Project ID: Newton Nature & Extent
Project #: 1940108208
PO #: 1940009402
EMLab ID: 3695099

Approved By:

Scott M. Ward, Ph.D.

Analyst: Carlos Duane Salinas

Eurofins Built Environment Testing (EBET) is an analytical laboratory accredited for the analysis of asbestos in air and bulk samples by X-Ray Powder Diffraction (XRD), Analytical Transmission Electron Microscopy (ATEM), and Polarized Light Microscopy (PLM) by the National Voluntary Laboratory Accreditation Program (NVLAP) {Lab Code 200525 (Houston) and Lab Code 600120 (Pasadena)}, and the American Industrial Hygiene Association Lab Code 157714 (Pasadena)}.

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. The results relate only to the samples as received and tested. The results include an inherent uncertainty of measurement associated with estimating percentages by the analytical method utilized.

Eurofins Built Environement Testing located in Pasadena, TX, a member of the Eurofins Built Environment Testing group of companies, shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor

eurofins | Built Environment Testing

Report: 3695099

Mineralogy of Drill Core Samples
XRD (Full and Clay Mineral) Analysis
Project Name: Newton Nature & Extent
Project #: 1940108208

For:

Michael Davis
Ramboll Americas Engineering Solutions, Inc.
333 W. Wacker Dr., Suite 1050
Chicago, IL 60606

By:

Carlos Duane Salinas
Technical Expert
Eurofins Built Environmental Testing
3113 Red Bluff Road
Pasadena, Texas 77503

September 9, 2024

eurofins | Built Environment Testing

September 9, 2024

Michael Davis
Ramboll Americas Engineering Solutions, Inc.
333 W/ Wacker Dr., Suite 1050
Chicago, IL 60606

Dear Michael,

Eurofins Built Environmental Testing (EBET) is an analytical laboratory accredited for the analysis of asbestos in air and bulk samples by X-Ray Powder Diffraction (XRD), Analytical Transmission Electron Microscopy (ATEM), and Polarized Light Microscopy (PLM) by the National Voluntary Laboratory Accreditation Program (NVLAP) {Lab Code 200525 (Houston) and Lab Code 600120 (Pasadena)}, and the American Industrial Hygiene Association Laboratory Accreditation Program (AIHA-LAP,LLC) {Lab Code 157714 (Pasadena)}.

EBET received ten (10) samples on June 28, 2024, to determine their mineralogy by X-Ray Powder Diffraction (XRD). The samples were orange-tan soils consisting mostly of clay, silt, sand and pebbles. The samples were contained in ten individually labeled 8 oz wide mouth glass jars. The chain of custody matched the labeled sample ID's as follows:

Client Sample Number	EMLab ID Number
APW19s_7.5 - 8.2'	3695099-1
APW19s_16 - 18'	3695099-2
APW20s_14 - 16'	3695099-3
APW20s_20 - 22'	3695099-4
APW21s_8 - 10'	3695099-5
APW21s_14 - 16'	3695099-6
APW22s_9 - 11'	3695099-7
APW22s_20.5 - 22'	3695099-8
APW23s_12 - 16'	3695099-9
APW23s_37 - 39'	3695099-10

EBET prepped and analyzed the samples using X-Ray Powder Diffraction. 3695099 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. EBET will not discuss any part of this study with personnel other than those authorized by the client. The results described in this report

only apply to the samples analyzed. This report shall not be reproduced except in full, without written approval from EBET. The samples will be kept in our secure storage facility for a minimum of three (3) months from the report date.

Full Mineral Scan Sample Preparation

A representative grab sample of the soil was dried overnight at 110 degrees Celsius in our drying oven. The dried sample was then crushed using a large mortar and pestle. The crushed sample was coned and quartered to acquire a representative sample to be further prepared. This sample was ground and homogenized by hand using a mortar and pestle, and then passed through a No. 35 Tyler Mesh (500 um) sieve. The sieved sample was then milled in a McCrone XRD Micro Mill for 15 minutes, utilizing agate grinding elements to produce a powder that was prepped and scanned in our Cubix3/Panalytical XRD using a mineral scan program.

Clay Mineral Scan Sample Preparation

A representative grab sample of the soil was collected and placed into a 100 ml plastic screw-cap container, filled with DI water and then shaken and wet sieved through a No. 400 Tyler Mesh (38 um) sieve. The <38 um material was collected in a 150 ml Pyrex beaker and placed into our drying oven overnight at a temperature of 110 degrees Celsius. The dried sample was then crushed by hand using a ceramic mortar and pestle to produce a powder that was prepped and scanned in our Cubix3/Panalytical XRD using a mineral scan program.

The results of this study can be found in the attached document. If you should have any questions about this report, please feel free to call us at 713-290-0223.

Sincerely,

Carlos Duane Salinas
Technical Expert
EBET – Pasadena, Texas

Mineralogy Report – August 2024.

This report was prepared at the request of Carlos Salinas, Technical Expert at Eurofins Built Environment Testing

I. Quantitative XRD analysis of powder samples

Table 1 - Scans of the following samples were evaluated.

Sample ID	
5099-1CM~1	Drill Core Sample
5099-2CM~1	Drill Core Sample
5099-3CM~1	Drill Core Sample
5099-4CM~1	Drill Core Sample
5099-5CM~1	Drill Core Sample
5099-6CM~1	Drill Core Sample
5099-7CM~1	Drill Core Sample
5099-8CM~1	Drill Core Sample
5099-9CM~1	Drill Core Sample
5099-10CM~1	Drill Core Sample
5099-1FM~1	Drill Core Sample
5099-2FM~1	Drill Core Sample
5099-3FM~1	Drill Core Sample
5099-4FM~1	Drill Core Sample
5099-5FM~1	Drill Core Sample
5099-6FM~1	Drill Core Sample
5099-7FM~1	Drill Core Sample
5099-8FM~1	Drill Core Sample
5099-9FM~1	Drill Core Sample
5099-10FM~1	Drill Core Sample

For QXRD analysis the software High score plus version 2.0.1 available from Malvern Panalytical was used.

II. Instrument and measurement conditions

Cubix3/PANalytical

Instrument settings:
Tube: Ceramic Cu long fine focus
Radiation: Copper (Cu)
Diffractometer radius: 200mm
Sample stage: Sample spinner stage

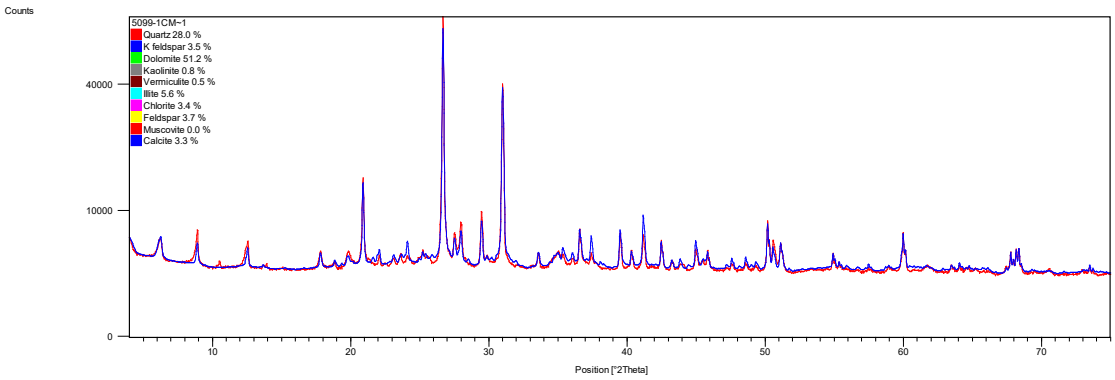
Incident optics:
BBHD
Divergence slit: Fixed 1/2 °
Soller slit: 0.04 radians
Mask: 10mm
Anti scatter slit: Fixed 2°

Diffracted optics:
Soller slit: 0.04 radians
Filter: Not present
Anti scatter slit: Fixed 5.5°
Detector: X'Celerator

Measurement conditions:
Applied power: 45KV, 40mA
Scan range: 4-75º 2Theta
Step size 0,016 º 2Theta
Time per step: 4.82sec
Scan type: continuous

III. QXRD analysis of samples:

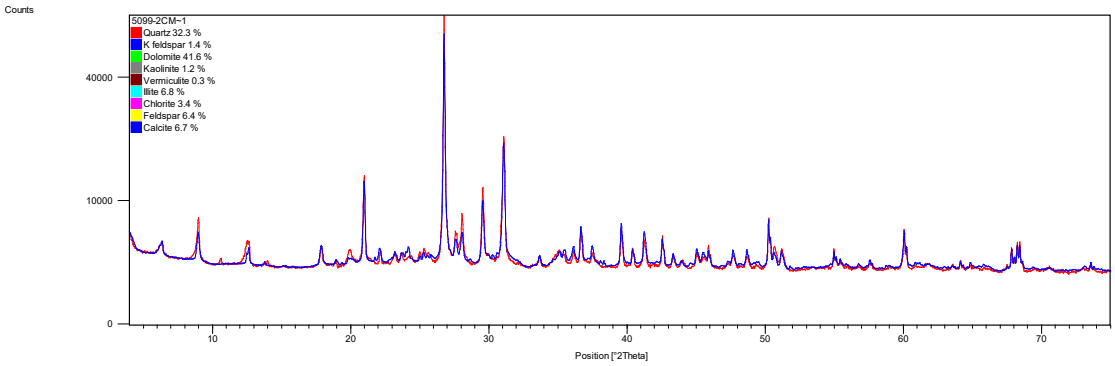
1) Sample 5099-1CM~1



Phase	Formula	%
Quartz	SiO2	28
Dolomite	CaMg(CO3)2	51.2
Feldspar	(Na,Ca)(Si,Al)4O8	3.7
K-feldspar	KAlSi3O8	3.5
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	5.6
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	3.9
Kaolinite	Al2Si2O5(OH)4	0.8
Calcite	CaCO3	3.3

Figure 1 – Results of X-ray diffraction – 5099-1CM~1

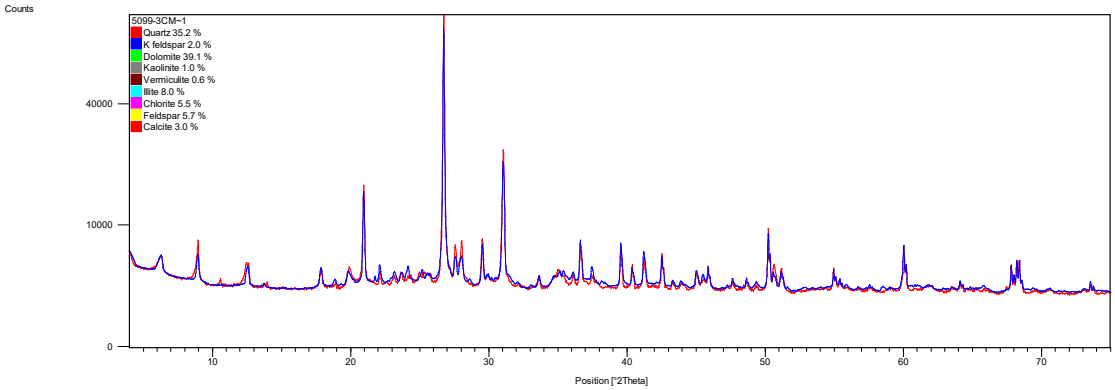
2) Sample 5099-2CM~1



Phase	Formula	%
Quartz	SiO2	32.3
Dolomite	CaMg(CO3)2	41.6
Feldspar	(Na,Ca)(Si,Al)4O8	6.4
K-feldspar	KAlSi3O8	1.4
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	6.8
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	3.7
Kaolinite	Al2Si2O5(OH)4	1.2
Calcite	CaCO3	6.7

Figure 2 – Results of X-ray diffraction - 5099-2CM~1

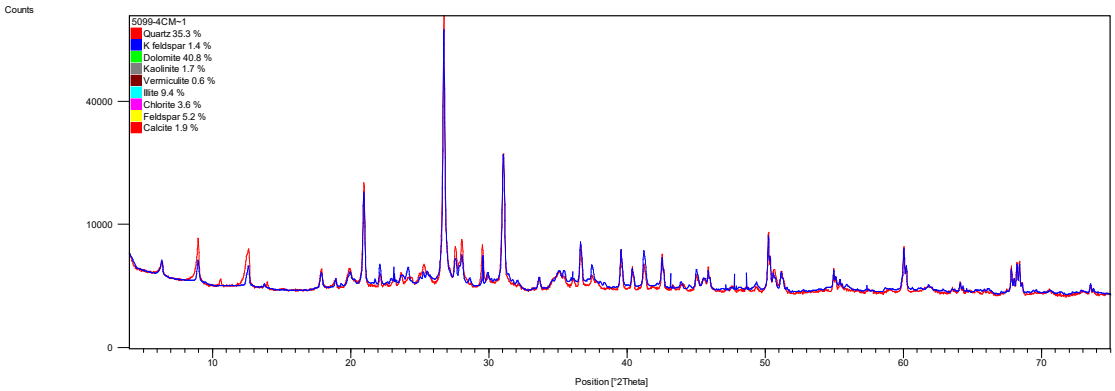
3) Sample 5099-3CM~1



Phase	Formula	%
Quartz	SiO2	35.2
Dolomite	CaMg(CO3)2	39.1
Feldspar	(Na,Ca)(Si,Al)4O8	5.7
K-feldspar	KAlSi3O8	2
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	8
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	6.1
Kaolinite	Al2Si2O5(OH)4	1
Calcite	CaCO3	3

Figure 3 – Results of X-ray diffraction - 5099C-3CM~1

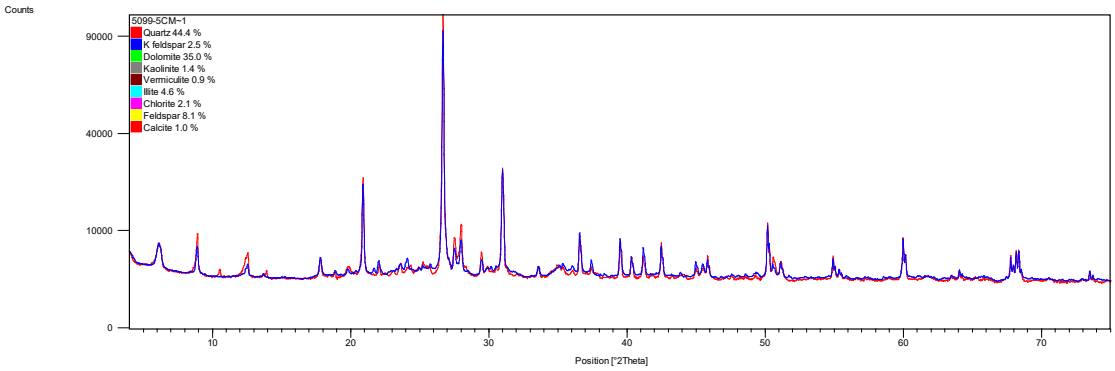
4) Sample 5099-4CM~1



Phase	Formula	%
Quartz	SiO2	35.3
Dolomite	CaMg(CO3)2	40.8
Feldspar	(Na,Ca)(Si,Al)4O8	5.2
K-feldspar	KAlSi3O8	1.4
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	9.4
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	4.2
Kaolinite	Al2Si2O5(OH)4	1.7
Calcite	CaCO3	1.9

Figure 4 – Results of X-ray diffraction - 5099-4CM~1

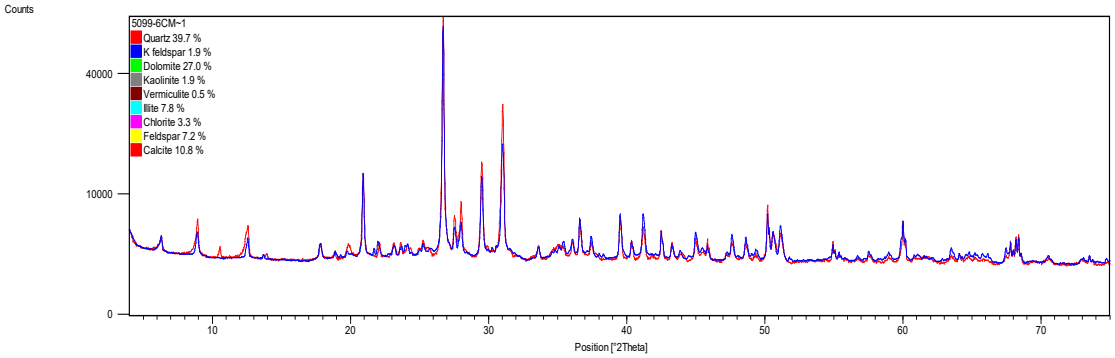
5) Sample 5099-5CM~1



Phase	Formula	%
Quartz	SiO2	44.4
Dolomite	CaMg(CO3)2	35
Feldspar	(Na,Ca)(Si,Al)4O8	8.1
K-feldspar	KAlSi3O8	2.5
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	4.6
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	3
Kaolinite	Al2Si2O5(OH)4	1.4
Calcite	CaCO3	1

Figure 5 – Results of X-ray diffraction - 5099-5CM~1

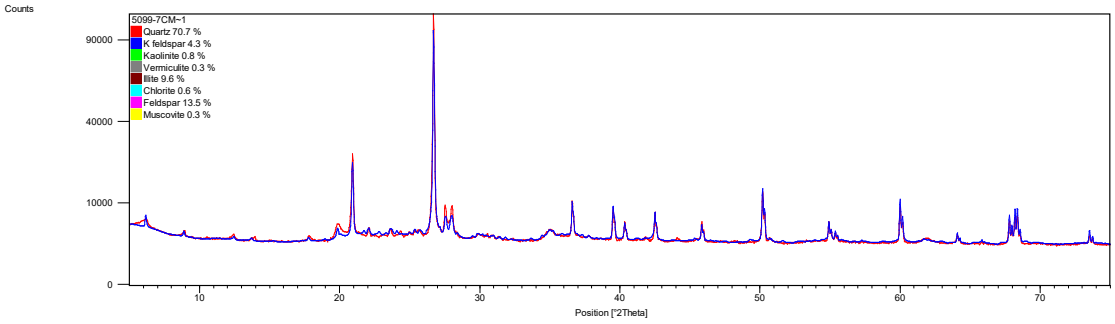
6) Sample 5099-6CM~1



Phase	Formula	%
Quartz	SiO2	39.7
Dolomite	CaMg(CO3)2	27
Feldspar	(Na,Ca)(Si,Al)4O8	7.2
K-feldspar	KAlSi3O8	1.9
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	7.8
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	3.8
Kaolinite	Al2Si2O5(OH)4	1.9
Calcite	CaCO3	10.8

Figure 6 – Results of X-ray diffraction - 5099-6CM~1

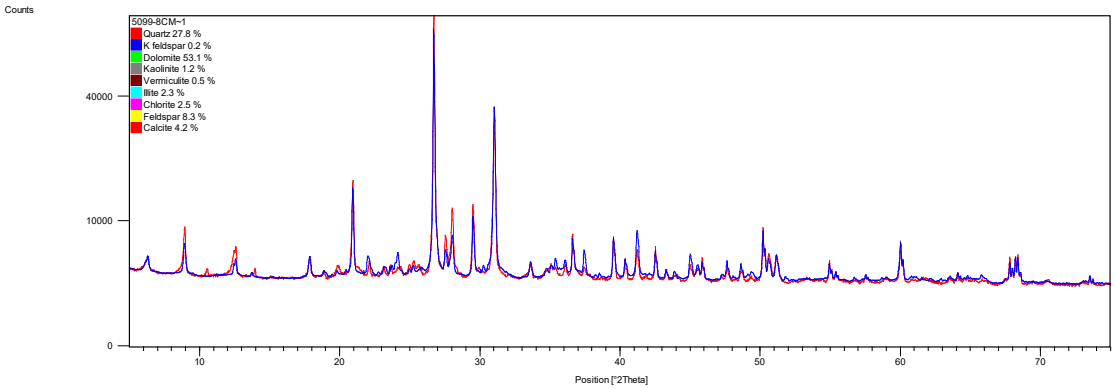
7) Sample 5099-7CM~1



Phase	Formula	%
Quartz	SiO2	70.7
Feldspar	(Na,Ca)(Si,Al)4O8	13.5
K-feldspar	KAlSi3O8	4.3
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	9.9
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	0.9
Kaolinite	Al2Si2O5(OH)4	0.8

Figure 7 – Results of X-ray diffraction - 5099-7CM~1

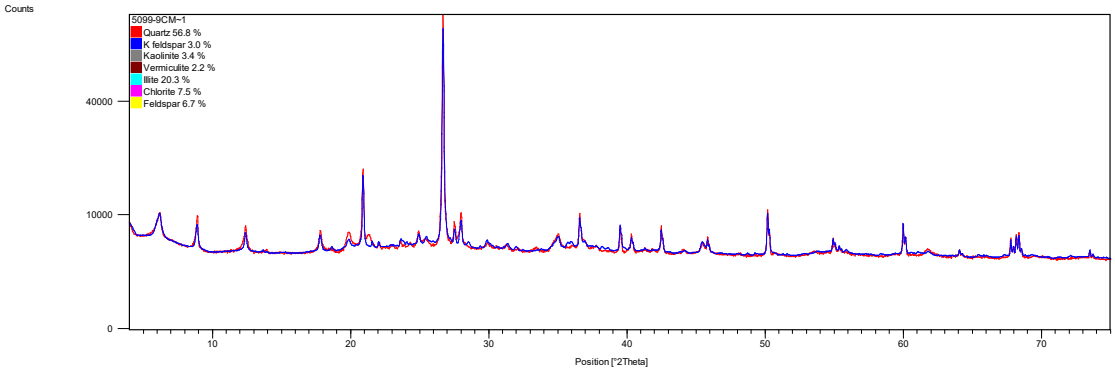
8) Sample 5099-8CM~1



Phase	Formula	%
Quartz	SiO2	27.8
Dolomite	CaMg(CO3)2	53.1
Feldspar	(Na,Ca)(Si,Al)4O8	8.3
K-feldspar	KAlSi3O8	0.2
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	2.3
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	3
Kaolinite	Al2Si2O5(OH)4	1.2
Calcite	CaCO3	4.2

Figure 8 – Results of X-ray diffraction - 5099-8CM~1

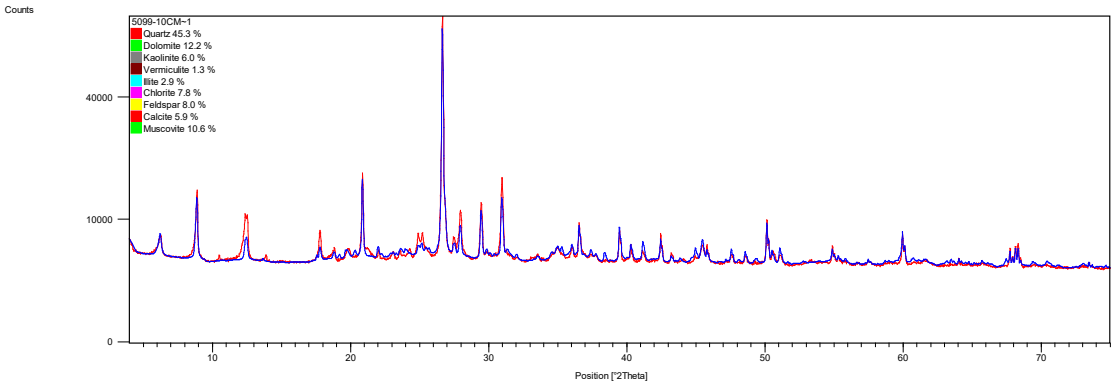
9) Sample 5099-9CM~1



Phase	Formula	%
Quartz	SiO2	56.8
Feldspar	(Na,Ca)(Si,Al)4O8	6.7
K-feldspar	KAlSi3O8	3
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	20.3
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	9.7
Kaolinite	Al2Si2O5(OH)4	3.4

Figure 9 – Results of X-ray diffraction - 5099-9CM~1

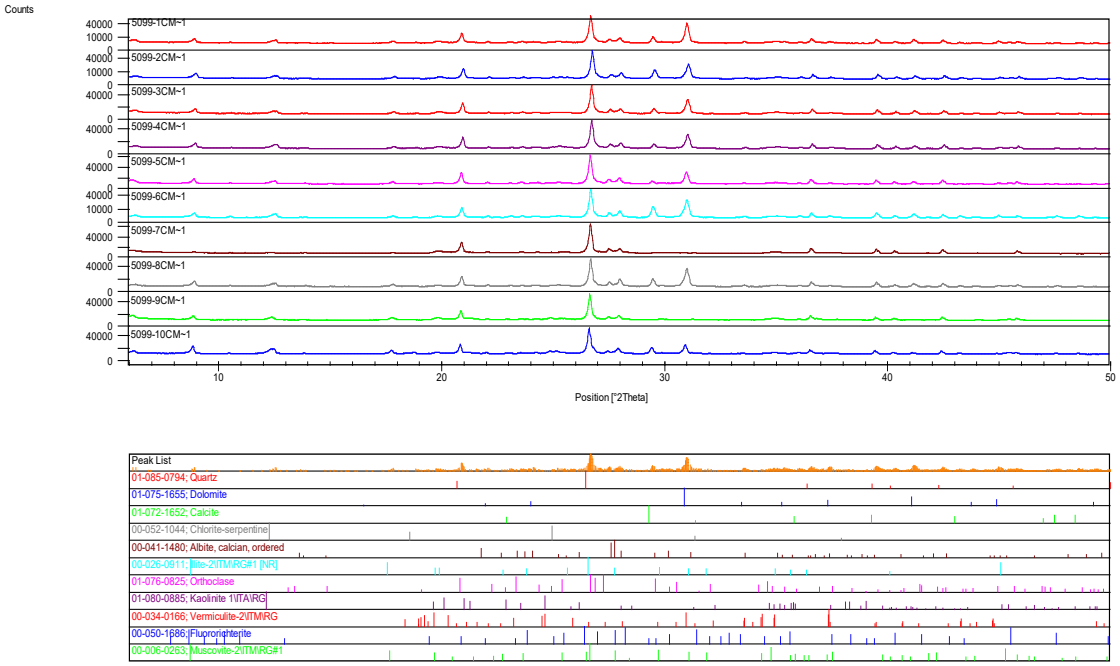
10) Sample 5099-10CM~1



Phase	Formula	%
Quartz	SiO2	45.3
Dolomite	CaMg(CO3)2	12.2
Feldspar	(Na,Ca)(Si,Al)4O8	8
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	13.5
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	9.1
Kaolinite	Al2Si2O5(OH)4	6
Calcite	CaCO3	5.9

Figure 10 – Results of X-ray diffraction - 5099-10CM~1

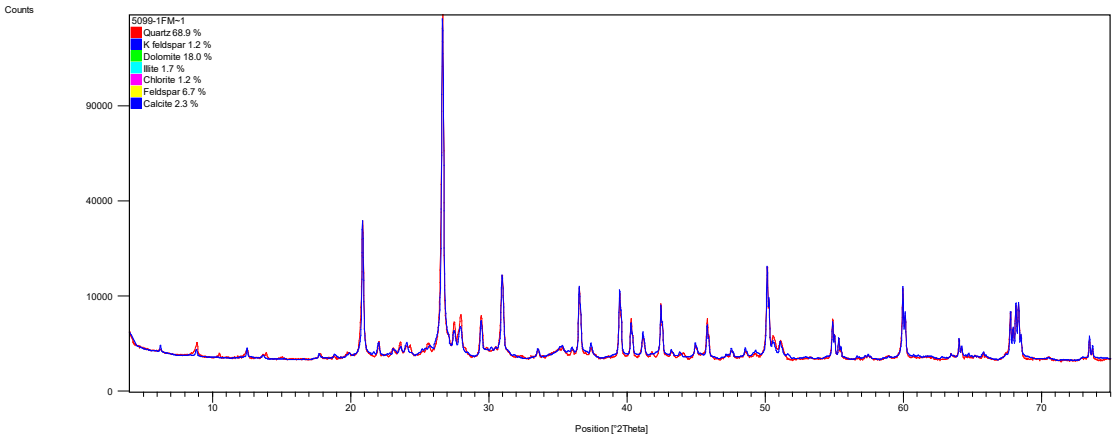
11) CM samples comparison



	Quartz	Dolomite	Feldspar	K-feldspar	Mica	Chlorite/ Vermiculite	Kaolinite	Calcite
5099-1CM~1	28	51.2	3.7	3.5	5.6	3.9	0.8	3.3
5099-2CM~1	32.3	41.6	6.4	1.4	6.8	3.7	1.2	6.7
5099-3CM~1	35.2	39.1	5.7	2	8	6.1	1	3
5099-4CM~1	35.3	40.8	5.2	1.4	9.4	4.2	1.7	1.9
5099-5CM~1	44.4	35	8.1	2.5	4.6	3	1.4	1
5099-6CM~1	39.7	27	7.2	1.9	7.8	3.8	1.9	10.8
5099-7CM~1	70.7	-	13.5	4.3	9.9	0.9	0.8	-
5099-8CM~1	27.8	53.1	8.3	0.2	2.3	3	1.2	4.2
5099-9CM~1	56.8	-	6.7	3	20.3	9.7	3.4	-
5099-10CM~1	45.3	12.2	8	-	13.5	9.1	6	5.9

Figure 11 - The comparison of the x-ray diffraction (XRD) results

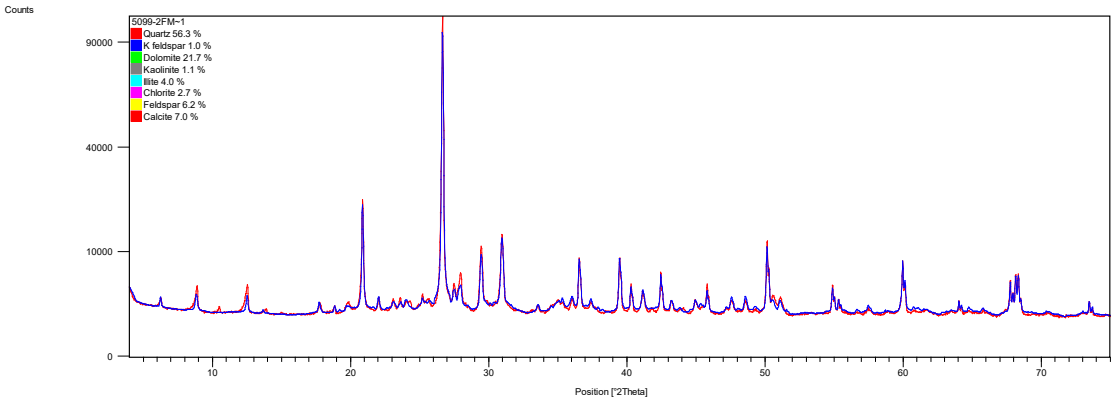
12) Sample 5099-1FM~1



Phase	Formula	%
Quartz	SiO2	68.9
Dolomite	CaMg(CO3)2	18
Feldspar	(Na,Ca)(Si,Al)4O8	6.7
K-feldspar	KAlSi3O8	1.2
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	1.7
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	1.2
Calcite	CaCO3	2.3

Figure 12 – Results of X-ray diffraction - 5099-1FM~1

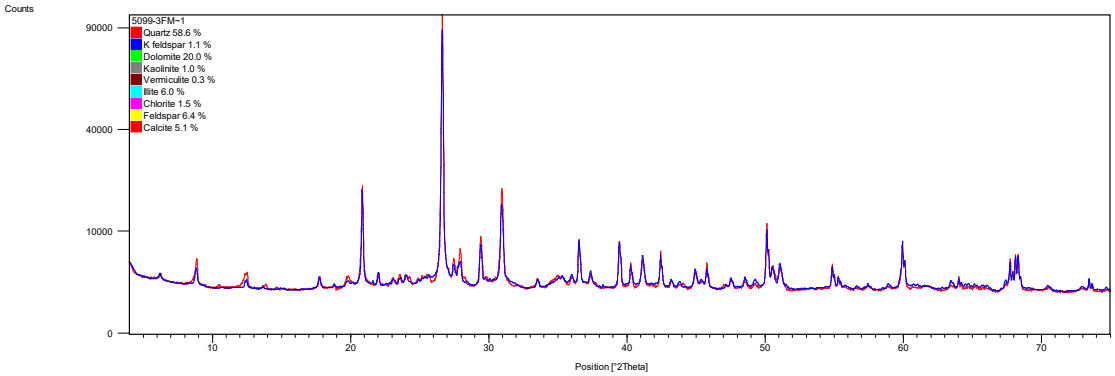
13) Sample 5099-2FM~1



Phase	Formula	%
Quartz	SiO2	56.3
Dolomite	CaMg(CO3)2	21.7
Feldspar	(Na,Ca)(Si,Al)4O8	6.2
K-feldspar	KAlSi3O8	1
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	4
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	2.7
Kaolinite	Al2Si2O5(OH)4	1.1
Calcite	CaCO3	7

Figure 13 – Results of X-ray diffraction - 5099-2FM~1

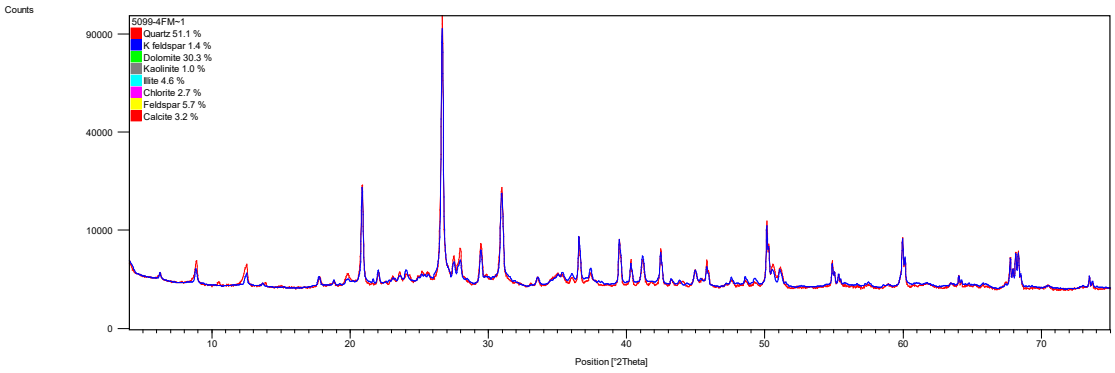
14) Sample 5099-3FM~1



Phase	Formula	%
Quartz	SiO2	58.6
Dolomite	CaMg(CO3)2	20
Feldspar	(Na,Ca)(Si,Al)4O8	6.4
K-feldspar	KAlSi3O8	1.1
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	6
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	1.8
Kaolinite	Al2Si2O5(OH)4	1
Calcite	CaCO3	5.1

Figure 14 – Results of X-ray diffraction - 5099-3FM~1

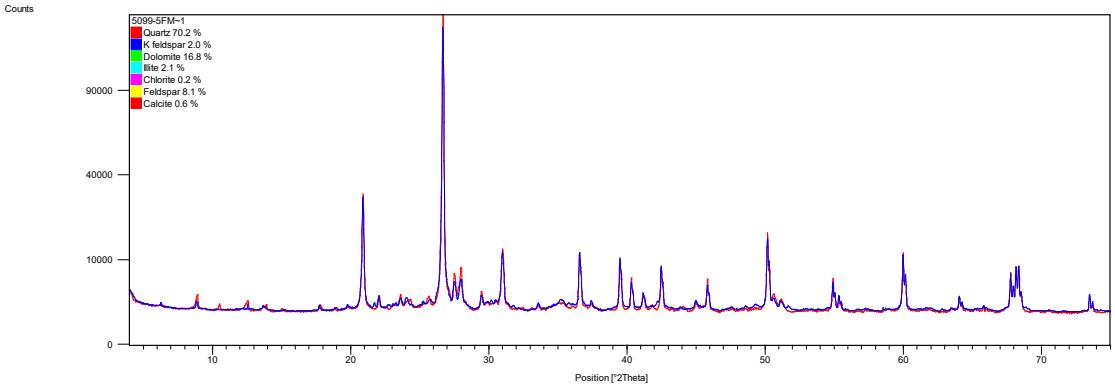
15) Sample 5099-4FM~1



Phase	Formula	%
Quartz	SiO2	51.1
Dolomite	CaMg(CO3)2	30.3
Feldspar	(Na,Ca)(Si,Al)4O8	5.7
K-feldspar	KAlSi3O8	1.4
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	4.6
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	2.7
Kaolinite	Al2Si2O5(OH)4	1
Calcite	CaCO3	3.2

Figure 15 – Results of X-ray diffraction - 5099-4FM~1

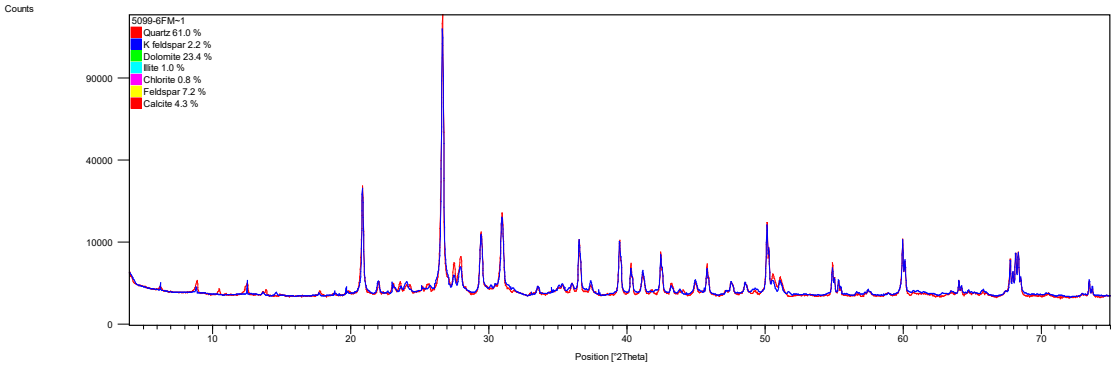
16) Sample 5099-5FM~1



Phase	Formula	%
Quartz	SiO2	70.2
Dolomite	CaMg(CO3)2	16.8
Feldspar	(Na,Ca)(Si,Al)4O8	8.1
K-feldspar	KAlSi3O8	2.0
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	2.1
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	0.2
Calcite	CaCO3	0.6

Figure 16 – Results of X-ray diffraction - 5099-5FM~1

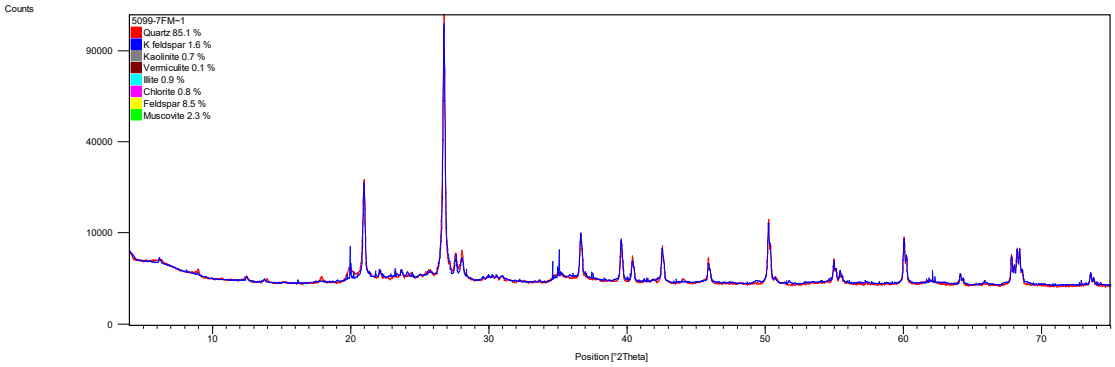
17) Sample 5099-6FM~1



Phase	Formula	%
Quartz	SiO2	61
Dolomite	CaMg(CO3)2	23.4
Feldspar	(Na,Ca)(Si,Al)4O8	7.2
K-feldspar	KAlSi3O8	2.2
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	1
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	0.8
Calcite	CaCO3	4.3

Figure 17 – Results of X-ray diffraction - 5099-6FM~1

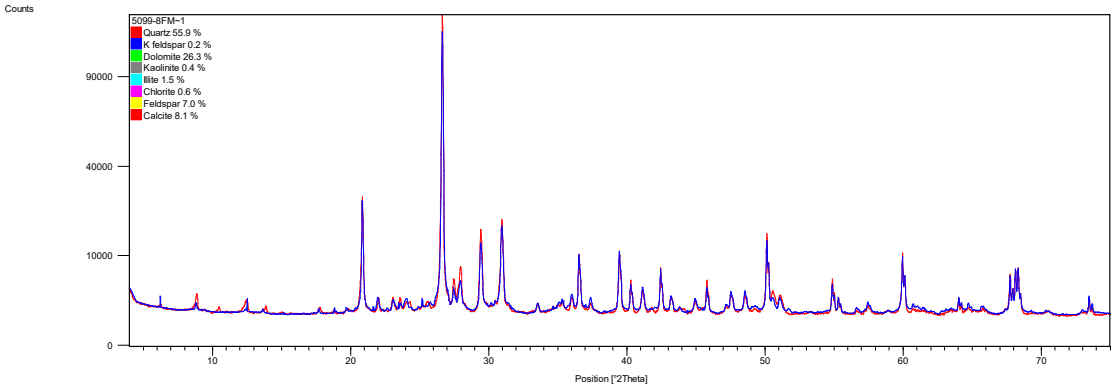
18) Sample 5099-7FM~1



Phase	Formula	%
Quartz	SiO2	85.1
Feldspar	(Na,Ca)(Si,Al)4O8	8.5
K-feldspar	KAlSi3O8	1.6
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	3.2
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	0.9
Kaolinite	Al2Si2O5(OH)4	0.7

Figure 18 – Results of X-ray diffraction - 5099-7FM~1

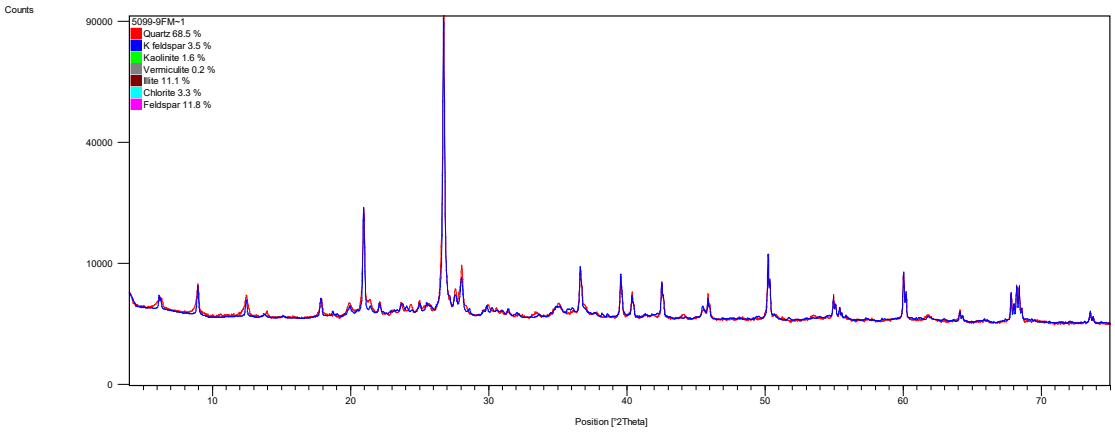
19) Sample 5099-8FM~1



Phase	Formula	%
Quartz	SiO2	55.9
Dolomite	CaMg(CO3)2	26.3
Feldspar	(Na,Ca)(Si,Al)4O8	7
K-feldspar	KAlSi3O8	0.2
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	1.5
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	0.6
Kaolinite	Al2Si2O5(OH)4	0.4
Calcite	CaCO3	8.1

Figure 19 – Results of X-ray diffraction - 5099-8FM~1

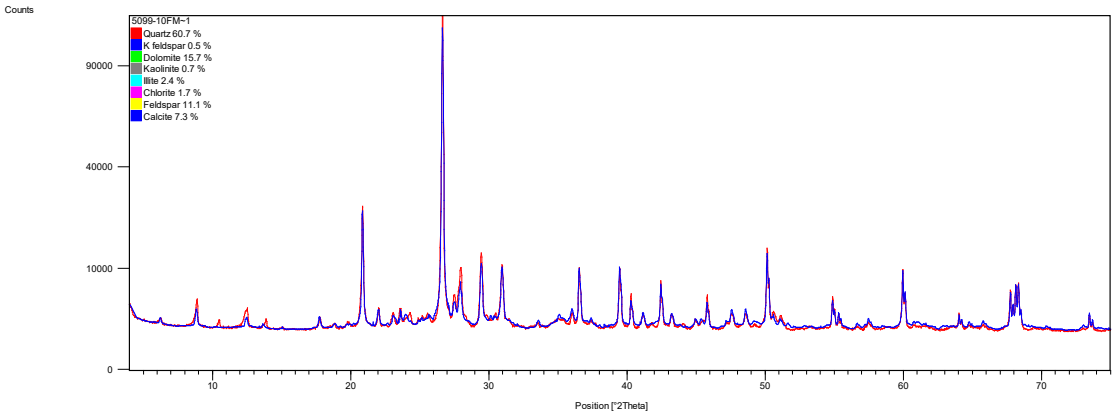
20) Sample 5099-9FM~1



Phase	Formula	%
Quartz	SiO2	68.5
Feldspar	(Na,Ca)(Si,Al)4O8	11.8
K-feldspar	KAlSi3O8	3.5
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	11.1
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	3.5
Kaolinite	Al2Si2O5(OH)4	1.6

Figure 20 – Results of X-ray diffraction - 5099-9FM~1

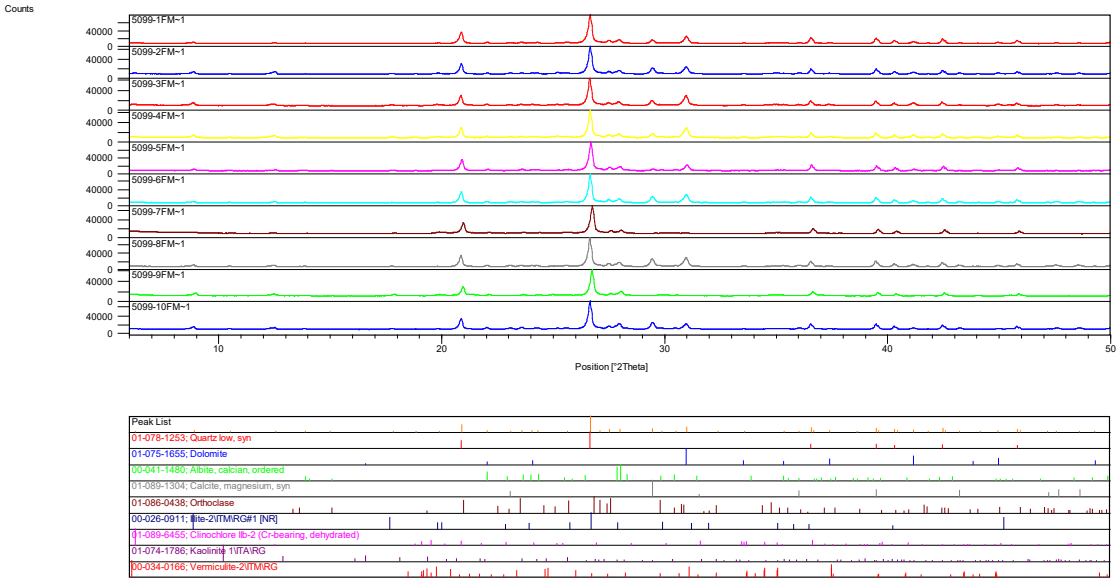
21) Sample 5099-10FM~1



Phase	Formula	%
Quartz	SiO2	60.7
Dolomite	CaMg(CO3)2	15.7
Feldspar	(Na,Ca)(Si,Al)4O8	11.1
K-feldspar	KAlSi3O8	0.5
Illite/Muscovite	(K,H3O)(Al,Mg,Fe)2(Si,Al)4O10[(OH)2,(H2O)	2.4
Chlorite/Vermiculite	(Mg,Fe)5Al(Si3Al)O10(OH)8	1.7
Kaolinite	Al2Si2O5(OH)4	0.8
Calcite	CaCO3	7.3

Figure 21 – Results of X-ray diffraction - 5099-10FM~1

22) FM samples comparison



	Quartz	Dolomite	Feldspar	K-feldspar	Mica	Chlorite/ Vermiculite	Kaolinite	Calcite
5099-1FM~1	68.9	18	6.7	1.2	1.7	1.2	-	2.3
5099-2FM~1	56.3	21.7	6.2	1	4	2.7	1.1	7
5099-3FM~1	58.6	20	6.4	1.1	6	1.8	1	5.1
5099-4FM~1	51.1	30.3	5.7	1.4	4.6	2.7	1	3.2
5099-5FM~1	70.2	16.8	8.1	2	2.1	0.2	-	0.6
5099-6FM~1	61	23.4	7.2	2.2	1	0.8	-	4.3
5099-7FM~1	85.1	-	8.5	1.6	3.2	0.9	0.7	-
5099-8FM~1	55.9	26.3	7	0.2	1.5	0.6	0.4	8.1
5099-9FM~1	68.5	-	11.8	3.5	11.1	3.5	1.6	-
5099-10FM~1	60.7	15.7	11.1	0.5	2.4	1.7	0.8	7.3

Figure 22 - The comparison of the x-ray diffraction (XRD) results

IV. Comments

The samples have similar mineralogy, with differences in their proportions, composed mainly of quartz, feldspars, dolomite, calcite, chlorite, vermiculite, mica (illite/muscovite) and kaolinite. It should be emphasized that carbonates were not detected in samples 7 and 9.
It is necessary to validate the quantification by XRD with other techniques, preferably chemical analysis. The orientation of clay mineral particles affects the XRD intensities of powdered samples. Clay mineral particles exhibit platy characteristics, and some preparation methods can often produce preferred orientation of clay minerals.

Elaborated by:
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Appendix E

Groundwater Polishing Evaluation Report

Intended for
Illinois Power Generating Company
6725 North 500th Street
Newton Illinois, 62448

Date
April 1, 2025

Project No.
1940110241-002

GROUNDWATER POLISHING EVALUATION REPORT

NEWTON POWER PLANT, PRIMARY ASH POND, IEPA ID NO. W0798070001-001

RAMBOLL Bright ideas. Sustainable change.

GROUNDWATER POLISHING EVALUATION REPORT NEWTON POWER PLANT, PRIMARY ASH POND, IEPA ID NO. W0798070001-001

Project name	**Newton Power Plant Primary Ash Pond**
Project no.	**1940110241-002**
Recipient	**Illinois Power Generating Company**
Document type	**Technical report**
Revision	**FINAL**
Date	**April 1, 2025**
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ATTACHMENTS

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Attachment B	PHREEQC input files and database
Attachment C	Modeling methodology
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ACRONYMS AND ABBREVIATIONS

35 I.A.C.	Title 35 of the Illinois Administrative Code
BCU	Bedrock confining unit
CAAA	Corrective action alternatives assessment
CCR	Coal combustion residuals
COC	Constituent of concern
ft	Feet
GCSM	Geochemical conceptual site model
GWPS	Groundwater protection standard
IEPA	Illinois Environmental Protection Agency
LCU	Lower confining unit
NPP	Newton Power Plant
PAP	Primary ash pond
PMP	Potential migration pathway
TDS	Total dissolved solids
UA	Uppermost aquifer
UCU	Upper confining unit
UD	Upper drift
USEPA	United States Environmental Protection Agency

EXECUTIVE SUMMARY

This document has been prepared as an attachment to the Corrective Actions Alternative Analysis (CAAA) prepared by Gradient for the Newton Power Plant Primary Ash Pond (NPP PAP). The constituents of concern (COCs) addressed in this document are lithium, sulfate, and total dissolved solids (TDS), which have been identified as having exceedances[1] of the site-specific groundwater protection standards (GWPS) at the time of this analysis. Natural geochemical processes may be appropriate as a "polishing step" for residual plume management after effective source control implementation if there are no risks to receptors and/or the contaminant plume is not expanding (United States Environmental Protection Agency [USEPA] 1999; USEPA 2015). Source control is a major component of every corrective action considered in the CAAA, and there are no risks to human health or the environment at NPP PAP.

Natural groundwater polishing processes, which include both physical and chemical mechanisms, reduce the concentration of COCs in the groundwater. After source control is implemented, a geochemical trailing gradient may form in the subsurface as conditions undergo a return to background water quality which could affect chemical groundwater polishing mechanisms (Savannah River National Laboratory, 2011). This report supports groundwater polishing as a component of the proposed corrective action by evaluating the contribution of chemical mechanisms to groundwater polishing under current conditions and after source control implementation. The groundwater flow and transport model estimated the time to reach the GWPS based on hydraulic properties of the aquifer. The results of this groundwater polishing evaluation contextualize these estimates by evaluating the potential for attenuation of COCs and for previously attenuated COCs to be mobilized to groundwater as groundwater quality returns to background conditions.

Groundwater polishing mechanisms were assessed using speciation and reaction geochemical models: speciation models assess the distribution of constituents between solid and aqueous phases, and reaction models evaluate how that distribution may change with changing site conditions (USEPA 2015). Inputs to the model include geochemically reactive solid mineral phases, compliance well groundwater composition, and background groundwater composition based on site-specific data.

Results from the speciation modeling show that a minimal amount of sulfate and a substantial proportion of lithium are retained in the solid phase under current conditions. Solid sorbing phases are anticipated to be stable as groundwater returns to background conditions following source control. Desorption of sulfate from the solid phase has a minimal effect on dissolved phase concentrations after source control is completed, indicating that mobilization of currently attenuated sulfate is unlikely to affect the time to reach the GWPS. Geochemical modeling results interpreted in conjunction with literature observations and additional site-specific data indicate that mobilization of currently sorbed lithium to the dissolved phase could result in a longer observed time to reach GWPS compared to sulfate, although the magnitude of that desorption may be substantially lower than indicated by the model results. These results will inform

[1] Throughout this document, "exceedance" or "exceedances" is intended to refer only to potential exceedances of proposed applicable background statistics or groundwater protection standards (GWPSs) as described in the proposed groundwater monitoring program which was submitted to the IEPA on October 25, 2021, as part of Illinois Power Generating Company's operating permit application for the PAP. That operating permit application, including the proposed groundwater monitoring program, remains under review by the IEPA and therefore Illinois Power Generating Company has not identified any actual exceedances.

corrective action groundwater monitoring and adaptive site management, critical components of every corrective action considered in the CAAA.

1. INTRODUCTION

This document has been prepared as an attachment to the Corrective Actions Alternatives Analysis (CAAA) prepared by Gradient for NPP PAP. The purpose of the CAAA is to holistically evaluate potentially viable corrective actions to remediate groundwater and achieve compliance with GWPS for all monitored parameters under Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845.600. The COCs addressed in this document are lithium, sulfate, and total dissolved solids (TDS)[2], which have been identified as having exceedances of the site-specific groundwater protection standards (GWPS) at the time of this analysis. In the CAAA, all corrective actions considered consist of source control and residual plume management. Natural geochemical processes may be appropriate as a "polishing step" for residual plume management after effective source control implementation if there are no risks to receptors and/or the contaminant plume is not expanding (United States Environmental Protection Agency [USEPA] 1999; USEPA 2015). Source control is a major component of every corrective action considered in the CAAA, and there are no risks to human health or the environment at NPP PAP.[3]

Groundwater polishing processes include both physical and chemical mechanisms within the groundwater which reduce the concentrations of COCs in the groundwater. Physical components of groundwater polishing, including advection, dilution, and dispersion, are described by groundwater flow and transport modeling (Groundwater Modeling Technical Memorandum[4]). Chemical mechanisms of groundwater polishing include sorption and mineral precipitation. After source control is implemented, a geochemical gradient may form in the subsurface as conditions undergo a return to background water quality which could affect chemical groundwater polishing mechanisms (Savannah River National Laboratory, 2011). The chemical components of groundwater polishing at NPP PAP are evaluated herein using a geochemical modeling-based approach informed by site-specific data. This report uses geochemical modeling to evaluate the contribution of chemical mechanisms to groundwater polishing under current conditions and after source control implementation.

The groundwater flow and transport model (Groundwater Modeling Technical Memorandum[5]) estimated the time for sulfate (as a conservative surrogate) to reach the GWPS under different potential corrective actions based on physical components of groundwater polishing and did not incorporate any potential chemical controls on constituent distribution. This geochemical modeling effort supports the assessment of groundwater polishing as a component of the proposed corrective action by evaluating the potential for chemical attenuation of COCs before and after source control as a means of contextualizing the times estimated in the flow and transport model. This analysis also provides an initial foundation for understanding groundwater chemistry to inform adaptive site management as a key component of the Corrective Action Groundwater Monitoring Plan.[6]

[2] TDS measurements represent the total mass of dissolved constituents in a sample rather than a single chemical behavior. Because sulfate is the dominant contributor to TDS, results for sulfate in this analysis also apply to TDS.

[3] The Human Health and Ecological Risk Assessment serves as Appendix A of the CAAA to which this report is attached.

[4] The Groundwater Modeling Technical Memorandum serves as Appendix B of the CAAA Supporting Information Report; the CAAA Supporting Information Report serves as Appendix B of the CAAA to which this report is attached.

[5] Ibid.

[6] The Corrective Action Groundwater Monitoring Plan serves as Appendix B to the Corrective Action Plan.

2. SITE BACKGROUND

2.1 Site Overview

A thorough overview of general site characteristics is presented in Section 1 of the CAAA to which this document is attached and summarized here. The Newton Power Plant (NPP) is an electric power generating facility with coal-fired units located approximately seven miles southwest of the City of Newton, Illinois. The NPP stores and produces coal combustion residuals (CCRs) as part of its operations. The NPP PAP (Vistra ID No. CCR Unit 501, Illinois Environmental Protection Agency [IEPA] ID No. W0798070001-01, and National Inventory of Dams ID No. IL50719) is the only CCR-containing impoundment at the NPP. The NPP PAP is a 404-acre unlined surface impoundment constructed in 1977 for the management of bottom ash, fly ash, and other non-CCR waste generated by the facility (Ramboll, 2021). The PAP is located south of the power plant and situated in a predominantly agricultural area. The PAP is surrounded by Newton Lake on the west, south, and east. Beyond the lake is agricultural land.

A groundwater monitoring network was proposed in accordance with 35 I.A.C. § 845.630 to monitor groundwater quality which passes the waste boundary as part of the Operating Permit Application to IEPA for NPP PAP. The proposed groundwater monitoring network is shown in **Attachment A**. The monitoring network consists of 16 compliance monitoring wells (APW02, APW03, APW04, APW05S, APW07, APW08, APW09, APW10, APW11, APW12, APW13, APW14, APW15, APW16, APW17, and APW18) and two background wells (APW05 and APW06).

The geology underlying the NPP in the vicinity of the NPP PAP consists of four distinct hydrostratigraphic units (Ramboll, 2021):

- **Upper Drift (UD)/Potential Migration Pathway (PMP)**: The UD is composed of the low permeability silts and clays of the Peoria Silt and Sangamon Soil and the sandier soils of the Hagarstown Member (*i.e.*, PMP). The Peoria Silt and Sangamon Soil range in thickness from 3 to 46 feet (ft). The Hagarstown Member ranges from 2-6.9 ft thick and consists of the discontinuous, sandier deposits of the UD, where present, and overlies the Vandalia Till.
- **Upper Confining Unit (UCU)**: The UCU consists of a thick package of the low permeability clay and silt of the Vandalia Till. This unit is a laterally continuous layer between the base of the CCR unit and the top of the uppermost aquifer.
- **Uppermost Aquifer (UA)**: The UA is composed of a 3-17 ft thick Mulberry Grove Member, which has been classified as poorly graded sand, silty sand, clayey sand, and gravel.
- **Lower Confining Unit (LCU)**: The LCU is comprised of low permeability silt and clay of the Smithboro Till Member and the Banner Formation.
- **Bedrock Confining Unit (BCU)**: Bedrock was classified as shale of the Mattoon Formation at the Site.

A map showing representative groundwater flow direction in the UA is shown in **Attachment A**. Groundwater migrates downward through the UD/PMP and UCU into the UA. Groundwater in the UA flows from north to south/southwest and converges near a former drainage feature located west of the PAP. In the eastern portion of the PAP, groundwater flows to the southeast towards Newton Lake. Groundwater elevations vary seasonally, although generally less than one foot per year (Ramboll, 2021).

2.2 Identified Exceedances of the GWPS

The following GWPS exceedances at compliance groundwater monitoring wells likely attributable to the PAP were observed from 2023 Q2 through 2023 Q4 (Ramboll 2024):

- Lithium – Observed at UD/PMP monitoring well APW02.
- Sulfate – Observed at UD/PMP monitoring wells APW02, APW04, APW05S and UA monitoring well APW10.
- TDS – Observed at UD/PMP monitoring wells APW02, APW04, APW05S and UA monitoring well APW10. Sulfate is the major contributor to TDS in the PAP groundwater. Therefore, processes that control sulfate concentrations also control TDS.

The data set for geochemical modeling was finalized after the 2023 Q4 sampling event. Groundwater at these compliance wells is representative of groundwater conditions downgradient of the unit, and samples may be referred to as downgradient groundwater.

The distribution of exceedances is described in detail in the Nature and Extent Report[7] and summarized here. Lithium exceedances occur only in one UD/PMP well west of the PAP (APW02). Exceedances of sulfate and TDS are present on the west, north, and east sides of the PAP within the UD/PMP but only east of the PAP within the UA. The lithium and sulfate concentrations in Newton Lake were evaluated and they do not present unacceptable risk (Gradient, 2022).

Modeling parameters with observed exceedances is appropriate to the scope of the CAAA. Modeling these parameters is conservative because they represent the most wide-spread and persistent exceedances at NPP PAP. Additionally, the selected remedy will meet the performance standards of 35 I.A.C. § 845.670(d) and the Corrective Action Plan will be submitted to the Agency on or before March 28, 2025. Once implemented and completed, the selected remedy will attain the GWPSs.

2.3 Geochemical Conceptual Site Model

A Geochemical Conceptual Site Model (GCSM)[8] was developed for NPP PAP to describe the geochemical processes that contribute to mobilization and attenuation of constituents in the environment under current conditions, including evaluating whether chemical interactions of COCs with aquifer solids contribute to attenuation of aqueous concentrations at compliance monitoring wells. This discussion relies on lab reports and raw data previously presented in the Nature and Extent Report submitted to IEPA on April 3, 2024 (Ramboll 2024) in accordance with 35 I.A.C. § 845.650(d)(1) and provided again, including relevant updates presenting ongoing work, as Appendix D of the CAAA to which this report is attached.

Groundwater in the UD/PMP and eastern UA wells tend to be geochemically similar: groundwater from these locations tends to be more oxidizing, exhibit lower pH, and have a cation signature dominated by calcium and magnesium. Groundwater in the rest of the UA tends to be more reducing (exhibiting higher dissolved iron concentrations), have higher pH, and have a greater contribution of sodium and potassium to the cation signature. These results suggest some degree

[7] The Nature and Extent Report was previously submitted to IEPA (Ramboll 2024) and provided with updates as Appendix D of the CAAA to which this report is attached.

[8] The GCSM is a component of the Nature and Extent Report previously submitted to IEPA (Ramboll 2024) and provided with updates as Appendix D of the CAAA to which this report is attached.

of hydraulic connection between the UD/PMP and UA east of the PAP where the UA is shallowest (*i.e.*, in closest proximity to the UD/PMP).

Lithium concentrations in groundwater are highest in UD/PMP and eastern UA groundwater. Although lithium was identified in solid samples located both upgradient and downgradient of the PAP, the similar distributions of lithium and sulfate suggest that CCR porewater is the primary source of lithium to the groundwater. The difference in groundwater lithium concentrations may be due to variability in porewater concentration or in attenuation to aquifer solids. Lithium in groundwater may be attenuated by sorption to exchangeable sites (readily reversible) or incorporation in clay mineral matrices (poorly reversible). According to results from laboratory batch testing, lithium may sorb to both UA/PMP and UA solids.

Sulfate in CCR porewater and the UD/PMP groundwater is correlated with sodium, indicating that dissolution of sodium sulfate from the CCR material is the primary source of sulfate to the CCR porewater. Sulfate exceedances in the UA, which occur exclusively on the east side of the PAP, are consistent with water migration from the UD/PMP. Potential sulfate attenuation mechanisms at the NPP PAP include sorption to solid-phase iron and aluminum (hydr)oxides. The circumneutral to slightly acidic pH of the UD/PMP and the presence of metal (hydr)oxides are conducive to sulfate sorption and attenuation; however, the batch test results indicated that the capacity of UD/PMP solid phase materials to sorb sulfate may be saturated, and that sulfate sorption may be more likely in the UA.

Analysis of aquifer solids collected from the UD/PMP and UA indicate that iron (hydr)oxides and aluminum (hydr)oxides are present in both hydrostratigraphic units, and that iron (hydr)oxides are generally more prevalent in the UA whereas aluminum (hydr)oxides are more prevalent in the UD/PMP. Both kaolinite and its parent mineral, K-feldspar, are present in aquifer solids, suggesting the potential for formation of secondary clay minerals through chemical weathering. Carbonate minerals (*i.e.*, calcite and dolomite) are present in high abundance in both the UD/PMP and UA.

3. GROUNDWATER POLISHING REMEDY EVALUATION

This groundwater polishing evaluation uses geochemical modeling to evaluate chemical attenuation of COCs under current conditions and to predict changes in attenuation at exceedance locations following source control to further assess if chemical mechanisms of groundwater polishing will contribute to the remedy achieving the GWPS in a reasonable amount of time. Speciation and reaction models are geochemical models that can be used to evaluate the potential for chemical attenuation in groundwater. Speciation models assess the distribution of constituents between solid and aqueous phases, and reaction models evaluate how that distribution may change with changing site conditions (USEPA 2015). The results of geochemical modeling provide insight into groundwater polishing mechanisms and additional context for the time estimated to reach the GWPS determined by the groundwater flow and transport model[9], which is based on hydraulic properties of the aquifer and does not take into account chemical interactions of sulfate within the hydrologic unit.

3.1 Methods

Geochemical modeling was done in PHREEQC Version 3 (USGS 2021) using a modified MINTEQ v4 thermodynamic database (as described in relevant sections below). The geochemical modeling of groundwater polishing under current conditions and conditions after source control is completed includes speciation and reaction modeling (USEPA 2015):

1. Speciation: To understand groundwater polishing mechanisms under current conditions, a solid phase representative of site conditions is equilibrated with current downgradient groundwater. The results of speciation modeling represent the association of COCs with the solid phase under current conditions through mechanisms such as sorption or precipitation.

2. Reaction: In the reaction modeling, the solid phase generated during the speciation modeling phase is reacted iteratively with background groundwater. These results represent the geochemical conditions expected after the source is controlled during which a trailing geochemical gradient may be created (SRNL 2011). The reactions with background groundwater assess the potential for a trailing geochemical gradient to drive changes in groundwater chemistry. Persistence of elevated groundwater COC concentrations over several reaction iterations suggests a trailing geochemical gradient may be more likely to affect the time to reach the GWPS.

The equilibrium thermodynamic modeling approach used herein allows that the solid and aqueous phases reach equilibrium during each step. The primary goal of this model is to inform the assessment of groundwater polishing as an appropriate remedy for the site by evaluating dominant geochemical reactions that may occur at time scales relevant to groundwater flow, including adsorption and certain mineral dissolution/precipitation (*i.e.*, iron and aluminum (hydr)oxides, carbonates, and some sulfates) as identified in the GCSM. The model therefore includes those parameters that are expected to contribute to those reactions (as discussed below) and does not include every constituent of the solid phase and groundwater in order to capture "the salient aspects of the system's behavior without introducing unnecessary complexity" (USEPA 2015). This model is therefore a semi-quantitative estimation of chemical

[9] The Groundwater Modeling Technical Memorandum serves as Appendix B of the CAAA Supporting Information Report; the CAAA Supporting Information Report serves as Appendix B of the CAAA to which this report is attached.

behavior in the subsurface rather than a prediction of groundwater quality, consistent with USEPA guidance that geochemical modeling "is often most helpful for identifying relative changes in contaminant speciation and distribution" (USEPA 2015).

3.1.1 Model Set-Up

Inputs to the model include solid phase composition, downgradient groundwater composition for wells with exceedances of any COC, and background groundwater composition. The data included for model parameterization is summarized in **Table 3-1** and detailed below. The PHREEQC input file and modified MINTEQ v4 database are provided in **Attachment B**. All data used in the model and discussed below are provided in the Nature and Extent Report.[10]

3.1.2 Solid Phase Inputs

Iron hydroxide (ferrihydrite) and aluminum hydroxide (gibbsite) are wide-spread in the environment known to act as sorbing phases for many groundwater constituents, including lithium and sulfate (Dzombak and Morel 1990; Karamalidis and Dzombak 2010). Model input concentrations for ferrihydrite and goethite were derived using site-specific sequential extraction procedure (SEP) data (details provided in **Attachment C**). SEP data were available from three solid phase samples from the UD/PMP and from five solid phase samples from the UA. Metal oxide concentrations representing the 25th percentile, median, and 75th percentile of the observed data were used to test the sensitivity of the model to the amount of sorbing phase present. Both ferrihydrite and goethite were allowed to dissolve or precipitate in the flushing phase of the model.

Results from the batch testing indicated that lithium sorption to NPP PAP aquifer solids was well modeled by a Langmuir isotherm[11]. Lithium may be strongly retained under environmental conditions in soils forming secondary minerals (such as kaolinite, as observed at the NPP PAP[12]). An empirical sorbing phase for lithium, representing the observed sorption capacity of the aquifer solids, was therefore included and parameterized using the median results from the batch testing (details provided in **Attachment C**). Because the properties and amount of sorbing phase were based on laboratory testing rather than field measurements, a range of sorbing phase summary statistics (like those used for ferrihydrite and goethite) were not available for sensitivity testing. Although other constituents will not sorb to this phase within the model, the batch testing was conducted with groundwater collected from the site and therefore the results account for competition for sorption sites. The inclusion of this phase is consistent with the observation of kaolinite, known to strongly and irreversibly bind lithium under environmental conditions (Li and Liu 2020), in aquifer solids in the vicinity of the PAP.

Calcite and dolomite were included as mineral phases in the model because carbonate mineral formation and dissolution are often major controls on groundwater pH (Stumm and Morgan 1996; Stackelberg et al. 2020). Calcite and dolomite are present in site aquifer solids in excess,

[10] The Nature and Extent Report was previously submitted to IEPA (Ramboll 2024) and is provided with relevant updates as Appendix D of the CAAA to which this report is attached. The Nature and Extent report contains laboratory reports and tabulated results from solid phase analysis and tabulated results from groundwater analyses. Laboratory reports for groundwater data are provided quarterly to IEPA and posted to the facility's operating record in accordance with 35 I.A.C. § 845.800(d)(15).

[11] See Attachment 10 of the Nature and Extent Report (ibid.)

[12] The Nature and Extent Report was previously submitted to IEPA (Ramboll 2024) and is provided with relevant updates as Appendix D of the CAAA to which this report is attached.

and model input concentrations were based on site-specific XRD results. Both calcite and dolomite were allowed to dissolve or precipitate in the flushing phase of the model.

Barite ($BaSO_4$) and gypsum ($CaSO_4$) are minerals that contain sulfate and have the potential to form under ambient environmental conditions in a timeframe consistent with the remedial effort. These minerals therefore may affect sulfate attenuation. Neither mineral phase was observed in mineralogical results for the site; therefore, both were made available to precipitate from the aqueous solution but did not have initial concentrations provided.

3.1.3 Aqueous Inputs

In addition to the COCs, the following parameters are included to capture the expected attenuation and mobilization mechanisms (discussed in **Section 2.3**):

- Temperature, pH and pe[13]
- Major ions: Carbonate and bicarbonate alkalinity, chloride, fluoride, calcium, magnesium, potassium, and sodium
- Oxyanions: Silicon and phosphate
- Redox-active metals: Aluminum, iron, and manganese
- Remaining constituents regulated under 35 I.A.C. § 845.600[14]

This full suite of geochemical parameters for this model was measured in Quarter 2 and Quarter 3, 2023. The medians of these results were used in the model to represent average groundwater interacting with the solid phase details provided in **Attachment C**. For downgradient wells with exceedances of the COCs, (**Section 2.2**), the median for each parameter was calculated for each location individually. For background wells, a single median for each parameter was calculated using data from both background locations (see **Section 2.1**).

3.2 Results and Discussion

Modeling outputs are presented in full in **Attachment D** and discussed below.

3.2.1 Sorption Modeling

Speciation modeling results indicate that lithium is predominantly associated with the solid (*i.e.*, sorbed) phase under current conditions (**Figure 3-1**). The high proportion (typically greater than 80%) of sorbed lithium is consistent with the strong lithium sorption observed in the laboratory batch test. Sulfate is predominantly present in the dissolved phase, indicated by a low proportion (less than 12%) present in the solid phase (**Figure 3-1**). The sensitivity test using the 25th percentile, median, and 75th percentile of metal oxide masses indicated that the amount of sorbing phase did not have a meaningful impact on the speciation results. These results suggest that chemical attenuation of lithium through sorption to solid phases is feasible at the site and may contribute to groundwater polishing, and that attenuation of sulfate through sorption to iron

[13] See **Appendix C** for details.

[14] Mercury, thallium, total dissolved solids, and radium were not included in the model. Mercury reactions within the environment are highly complex and would require a separate modeling effort, and the high frequency of non-detect concentrations in the groundwater indicate it would not contribute to model outcomes. Thallium forms a non-reactive monovalent cation and is rarely detected in the groundwater and is therefore not expected to contribute to model outcomes. Total dissolved solids are not a chemical parameter, but rather the result of other chemical abundances taken together. Radium is not included in most thermodynamic databases.

and aluminum hydroxide minerals is minimal and concentrations are predominantly affected by physical mechanisms.

3.2.2 Reaction Modeling

Background groundwater tends to have a higher pH, be somewhat more reducing, and have higher iron concentrations than modeled downgradient compliance locations.[15] **Table 3-2** shows the modeled concentrations of ferrihydrite and gibbsite during each reaction, the change in concentration from the previous step concentration, and the percent of total mass that change represents. The changes in ferrihydrite and gibbsite concentrations are positive, indicating that both phases may precipitate as conditions return to background groundwater quality. However, the change during each flush represents less than 0.01% of the total mass available. This indicates that any changes in ferrihydrite or gibbsite concentrations would likely be minor as conditions return to background.

Figure 3-2 shows the modeled concentrations of sulfate in the dissolved phase, sorbed phase, and barite for both reaction steps. Desorption of sulfate from the solid phase has a minimal effect on dissolved phase concentrations after source control is completed and conditions return to background, consistent with the limited attenuation under current conditions. A negligible amount of sulfate is expected to precipitate as barium, and barite may become undersaturated as dissolved sulfate concentration decrease (*e.g.*, APW10). No gypsum is anticipated to precipitate. These results indicate that mobilization of currently attenuated sulfate is unlikely to affect the modeled time to reach the GWPS.

Figure 3-3 shows the modeled concentrations of lithium in the dissolved and sorbed phases for both reaction steps. Desorption from the solid phase may affect lithium concentrations as indicated by decreasing sorbed concentrations in the first reaction. This desorption may drive transient increases in concentrations at some UD/PMP wells. At some UD/PMP wells, the subsequent reaction steps show that lithium concentrations may persist above the GWPS longer-term.

These semi-quantitative modeling results should be interpreted in the context of the scientific literature and site-specific observations. Lithium may be strongly retained under environmental conditions in soils forming secondary minerals (such as kaolinite, as observed at the NPP PAP[16]) (*e.g.*, Pogge von Strandmann *et al*. 2021; Steinhoefel *et al*. 2021), and this binding can be 60% to 90% irreversible under changing conditions (*e.g.*, Anderson *et al.* 1989; Prodromou 2016; Li and Liu 2020). In laboratory batch testing, lithium desorption from a UD/PMP sample resulted in concentrations of 0.015 to 0.016 mg/L – an order of magnitude less than remobilization observed in the first reaction step in the model. Therefore, the magnitude of lithium remobilization may be over-estimated by the reaction modeling.

[15] The GCSM is a component of the Nature and Extent Report previously submitted to IEPA (Ramboll 2024) and is provided with relevant updates as Appendix D of the CAAA to which this report is attached.

[16] Ibid.

4. CONCLUSIONS

This report evaluated the contribution of chemical mechanisms to groundwater polishing. The relative effect of these chemical mechanisms on COC concentrations in the groundwater was evaluated using geochemical modeling. The results of the groundwater polishing evaluation also contextualize estimates of the modeled time to reach the GWPS by evaluating potential changes in sulfate attenuation as groundwater quality returns to background conditions.

Results from the speciation modeling show that a minimal amount of sulfate and a substantial proportion of lithium are retained in the solid phase under current conditions. As conditions return to background conditions after source control is completed, solid sorbing phases are anticipated to be stable despite anticipated higher pH and more reducing conditions. Desorption of sulfate from the solid phase has a minimal effect on dissolved phase concentrations after source control is completed, indicating that mobilization of currently attenuated sulfate is unlikely to affect the time to reach the GWPS. Geochemical modeling results interpreted in conjunction with literature observations and additional site-specific data indicate that mobilization of currently sorbed lithium to the dissolved phase could result in a longer observed time to reach GWPS compared to sulfate, although the magnitude of that desorption may be substantially lower than indicated by the model results. These results will inform corrective action groundwater monitoring and adaptive site management, critical components of every corrective action considered in the CAAA.

5. REFERENCES

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TABLES

Table 3-1. Summary of geochemical model inputs
Groundwater Polishing Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Model Component	Parameters	Data source(s)
Solid Phase	Iron hydr(oxides), aluminum (hydr)oxides	Site-specific concentrations from sequential extraction data
	Calcite and dolomite	X-ray diffraction results
Downgradient groundwater[1]	Lithium, sulfate, TDS, iron, manganese, major ions, silicon, phosphate, 35 I.A.C § 845 parameters[2]	Median concentrations per will from data collected in Q2 and Q3 2023
Background groundwater		Median concentrations from pooled background data collected in Q2 and Q3 2023

NOTES:
1. Locations discussed in Section 2.2.
2. Details discussed in Section 3.1.3.

Table 3-2. Response of sorbing phases
Groundwater Polishing Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

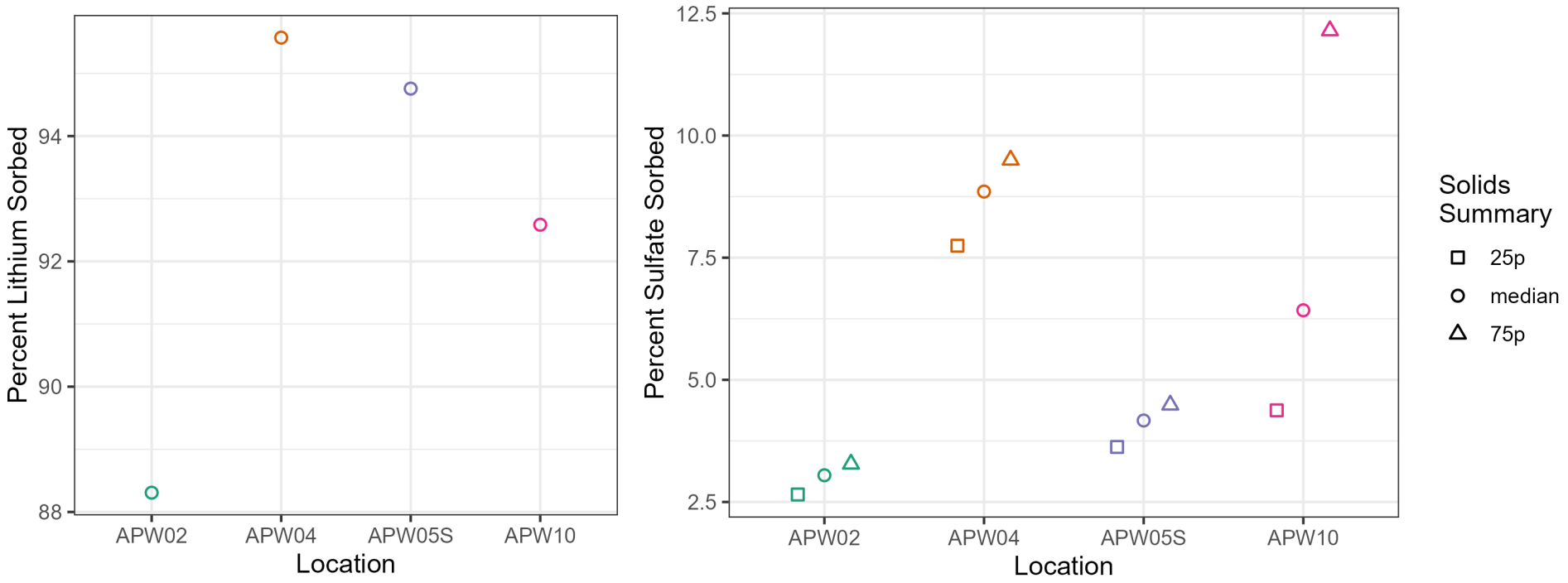
				Speciation	First Reaction			Second Reaction		
Parameter	**HSU**	**Location**	**Summary Type**	**mg/kg**	**mg/kg**	**Δ mg/kg**	**%**	**mg/kg**	**Δ mg/kg**	**%**
Barite	UA	APW10	25th percentile	0	0.0317	0.032	NA	0	-0.032	<0.01
			median	0	0.0450	0.045	NA	0.0189	-0.026	<0.01
			75th percentile	0	0.0582	0.058	NA	0.0526	-0.006	<0.01
Barite	UD	APW02	25th percentile	0	0.0765	0.076	NA	0.0841	0.008	9.9
			median	0	0.0796	0.080	NA	0.0931	0.014	17.0
			75th percentile	0	0.0811	0.081	NA	0.0978	0.017	20.7
Barite	UD	APW04	25th percentile	0	0.0588	0.059	NA	0.0553	-0.004	<0.01
			median	0	0.0627	0.063	NA	0.0645	0.002	2.9
			75th percentile	0	0.0647	0.065	NA	0.0695	0.005	7.4
Barite	UD	APW05S	25th percentile	0	0.0689	0.069	NA	0.0707	0.002	2.6
			median	0	0.0725	0.073	NA	0.0800	0.008	10.4
			75th percentile	0	0.0743	0.074	NA	0.0850	0.011	14.4
Ferrihydrite	UA	APW10	25th percentile	3150	3150	0.037	<0.01	3150	0.048	<0.01
			median	4720	4720	0.035	<0.01	4720	0.042	<0.01
			75th percentile	6040	6040	0.033	<0.01	6040	0.035	<0.01
Ferrihydrite	UD	APW02	25th percentile	534	534	0.035	<0.01	534	0.035	<0.01
			median	590	590	0.035	<0.01	590	0.035	<0.01
			75th percentile	618	618	0.035	<0.01	618	0.035	<0.01
Ferrihydrite	UD	APW04	25th percentile	534	534	0.035	<0.01	534	0.035	<0.01
			median	590	590	0.035	<0.01	590	0.035	<0.01
			75th percentile	618	618	0.035	<0.01	618	0.035	<0.01
Ferrihydrite	UD	APW05S	25th percentile	534	534	0.035	<0.01	534	0.035	<0.01
			median	590	590	0.035	<0.01	590	0.035	<0.01
			75th percentile	618	618	0.035	<0.01	618	0.035	<0.01
Gibbsite	UA	APW10	25th percentile	230	230	0.006	<0.01	230	0.006	<0.01
			median	345	345	0.006	<0.01	345	0.006	<0.01
			75th percentile	862	862	0.007	<0.01	862	0.006	<0.01
Gibbsite	UD	APW02	25th percentile	1270	1270	0.007	<0.01	1270	0.007	<0.01
			median	1480	1480	0.007	<0.01	1480	0.007	<0.01
			75th percentile	1600	1600	0.007	<0.01	1600	0.007	<0.01

Table 3-2. Response of sorbing phases
Groundwater Polishing Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

				Speciation	First Reaction			Second Reaction		
Parameter	**HSU**	**Location**	**Summary Type**	**mg/kg**	**mg/kg**	**Δ mg/kg**	**%**	**mg/kg**	**Δ mg/kg**	**%**
Gibbsite	UD	APW04	25th percentile	1270	1270	0.007	<0.01	1270	0.007	<0.01
			median	1480	1480	0.007	<0.01	1480	0.007	<0.01
			75th percentile	1600	1600	0.007	<0.01	1600	0.007	<0.01
Gibbsite	UD	APW05S	25th percentile	1270	1270	0.007	<0.01	1270	0.007	<0.01
			median	1480	1480	0.007	<0.01	1480	0.007	<0.01
			75th percentile	1600	1600	0.007	<0.01	1600	0.007	<0.01

NOTES:
% = percent
HSU = hydrostratigraphic unit
mg/kg = milligram per kilogram
Summary Type = solids summary statistic
UA = uppermost aquifer
UD = upper drift

FIGURES



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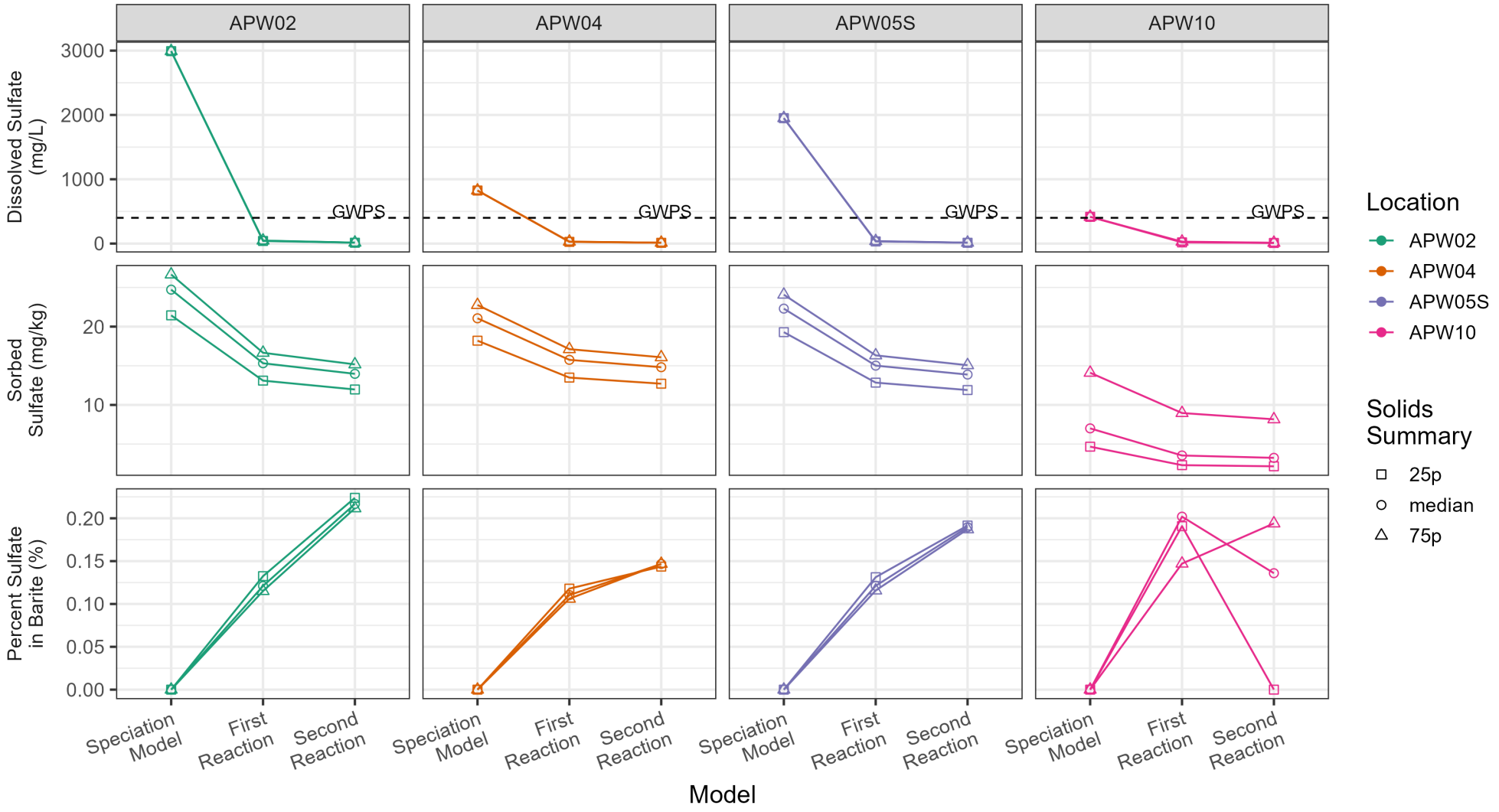
DRAFTED BY: AO | 11/5/2024

Speciation Model Results
Groundwater Polishing Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 3-1



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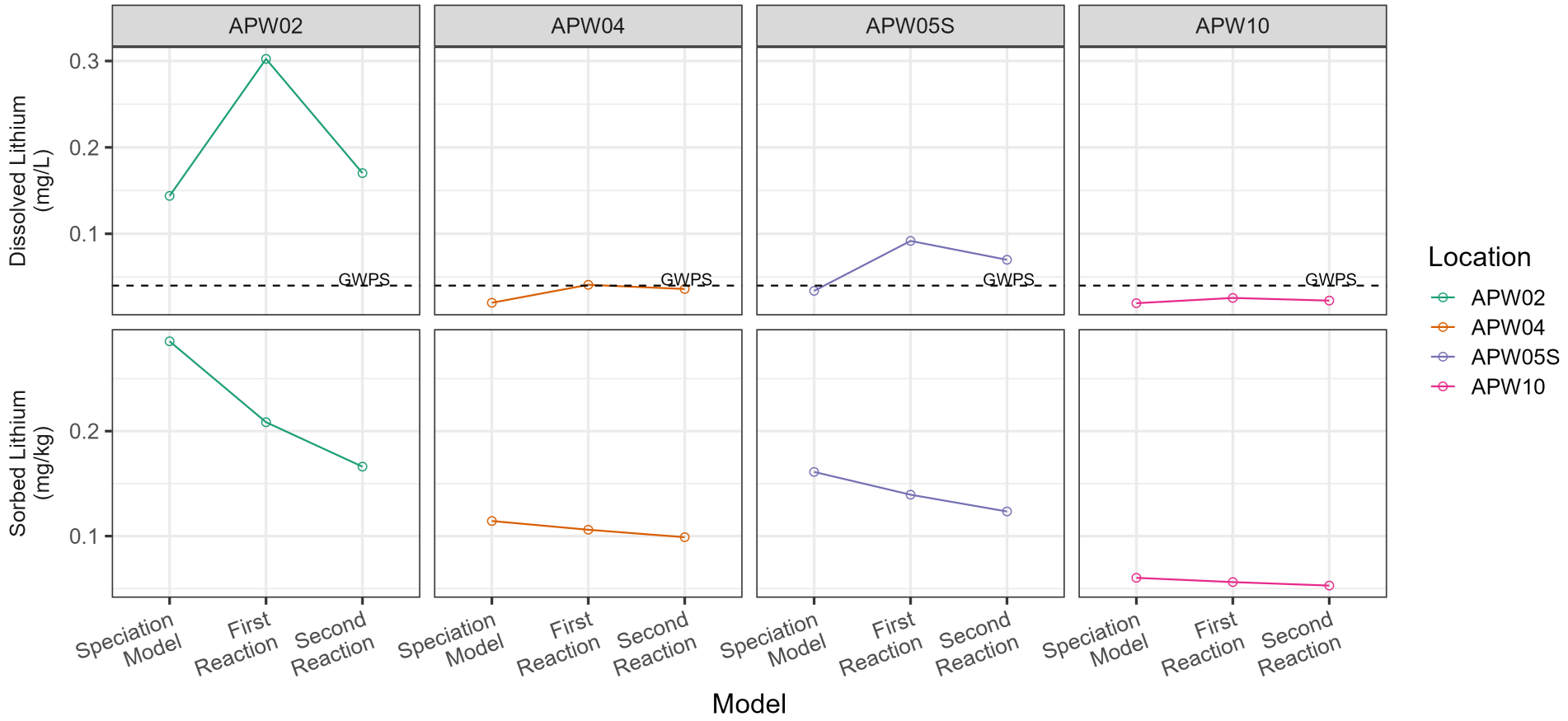
Sulfate reaction results
Groundwater Polishing Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 3-2



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DRAFTED BY: AO | 11/5/2024

Lithium reaction results
Groundwater Polishing Report
Newton Primary Ash Pond
Newton Power Plant
Newton, IL

Figure 3-3

ATTACHMENTS

ATTACHMENT A
Operating permit and potentiometric surface map

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- MONITORING WELL
- PORE WATER WELL
- LEACHATE WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, LAKE
- GROUNDWATER ELEVATION CONTOUR (5-FT CONTOUR INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE

NOTES:

1.ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.

2. ELEVATIONS IN BRACKETS WERE OBTAINED OUTSIDE OF THE 24 HOUR PERIOD FROM INITIATION OF DEPTH TO GROUNDWATER MEASUREMENTS BUT WITHIN THE SAME SAMPLING EVENT.

3. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

0 400 800
Feet

POTENTIOMETRIC SURFACE MAP JULY 24-25, 2023

2023 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\22851\MXD\GW_Contours\Round_2023\Newton\PAP_501\NEW 501 PAP Pot Surface 20230724.mxd

PROJECT: 169000XXXX | DATED: 12/11/2023 | DESIGNER: GALARNMC

ATTACHMENT B
PHREEQC input files and database

25th Percentile Metal Oxides/No Charge Balance

```
SELECTED_OUTPUT 1
-file NEW_845_501_25p_cb-false_out.csv
-charge_balance true
-percent_error true
-totals S(6) B Li As C(4) Cl F Ca Mg Na K Ba Si P Mn Fe Al Sb Be Cd Cr Co Pb Mo Se Hfo_s
Hfo_w Hao_
-molalities Hfo_wOH Hfo_wOH2+ Hfo_wOHSO4-2 Hfo_wSO4- Hfo_wOSi(OH)3
Hfo_wOSiO(OH)2- Hfo_wHCO3 Hfo_wCO3- Hfo_wPO4-2
Hfo_wHPO4- Hfo_wH2PO4 Hfo_sCO3- Hfo_sHCO3
Hfo_sHPO4- Hfo_sH2BO3 Hfo_sH2PO4 Hfo_sOSi(OH)3
Hfo_sOSiO(OH)2- Hfo_sOHSO4-2 Hfo_sSO4-
Hao_SO4- Hao_OHSO4-2 Hao_H2BO3 Hao_H3BO4- LangmuirLi+
-equilibrium_phases Ferrihydrite Gibbsite Barite Calcite Dolomite(ordered) Gypsum
-saturation_indices Ferrihydrite Gibbsite Barite Calcite Dolomite(ordered) Gypsum

SURFACE_MASTER_SPECIES
Langmuir Langmuir

SURFACE_SPECIES
Langmuir = Langmuir
Langmuir + Li+ = LangmuirLi+
-log_k = 8.6 #log10(mean(4.23e8 L/kg, 1.19e9 L/kg))

SOLUTION 1 #APW10 (C - UA)
redox pe
units mg/l
density 1
pH 7.215
pe 5.28
temp 16.1
S(6) 415.5 as SO4
B 0.08465
Li 0.01975
As 0.0086
C(4) 250.5 as CO3
Cl 45.5
F 0.2685
Ca 140
Mg 67.65
Na 116
K 1.5
Ba 0.0293
Si 8.555
P 0.003225
Mn 0.32
Fe 0.08645
Al 0.01395
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.00125
Co 0.000145
Pb 0.000205
```

```
Mo 0.0074
Se 0.000335
end

SOLUTION 2 #APW02 (C - UD)
redox pe
units mg/l
density 1
pH 6.715
pe 5.2
temp 16.55
S(6) 2980 as SO4
B 0.1545
Li 0.144
As 0.00115
C(4) 376 as CO3
Cl 106
F 0.191
Ca 467.5
Mg 429.5
Na 377
K 6.115
Ba 0.0158
Si 8.03
P 0.003225
Mn 0.385
Fe 0.0805
Al 0.006625
Sb 0.0002075
Be 0.0003475
Cd 0.000235
Cr 0.0031
Co 0.0014
Pb 0.000345
Mo 0.00155
Se 0.000335
end

SOLUTION 3 #APW04 (C - UD)
redox pe
units mg/l
density 1
pH 6.76
pe 6.025
temp 15.35
S(6) 824 as SO4
B 0.0321
Li 0.02025
As 0.000895
C(4) 285 as CO3
Cl 35
F 0.1155
Ca 210.5
Mg 172
Na 90.3
```

```
K 1.51
Ba 0.02335
Si 8.255
P 0.004475
Mn 0.4345
Fe 0.01875
Al 0.005675
Sb 0.0003575
Be 0.0001975
Cd 0.000235
Cr 0.02805
Co 0.00043
Pb 0.000465
Mo 0.0016
Se 0.000335
end

SOLUTION 4 #APW05S (C - UD)
redox pe
units mg/l
density 1
pH 6.74
pe 4.81
temp 17.95
S(6) 1945 as SO4
B 0.1315
Li 0.034
As 0.000915
C(4) 318 as CO3
Cl 161.5
F 0.3875
Ca 372.5
Mg 291
Na 258.5
K 1.985
Ba 0.0339
Si 10.65
P 0.005475
Mn 0.449
Fe 0.0831
Al 0.0125
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.0021
Co 0.001415
Pb 0.00026
Mo 0.0013
Se 0.000335
end

EQUILIBRIUM_PHASES 1 #APW10 (C - UA) - 25p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.012
```

```
Ferrihydrite 0 0.12
Calcite 0 4
Dolomite(ordered) 0 3

SURFACE 1
Langmuir 0.00522 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 1
save surface 1
end

EQUILIBRIUM_PHASES 2 #APW02 (C - UD) - 25p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.062
Ferrihydrite 0 0.019
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 2
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 2
save surface 2
end

EQUILIBRIUM_PHASES 3 #APW04 (C - UD) - 25p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.062
Ferrihydrite 0 0.019
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 3
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 3
save surface 3
end

EQUILIBRIUM_PHASES 4 #APW05S (C - UD) - 25p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.062
Ferrihydrite 0 0.019
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 4
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
```

```
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 4
save surface 4
end

SOLUTION 5 #average background
redox pe
units mg/l
density 1
pH 7.525
pe 1.875
temp 15.05
S(6) 8.8
B 0.1
Li 0.0092
As 0.01925
C(4) 278.5
Cl 36 charge
F 0.4935
Ca 52.05
Mg 25.7
Na 124
K 1.46
Ba 0.252
Si 6.435
P 0.061
Mn 0.0395
Fe 0.99
Al 0.01055
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.0025
Co 0.000265
Pb 0.00049
Mo 0.0084
Se 0.000335

SAVE solution 5

end

#FIRST REACTION

#APW10 (C - UA) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 1
USE SURFACE 1
SAVE equilibrium_phases 1
SAVE surface 1
end

#APW10 (C - UA) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 1
USE SURFACE 1
```

```
SAVE equilibrium_phases 1
SAVE surface 1
end

#APW02 (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 2
USE SURFACE 2
SAVE equilibrium_phases 2
SAVE surface 2
end

#APW02 (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 2
USE SURFACE 2
SAVE equilibrium_phases 2
SAVE surface 2
end

#APW04 (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 3
USE SURFACE 3
SAVE equilibrium_phases 3
SAVE surface 3
end

#APW04 (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 3
USE SURFACE 3
SAVE equilibrium_phases 3
SAVE surface 3
end

#APW05S (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 4
USE SURFACE 4
SAVE equilibrium_phases 4
SAVE surface 4
end

#APW05S (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 4
USE SURFACE 4
SAVE equilibrium_phases 4
SAVE surface 4
end
```

25th Percentile Metal Oxides/Charge Balance on Chloride

```
SELECTED_OUTPUT 1
-file NEW_845_501_25p_cb-true_out.csv
-charge_balance true
-percent_error true
-totals S(6) B Li As C(4) Cl F Ca Mg Na K Ba Si P Mn Fe Al Sb Be Cd Cr Co Pb Mo Se Hfo_s
Hfo_w Hao_
-molalities Hfo_wOH Hfo_wOH2+ Hfo_wOHSO4-2 Hfo_wSO4- Hfo_wOSi(OH)3
Hfo_wOSiO(OH)2- Hfo_wHCO3 Hfo_wCO3- Hfo_wPO4-2
Hfo_wHPO4- Hfo_wH2PO4 Hfo_sCO3- Hfo_sHCO3
Hfo_sHPO4- Hfo_sH2BO3 Hfo_sH2PO4 Hfo_sOSi(OH)3
Hfo_sOSiO(OH)2- Hfo_sOHSO4-2 Hfo_sSO4-
Hao_SO4- Hao_OHSO4-2 Hao_H2BO3 Hao_H3BO4- LangmuirLi+
-equilibrium_phases Ferrihydrite Gibbsite Barite Calcite Dolomite(ordered) Gypsum
-saturation_indices Ferrihydrite Gibbsite Barite Calcite Dolomite(ordered) Gypsum

SURFACE_MASTER_SPECIES
Langmuir Langmuir

SURFACE_SPECIES
Langmuir = Langmuir
Langmuir + Li+ = LangmuirLi+
-log_k = 8.6 #log10(mean(4.23e8 L/kg, 1.19e9 L/kg))

SOLUTION 1 #APW10 (C - UA)
redox pe
units mg/l
density 1
pH 7.215
pe 5.28
temp 16.1
S(6) 415.5 as SO4
B 0.08465
Li 0.01975
As 0.0086
C(4) 250.5 as CO3
Cl 45.5 charge
F 0.2685
Ca 140
Mg 67.65
Na 116
K 1.5
Ba 0.0293
Si 8.555
P 0.003225
Mn 0.32
Fe 0.08645
Al 0.01395
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.00125
Co 0.000145
Pb 0.000205
```

Mo 0.0074
Se 0.000335
end

SOLUTION 2 #APW02 (C - UD)
redox pe
units mg/l
density 1
pH 6.715
pe 5.2
temp 16.55
S(6) 2980 as SO4
B 0.1545
Li 0.144
As 0.00115
C(4) 376 as CO3
Cl 106 charge
F 0.191
Ca 467.5
Mg 429.5
Na 377
K 6.115
Ba 0.0158
Si 8.03
P 0.003225
Mn 0.385
Fe 0.0805
Al 0.006625
Sb 0.0002075
Be 0.0003475
Cd 0.000235
Cr 0.0031
Co 0.0014
Pb 0.000345
Mo 0.00155
Se 0.000335
end

SOLUTION 3 #APW04 (C - UD)
redox pe
units mg/l
density 1
pH 6.76
pe 6.025
temp 15.35
S(6) 824 as SO4
B 0.0321
Li 0.02025
As 0.000895
C(4) 285 as CO3
Cl 35 charge
F 0.1155
Ca 210.5
Mg 172
Na 90.3

```
K 1.51
Ba 0.02335
Si 8.255
P 0.004475
Mn 0.4345
Fe 0.01875
Al 0.005675
Sb 0.0003575
Be 0.0001975
Cd 0.000235
Cr 0.02805
Co 0.00043
Pb 0.000465
Mo 0.0016
Se 0.000335
end

SOLUTION 4 #APW05S (C - UD)
redox pe
units mg/l
density 1
pH 6.74
pe 4.81
temp 17.95
S(6) 1945 as SO4
B 0.1315
Li 0.034
As 0.000915
C(4) 318 as CO3
Cl 161.5 charge
F 0.3875
Ca 372.5
Mg 291
Na 258.5
K 1.985
Ba 0.0339
Si 10.65
P 0.005475
Mn 0.449
Fe 0.0831
Al 0.0125
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.0021
Co 0.001415
Pb 0.00026
Mo 0.0013
Se 0.000335
end

EQUILIBRIUM_PHASES 1 #APW10 (C - UA) - 25p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.012
```

```
Ferrihydrite 0 0.12
Calcite 0 4
Dolomite(ordered) 0 3

SURFACE 1
Langmuir 0.00522 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 1
save surface 1
end

EQUILIBRIUM_PHASES 2 #APW02 (C - UD) - 25p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.062
Ferrihydrite 0 0.019
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 2
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 2
save surface 2
end

EQUILIBRIUM_PHASES 3 #APW04 (C - UD) - 25p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.062
Ferrihydrite 0 0.019
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 3
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 3
save surface 3
end

EQUILIBRIUM_PHASES 4 #APW05S (C - UD) - 25p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.062
Ferrihydrite 0 0.019
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 4
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
```

```
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 4
save surface 4
end

SOLUTION 5 #average background
redox pe
units mg/l
density 1
pH 7.525
pe 1.875
temp 15.05
S(6) 8.8
B 0.1
Li 0.0092
As 0.01925
C(4) 278.5
Cl 36 charge
F 0.4935
Ca 52.05
Mg 25.7
Na 124
K 1.46
Ba 0.252
Si 6.435
P 0.061
Mn 0.0395
Fe 0.99
Al 0.01055
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.0025
Co 0.000265
Pb 0.00049
Mo 0.0084
Se 0.000335

SAVE solution 5

end

#FIRST REACTION

#APW10 (C - UA) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 1
USE SURFACE 1
SAVE equilibrium_phases 1
SAVE surface 1
end

#APW10 (C - UA) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 1
USE SURFACE 1
```

```
SAVE equilibrium_phases 1
SAVE surface 1
end

#APW02 (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 2
USE SURFACE 2
SAVE equilibrium_phases 2
SAVE surface 2
end

#APW02 (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 2
USE SURFACE 2
SAVE equilibrium_phases 2
SAVE surface 2
end

#APW04 (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 3
USE SURFACE 3
SAVE equilibrium_phases 3
SAVE surface 3
end

#APW04 (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 3
USE SURFACE 3
SAVE equilibrium_phases 3
SAVE surface 3
end

#APW05S (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 4
USE SURFACE 4
SAVE equilibrium_phases 4
SAVE surface 4
end

#APW05S (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 4
USE SURFACE 4
SAVE equilibrium_phases 4
SAVE surface 4
end
```

75th Percentile Metal Oxides/No Charge Balance

```
SELECTED_OUTPUT 1
-file NEW_845_501_75p_cb-false_out.csv
-charge_balance true
-percent_error true
-totals S(6) B Li As C(4) Cl F Ca Mg Na K Ba Si P Mn Fe Al Sb Be Cd Cr Co Pb Mo Se Hfo_s
Hfo_w Hao_
-molalities Hfo_wOH Hfo_wOH2+ Hfo_wOHSO4-2 Hfo_wSO4- Hfo_wOSi(OH)3
Hfo_wOSiO(OH)2- Hfo_wHCO3 Hfo_wCO3- Hfo_wPO4-2
Hfo_wHPO4- Hfo_wH2PO4 Hfo_sCO3- Hfo_sHCO3
Hfo_sHPO4- Hfo_sH2BO3 Hfo_sH2PO4 Hfo_sOSi(OH)3
Hfo_sOSiO(OH)2- Hfo_sOHSO4-2 Hfo_sSO4-
Hao_SO4- Hao_OHSO4-2 Hao_H2BO3 Hao_H3BO4- LangmuirLi+
-equilibrium_phases Ferrihydrite Gibbsite Barite Calcite Dolomite(ordered) Gypsum
-saturation_indices Ferrihydrite Gibbsite Barite Calcite Dolomite(ordered) Gypsum

SURFACE_MASTER_SPECIES
Langmuir Langmuir

SURFACE_SPECIES
Langmuir = Langmuir
Langmuir + Li+ = LangmuirLi+
-log_k = 8.6 #log10(mean(4.23e8 L/kg, 1.19e9 L/kg))

SOLUTION 1 #APW10 (C - UA)
redox pe
units mg/l
density 1
pH 7.215
pe 5.28
temp 16.1
S(6) 415.5 as SO4
B 0.08465
Li 0.01975
As 0.0086
C(4) 250.5 as CO3
Cl 45.5
F 0.2685
Ca 140
Mg 67.65
Na 116
K 1.5
Ba 0.0293
Si 8.555
P 0.003225
Mn 0.32
Fe 0.08645
Al 0.01395
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.00125
Co 0.000145
Pb 0.000205
```

```
Mo 0.0074
Se 0.000335
end

SOLUTION 2 #APW02 (C - UD)
redox pe
units mg/l
density 1
pH 6.715
pe 5.2
temp 16.55
S(6) 2980 as SO4
B 0.1545
Li 0.144
As 0.00115
C(4) 376 as CO3
Cl 106
F 0.191
Ca 467.5
Mg 429.5
Na 377
K 6.115
Ba 0.0158
Si 8.03
P 0.003225
Mn 0.385
Fe 0.0805
Al 0.006625
Sb 0.0002075
Be 0.0003475
Cd 0.000235
Cr 0.0031
Co 0.0014
Pb 0.000345
Mo 0.00155
Se 0.000335
end

SOLUTION 3 #APW04 (C - UD)
redox pe
units mg/l
density 1
pH 6.76
pe 6.025
temp 15.35
S(6) 824 as SO4
B 0.0321
Li 0.02025
As 0.000895
C(4) 285 as CO3
Cl 35
F 0.1155
Ca 210.5
Mg 172
Na 90.3
```

K 1.51
Ba 0.02335
Si 8.255
P 0.004475
Mn 0.4345
Fe 0.01875
Al 0.005675
Sb 0.0003575
Be 0.0001975
Cd 0.000235
Cr 0.02805
Co 0.00043
Pb 0.000465
Mo 0.0016
Se 0.000335
end

SOLUTION 4 #APW05S (C - UD)
redox pe
units mg/l
density 1
pH 6.74
pe 4.81
temp 17.95
S(6) 1945 as SO4
B 0.1315
Li 0.034
As 0.000915
C(4) 318 as CO3
Cl 161.5
F 0.3875
Ca 372.5
Mg 291
Na 258.5
K 1.985
Ba 0.0339
Si 10.65
P 0.005475
Mn 0.449
Fe 0.0831
Al 0.0125
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.0021
Co 0.001415
Pb 0.00026
Mo 0.0013
Se 0.000335
end

EQUILIBRIUM_PHASES 1 #APW10 (C - UA) - 75p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.045

```
Ferrihydrite 0 0.23
Calcite 0 4
Dolomite(ordered) 0 3

SURFACE 1
Langmuir 0.00522 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 1
save surface 1
end

EQUILIBRIUM_PHASES 2 #APW02 (C - UD) - 75p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.078
Ferrihydrite 0 0.022
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 2
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 2
save surface 2
end

EQUILIBRIUM_PHASES 3 #APW04 (C - UD) - 75p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.078
Ferrihydrite 0 0.022
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 3
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 3
save surface 3
end

EQUILIBRIUM_PHASES 4 #APW05S (C - UD) - 75p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.078
Ferrihydrite 0 0.022
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 4
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
```

```
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 4
save surface 4
end

SOLUTION 5 #average background
redox pe
units mg/l
density 1
pH 7.525
pe 1.875
temp 15.05
S(6) 8.8
B 0.1
Li 0.0092
As 0.01925
C(4) 278.5
Cl 36 charge
F 0.4935
Ca 52.05
Mg 25.7
Na 124
K 1.46
Ba 0.252
Si 6.435
P 0.061
Mn 0.0395
Fe 0.99
Al 0.01055
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.0025
Co 0.000265
Pb 0.00049
Mo 0.0084
Se 0.000335

SAVE solution 5

end

#FIRST REACTION

#APW10 (C - UA) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 1
USE SURFACE 1
SAVE equilibrium_phases 1
SAVE surface 1
end

#APW10 (C - UA) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 1
USE SURFACE 1
```

```
SAVE equilibrium_phases 1
SAVE surface 1
end

#APW02 (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 2
USE SURFACE 2
SAVE equilibrium_phases 2
SAVE surface 2
end

#APW02 (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 2
USE SURFACE 2
SAVE equilibrium_phases 2
SAVE surface 2
end

#APW04 (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 3
USE SURFACE 3
SAVE equilibrium_phases 3
SAVE surface 3
end

#APW04 (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 3
USE SURFACE 3
SAVE equilibrium_phases 3
SAVE surface 3
end

#APW05S (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 4
USE SURFACE 4
SAVE equilibrium_phases 4
SAVE surface 4
end

#APW05S (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 4
USE SURFACE 4
SAVE equilibrium_phases 4
SAVE surface 4
end
```

75th Percentile Metal Oxides/Charge Balance on Chloride

```
SELECTED_OUTPUT 1
-file NEW_845_501_75p_cb-true_out.csv
-charge_balance true
-percent_error true
-totals S(6) B Li As C(4) Cl F Ca Mg Na K Ba Si P Mn Fe Al Sb Be Cd Cr Co Pb Mo Se Hfo_s
Hfo_w Hao_
-molalities Hfo_wOH Hfo_wOH2+ Hfo_wOHSO4-2 Hfo_wSO4- Hfo_wOSi(OH)3
Hfo_wOSiO(OH)2- Hfo_wHCO3 Hfo_wCO3- Hfo_wPO4-2
Hfo_wHPO4- Hfo_wH2PO4 Hfo_sCO3- Hfo_sHCO3
Hfo_sHPO4- Hfo_sH2BO3 Hfo_sH2PO4 Hfo_sOSi(OH)3
Hfo_sOSiO(OH)2- Hfo_sOHSO4-2 Hfo_sSO4-
Hao_SO4- Hao_OHSO4-2 Hao_H2BO3 Hao_H3BO4- LangmuirLi+
-equilibrium_phases Ferrihydrite Gibbsite Barite Calcite Dolomite(ordered) Gypsum
-saturation_indices Ferrihydrite Gibbsite Barite Calcite Dolomite(ordered) Gypsum

SURFACE_MASTER_SPECIES
Langmuir Langmuir

SURFACE_SPECIES
Langmuir = Langmuir
Langmuir + Li+ = LangmuirLi+
-log_k = 8.6 #log10(mean(4.23e8 L/kg, 1.19e9 L/kg))

SOLUTION 1 #APW10 (C - UA)
redox pe
units mg/l
density 1
pH 7.215
pe 5.28
temp 16.1
S(6) 415.5 as SO4
B 0.08465
Li 0.01975
As 0.0086
C(4) 250.5 as CO3
Cl 45.5 charge
F 0.2685
Ca 140
Mg 67.65
Na 116
K 1.5
Ba 0.0293
Si 8.555
P 0.003225
Mn 0.32
Fe 0.08645
Al 0.01395
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.00125
Co 0.000145
Pb 0.000205
```

```
Mo 0.0074
Se 0.000335
end

SOLUTION 2 #APW02 (C - UD)
redox pe
units mg/l
density 1
pH 6.715
pe 5.2
temp 16.55
S(6) 2980 as SO4
B 0.1545
Li 0.144
As 0.00115
C(4) 376 as CO3
Cl 106 charge
F 0.191
Ca 467.5
Mg 429.5
Na 377
K 6.115
Ba 0.0158
Si 8.03
P 0.003225
Mn 0.385
Fe 0.0805
Al 0.006625
Sb 0.0002075
Be 0.0003475
Cd 0.000235
Cr 0.0031
Co 0.0014
Pb 0.000345
Mo 0.00155
Se 0.000335
end

SOLUTION 3 #APW04 (C - UD)
redox pe
units mg/l
density 1
pH 6.76
pe 6.025
temp 15.35
S(6) 824 as SO4
B 0.0321
Li 0.02025
As 0.000895
C(4) 285 as CO3
Cl 35 charge
F 0.1155
Ca 210.5
Mg 172
Na 90.3
```

K 1.51
Ba 0.02335
Si 8.255
P 0.004475
Mn 0.4345
Fe 0.01875
Al 0.005675
Sb 0.0003575
Be 0.0001975
Cd 0.000235
Cr 0.02805
Co 0.00043
Pb 0.000465
Mo 0.0016
Se 0.000335
end

SOLUTION 4 #APW05S (C - UD)
redox pe
units mg/l
density 1
pH 6.74
pe 4.81
temp 17.95
S(6) 1945 as SO4
B 0.1315
Li 0.034
As 0.000915
C(4) 318 as CO3
Cl 161.5 charge
F 0.3875
Ca 372.5
Mg 291
Na 258.5
K 1.985
Ba 0.0339
Si 10.65
P 0.005475
Mn 0.449
Fe 0.0831
Al 0.0125
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.0021
Co 0.001415
Pb 0.00026
Mo 0.0013
Se 0.000335
end

EQUILIBRIUM_PHASES 1 #APW10 (C - UA) - 75p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.045

```
Ferrihydrite 0 0.23
Calcite 0 4
Dolomite(ordered) 0 3

SURFACE 1
Langmuir 0.00522 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 1
save surface 1
end

EQUILIBRIUM_PHASES 2 #APW02 (C - UD) - 75p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.078
Ferrihydrite 0 0.022
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 2
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 2
save surface 2
end

EQUILIBRIUM_PHASES 3 #APW04 (C - UD) - 75p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.078
Ferrihydrite 0 0.022
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 3
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 3
save surface 3
end

EQUILIBRIUM_PHASES 4 #APW05S (C - UD) - 75p
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.078
Ferrihydrite 0 0.022
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 4
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
```

```
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 4
save surface 4
end

SOLUTION 5 #average background
redox pe
units mg/l
density 1
pH 7.525
pe 1.875
temp 15.05
S(6) 8.8
B 0.1
Li 0.0092
As 0.01925
C(4) 278.5
Cl 36 charge
F 0.4935
Ca 52.05
Mg 25.7
Na 124
K 1.46
Ba 0.252
Si 6.435
P 0.061
Mn 0.0395
Fe 0.99
Al 0.01055
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.0025
Co 0.000265
Pb 0.00049
Mo 0.0084
Se 0.000335

SAVE solution 5

end

#FIRST REACTION

#APW10 (C - UA) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 1
USE SURFACE 1
SAVE equilibrium_phases 1
SAVE surface 1
end

#APW10 (C - UA) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 1
USE SURFACE 1
```

```
SAVE equilibrium_phases 1
SAVE surface 1
end

#APW02 (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 2
USE SURFACE 2
SAVE equilibrium_phases 2
SAVE surface 2
end

#APW02 (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 2
USE SURFACE 2
SAVE equilibrium_phases 2
SAVE surface 2
end

#APW04 (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 3
USE SURFACE 3
SAVE equilibrium_phases 3
SAVE surface 3
end

#APW04 (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 3
USE SURFACE 3
SAVE equilibrium_phases 3
SAVE surface 3
end

#APW05S (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 4
USE SURFACE 4
SAVE equilibrium_phases 4
SAVE surface 4
end

#APW05S (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 4
USE SURFACE 4
SAVE equilibrium_phases 4
SAVE surface 4
end
```

Median Metal Oxides/No Charge Balance

```
SELECTED_OUTPUT 1
-file NEW_845_501_median_cb-false_out.csv
-charge_balance true
-percent_error true
-totals S(6) B Li As C(4) Cl F Ca Mg Na K Ba Si P Mn Fe Al Sb Be Cd Cr Co Pb Mo Se Hfo_s
Hfo_w Hao_
-molalities Hfo_wOH Hfo_wOH2+ Hfo_wOHSO4-2 Hfo_wSO4- Hfo_wOSi(OH)3
Hfo_wOSiO(OH)2- Hfo_wHCO3 Hfo_wCO3- Hfo_wPO4-2
Hfo_wHPO4- Hfo_wH2PO4 Hfo_sCO3- Hfo_sHCO3
Hfo_sHPO4- Hfo_sH2BO3 Hfo_sH2PO4 Hfo_sOSi(OH)3
Hfo_sOSiO(OH)2- Hfo_sOHSO4-2 Hfo_sSO4-
Hao_SO4- Hao_OHSO4-2 Hao_H2BO3 Hao_H3BO4- LangmuirLi+
-equilibrium_phases Ferrihydrite Gibbsite Barite Calcite Dolomite(ordered) Gypsum
-saturation_indices Ferrihydrite Gibbsite Barite Calcite Dolomite(ordered) Gypsum

SURFACE_MASTER_SPECIES
Langmuir Langmuir

SURFACE_SPECIES
Langmuir = Langmuir
Langmuir + Li+ = LangmuirLi+
-log_k = 8.6 #log10(mean(4.23e8 L/kg, 1.19e9 L/kg))

SOLUTION 1 #APW10 (C - UA)
redox pe
units mg/l
density 1
pH 7.215
pe 5.28
temp 16.1
S(6) 415.5 as SO4
B 0.08465
Li 0.01975
As 0.0086
C(4) 250.5 as CO3
Cl 45.5
F 0.2685
Ca 140
Mg 67.65
Na 116
K 1.5
Ba 0.0293
Si 8.555
P 0.003225
Mn 0.32
Fe 0.08645
Al 0.01395
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.00125
Co 0.000145
Pb 0.000205
```

```
Mo 0.0074
Se 0.000335
end

SOLUTION 2 #APW02 (C - UD)
redox pe
units mg/l
density 1
pH 6.715
pe 5.2
temp 16.55
S(6) 2980 as SO4
B 0.1545
Li 0.144
As 0.00115
C(4) 376 as CO3
Cl 106
F 0.191
Ca 467.5
Mg 429.5
Na 377
K 6.115
Ba 0.0158
Si 8.03
P 0.003225
Mn 0.385
Fe 0.0805
Al 0.006625
Sb 0.0002075
Be 0.0003475
Cd 0.000235
Cr 0.0031
Co 0.0014
Pb 0.000345
Mo 0.00155
Se 0.000335
end

SOLUTION 3 #APW04 (C - UD)
redox pe
units mg/l
density 1
pH 6.76
pe 6.025
temp 15.35
S(6) 824 as SO4
B 0.0321
Li 0.02025
As 0.000895
C(4) 285 as CO3
Cl 35
F 0.1155
Ca 210.5
Mg 172
Na 90.3
```

K 1.51
Ba 0.02335
Si 8.255
P 0.004475
Mn 0.4345
Fe 0.01875
Al 0.005675
Sb 0.0003575
Be 0.0001975
Cd 0.000235
Cr 0.02805
Co 0.00043
Pb 0.000465
Mo 0.0016
Se 0.000335
end

SOLUTION 4 #APW05S (C - UD)
redox pe
units mg/l
density 1
pH 6.74
pe 4.81
temp 17.95
S(6) 1945 as SO4
B 0.1315
Li 0.034
As 0.000915
C(4) 318 as CO3
Cl 161.5
F 0.3875
Ca 372.5
Mg 291
Na 258.5
K 1.985
Ba 0.0339
Si 10.65
P 0.005475
Mn 0.449
Fe 0.0831
Al 0.0125
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.0021
Co 0.001415
Pb 0.00026
Mo 0.0013
Se 0.000335
end

EQUILIBRIUM_PHASES 1 #APW10 (C - UA) - median
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.018

```
Ferrihydrite 0 0.18
Calcite 0 4
Dolomite(ordered) 0 3

SURFACE 1
Langmuir 0.00522 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 1
save surface 1
end

EQUILIBRIUM_PHASES 2 #APW02 (C - UD) - median
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.072
Ferrihydrite 0 0.021
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 2
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 2
save surface 2
end

EQUILIBRIUM_PHASES 3 #APW04 (C - UD) - median
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.072
Ferrihydrite 0 0.021
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 3
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 3
save surface 3
end

EQUILIBRIUM_PHASES 4 #APW05S (C - UD) - median
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.072
Ferrihydrite 0 0.021
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 4
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
```

```
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 4
save surface 4
end

SOLUTION 5 #average background
redox pe
units mg/l
density 1
pH 7.525
pe 1.875
temp 15.05
S(6) 8.8
B 0.1
Li 0.0092
As 0.01925
C(4) 278.5
Cl 36 charge
F 0.4935
Ca 52.05
Mg 25.7
Na 124
K 1.46
Ba 0.252
Si 6.435
P 0.061
Mn 0.0395
Fe 0.99
Al 0.01055
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.0025
Co 0.000265
Pb 0.00049
Mo 0.0084
Se 0.000335

SAVE solution 5

end

#FIRST REACTION

#APW10 (C - UA) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 1
USE SURFACE 1
SAVE equilibrium_phases 1
SAVE surface 1
end

#APW10 (C - UA) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 1
USE SURFACE 1
```

```
SAVE equilibrium_phases 1
SAVE surface 1
end

#APW02 (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 2
USE SURFACE 2
SAVE equilibrium_phases 2
SAVE surface 2
end

#APW02 (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 2
USE SURFACE 2
SAVE equilibrium_phases 2
SAVE surface 2
end

#APW04 (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 3
USE SURFACE 3
SAVE equilibrium_phases 3
SAVE surface 3
end

#APW04 (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 3
USE SURFACE 3
SAVE equilibrium_phases 3
SAVE surface 3
end

#APW05S (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 4
USE SURFACE 4
SAVE equilibrium_phases 4
SAVE surface 4
end

#APW05S (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 4
USE SURFACE 4
SAVE equilibrium_phases 4
SAVE surface 4
end
```

Median Metal Oxides/Charge Balance on Chloride

```
SELECTED_OUTPUT 1
-file NEW_845_501_median_cb-true_out.csv
-charge_balance true
-percent_error true
-totals S(6) B Li As C(4) Cl F Ca Mg Na K Ba Si P Mn Fe Al Sb Be Cd Cr Co Pb Mo Se Hfo_s
Hfo_w Hao_
-molalities Hfo_wOH Hfo_wOH2+ Hfo_wOHSO4-2 Hfo_wSO4- Hfo_wOSi(OH)3
Hfo_wOSiO(OH)2- Hfo_wHCO3 Hfo_wCO3- Hfo_wPO4-2
Hfo_wHPO4- Hfo_wH2PO4 Hfo_sCO3- Hfo_sHCO3
Hfo_sHPO4- Hfo_sH2BO3 Hfo_sH2PO4 Hfo_sOSi(OH)3
Hfo_sOSiO(OH)2- Hfo_sOHSO4-2 Hfo_sSO4-
Hao_SO4- Hao_OHSO4-2 Hao_H2BO3 Hao_H3BO4- LangmuirLi+
-equilibrium_phases Ferrihydrite Gibbsite Barite Calcite Dolomite(ordered) Gypsum
-saturation_indices Ferrihydrite Gibbsite Barite Calcite Dolomite(ordered) Gypsum

SURFACE_MASTER_SPECIES
Langmuir Langmuir

SURFACE_SPECIES
Langmuir = Langmuir
Langmuir + Li+ = LangmuirLi+
-log_k = 8.6 #log10(mean(4.23e8 L/kg, 1.19e9 L/kg))

SOLUTION 1 #APW10 (C - UA)
redox pe
units mg/l
density 1
pH 7.215
pe 5.28
temp 16.1
S(6) 415.5 as SO4
B 0.08465
Li 0.01975
As 0.0086
C(4) 250.5 as CO3
Cl 45.5 charge
F 0.2685
Ca 140
Mg 67.65
Na 116
K 1.5
Ba 0.0293
Si 8.555
P 0.003225
Mn 0.32
Fe 0.08645
Al 0.01395
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.00125
Co 0.000145
Pb 0.000205
```

```
Mo 0.0074
Se 0.000335
end

SOLUTION 2 #APW02 (C - UD)
redox pe
units mg/l
density 1
pH 6.715
pe 5.2
temp 16.55
S(6) 2980 as SO4
B 0.1545
Li 0.144
As 0.00115
C(4) 376 as CO3
Cl 106 charge
F 0.191
Ca 467.5
Mg 429.5
Na 377
K 6.115
Ba 0.0158
Si 8.03
P 0.003225
Mn 0.385
Fe 0.0805
Al 0.006625
Sb 0.0002075
Be 0.0003475
Cd 0.000235
Cr 0.0031
Co 0.0014
Pb 0.000345
Mo 0.00155
Se 0.000335
end

SOLUTION 3 #APW04 (C - UD)
redox pe
units mg/l
density 1
pH 6.76
pe 6.025
temp 15.35
S(6) 824 as SO4
B 0.0321
Li 0.02025
As 0.000895
C(4) 285 as CO3
Cl 35 charge
F 0.1155
Ca 210.5
Mg 172
Na 90.3
```

K 1.51
Ba 0.02335
Si 8.255
P 0.004475
Mn 0.4345
Fe 0.01875
Al 0.005675
Sb 0.0003575
Be 0.0001975
Cd 0.000235
Cr 0.02805
Co 0.00043
Pb 0.000465
Mo 0.0016
Se 0.000335
end

SOLUTION 4 #APW05S (C - UD)
redox pe
units mg/l
density 1
pH 6.74
pe 4.81
temp 17.95
S(6) 1945 as SO4
B 0.1315
Li 0.034
As 0.000915
C(4) 318 as CO3
Cl 161.5 charge
F 0.3875
Ca 372.5
Mg 291
Na 258.5
K 1.985
Ba 0.0339
Si 10.65
P 0.005475
Mn 0.449
Fe 0.0831
Al 0.0125
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.0021
Co 0.001415
Pb 0.00026
Mo 0.0013
Se 0.000335
end

EQUILIBRIUM_PHASES 1 #APW10 (C - UA) - median
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.018

```
Ferrihydrite 0 0.18
Calcite 0 4
Dolomite(ordered) 0 3

SURFACE 1
Langmuir 0.00522 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 1
save surface 1
end

EQUILIBRIUM_PHASES 2 #APW02 (C - UD) - median
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.072
Ferrihydrite 0 0.021
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 2
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 2
save surface 2
end

EQUILIBRIUM_PHASES 3 #APW04 (C - UD) - median
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.072
Ferrihydrite 0 0.021
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 3
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 3
save surface 3
end

EQUILIBRIUM_PHASES 4 #APW05S (C - UD) - median
Barite 0 0
Gypsum 0 0
Gibbsite 0 0.072
Ferrihydrite 0 0.021
Calcite 0 3
Dolomite(ordered) 0 2

SURFACE 4
Langmuir 0.018 1 1
Hfo_wOH Ferrihydrite equilibrium_phase 0.2 53400
```

```
Hfo_sOH Ferrihydrite equilibrium_phase 0.005 53400
Hao_OH Gibbsite equilibrium_phase 0.033 2496
-equil 4
save surface 4
end

SOLUTION 5 #average background
redox pe
units mg/l
density 1
pH 7.525
pe 1.875
temp 15.05
S(6) 8.8
B 0.1
Li 0.0092
As 0.01925
C(4) 278.5
Cl 36 charge
F 0.4935
Ca 52.05
Mg 25.7
Na 124
K 1.46
Ba 0.252
Si 6.435
P 0.061
Mn 0.0395
Fe 0.99
Al 0.01055
Sb 0.0002075
Be 0.0001975
Cd 0.000235
Cr 0.0025
Co 0.000265
Pb 0.00049
Mo 0.0084
Se 0.000335

SAVE solution 5

end

#FIRST REACTION

#APW10 (C - UA) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 1
USE SURFACE 1
SAVE equilibrium_phases 1
SAVE surface 1
end

#APW10 (C - UA) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 1
USE SURFACE 1
```

```
SAVE equilibrium_phases 1
SAVE surface 1
end

#APW02 (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 2
USE SURFACE 2
SAVE equilibrium_phases 2
SAVE surface 2
end

#APW02 (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 2
USE SURFACE 2
SAVE equilibrium_phases 2
SAVE surface 2
end

#APW04 (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 3
USE SURFACE 3
SAVE equilibrium_phases 3
SAVE surface 3
end

#APW04 (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 3
USE SURFACE 3
SAVE equilibrium_phases 3
SAVE surface 3
end

#APW05S (C - UD) - First Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 4
USE SURFACE 4
SAVE equilibrium_phases 4
SAVE surface 4
end

#APW05S (C - UD) - Second Reaction
USE SOLUTION 5
USE EQUILIBRIUM_PHASES 4
USE SURFACE 4
SAVE equilibrium_phases 4
SAVE surface 4
end
```

Database

```
#$Id: minteq.v4.dat 12387 2017-02-09 16:41:47Z dlpark $
SOLUTION_MASTER_SPECIES
Alkalinity CO3-2 2.0 HCO3 61.0173
E e- 0 0 0
O H2O 0 O 16.00
O(-2) H2O 0 O
O(0) O2 0 O
Ag Ag+ 0.0 Ag 107.868
Al Al+3 0.0 Al 26.9815
As H3AsO4 -1.0 As 74.9216
As(3) H3AsO3 0.0 As
As(5) H3AsO4 -1.0 As
B H3BO3 0.0 B 10.81
Ba Ba+2 0.0 Ba 137.33
Be Be+2 0.0 Be 9.0122
Br Br- 0.0 Br 79.904
C CO3-2 2.0 CO3 12.0111
C(4) CO3-2 2.0 CO3 12.0111
Cyanide Cyanide- 1.0 Cyanide 26.0177
Dom_a Dom_a 0.0 C 12.0111
Dom_b Dom_b 0.0 C 12.0111
Dom_c Dom_c 0.0 C 12.0111
Ca Ca+2 0.0 Ca 40.078
Cd Cd+2 0.0 Cd 112.41
Cl Cl- 0.0 Cl 35.453
Co Co+3 -1.0 Co 58.9332
Co(2) Co+2 0.0 Co
Co(3) Co+3 -1.0 Co
Cr CrO4-2 1.0 Cr 51.996
Cr(2) Cr+2 0.0 Cr
Cr(3) Cr(OH)2+ 0.0 Cr
Cr(6) CrO4-2 1.0 Cr
Cu Cu+2 0.0 Cu 63.546
Cu(1) Cu+ 0.0 Cu
Cu(2) Cu+2 0.0 Cu
F F- 0.0 F 18.9984
Fe Fe+3 -2.0 Fe 55.847
Fe(2) Fe+2 0.0 Fe
Fe(3) Fe+3 -2.0 Fe
H H+ -1.0 H 1.0079
H(0) H2 0 H
H(1) H+ -1.0 H
Hg Hg(OH)2 0.0 Hg 200.59
Hg(0) Hg 0.0 Hg
Hg(1) Hg2+2 0.0 Hg
Hg(2) Hg(OH)2 0.0 Hg
I I- 0.0 I 126.904
K K+ 0.0 K 39.0983
Li Li+ 0.0 Li 6.941
Mg Mg+2 0.0 Mg 24.305
Mn Mn+3 0.0 Mn 54.938
```

Mn(2) Mn+2 0.0 Mn
Mn(3) Mn+3 0.0 Mn
Mn(6) MnO4-2 0.0 Mn
Mn(7) MnO4- 0.0 Mn
Mo MoO4-2 0.0 Mo 95.94
N NO3- 0.0 N 14.0067
N(-3) NH4+ 0.0 N
N(3) NO2- 0.0 N
N(5) NO3- 0.0 N
Na Na+ 0.0 Na 22.9898
Ni Ni+2 0.0 Ni 58.69
P PO4-3 2.0 P 30.9738
Pb Pb+2 0.0 Pb 207.2
S SO4-2 0.0 SO4 32.066
S(-2) HS- 1.0 S
#S(0) S 0.0 S
S(6) SO4-2 0.0 SO4
Sb Sb(OH)6- 0.0 Sb 121.75
Sb(3) Sb(OH)3 0.0 Sb
Sb(5) Sb(OH)6- 0.0 Sb
Se SeO4-2 0.0 Se 78.96
Se(-2) HSe- 0.0 Se
Se(4) HSeO3- 0.0 Se
Se(6) SeO4-2 0.0 Se
Si H4SiO4 0.0 SiO2 28.0843
Sn Sn(OH)6-2 0.0 Sn 118.71
Sn(2) Sn(OH)2 0.0 Sn
Sn(4) Sn(OH)6-2 0.0 Sn
Sr Sr+2 0.0 Sr 87.62
Tl Tl(OH)3 0.0 Tl 204.383
Tl(1) Tl+ 0.0 Tl
Tl(3) Tl(OH)3 0.0 Tl
U UO2+2 0.0 U 238.029
U(3) U+3 0.0 U
U(4) U+4 -4.0 U
U(5) UO2+ 0.0 U
U(6) UO2+2 0.0 U
V VO2+ -2.0 V 50.94
V(2) V+2 0.0 V
V(3) V+3 -3.0 V
V(4) VO+2 0.0 V
V(5) VO2+ -2.0 V
Zn Zn+2 0.0 Zn 65.39
Benzoate Benzoate- 0.0 121.116 121.116
Phenylacetate Phenylacetate- 0.0 135.142 135.142
Isophthalate Isophthalate-2 0.0 164.117 164.117
Diethylamine Diethylamine 1.0 73.138 73.138
Butylamine Butylamine 1.0 73.138 73.138
Methylamine Methylamine 1.0 31.057 31.057
Dimethylamine Dimethylamine 1.0 45.084 45.084
Hexylamine Hexylamine 1.0 101.192 101.192
Ethylenediamine Ethylenediamine 2.0 60.099 60.099
Propylamine Propylamine 1.0 59.111 59.111
Isopropylamine Isopropylamine 1.0 59.111 59.111

Trimethylamine Trimethylamine 1.0 59.111 59.111
Citrate Citrate-3 2.0 189.102 189.102
Nta Nta-3 1.0 188.117 188.117
Edta Edta-4 2.0 288.214 288.214
Propionate Propionate- 1.0 73.072 73.072
Butyrate Butyrate- 1.0 87.098 87.098
Isobutyrate Isobutyrate- 1.0 87.098 87.098
Two_picoline Two_picoline 1.0 93.128 93.128
Three_picoline Three_picoline 1.0 93.128 93.128
Four_picoline Four_picoline 1.0 93.128 93.128
Formate Formate- 0.0 45.018 45.018
Isovalerate Isovalerate- 1.0 101.125 101.125
Valerate Valerate- 1.0 101.125 101.125
Acetate Acetate- 1.0 59.045 59.045
Tartarate Tartarate-2 0.0 148.072 148.072
Glycine Glycine- 1.0 74.059 74.059
Salicylate Salicylate-2 1.0 136.107 136.107
Glutamate Glutamate-2 1.0 145.115 145.115
Phthalate Phthalate-2 1.0 164.117 164.117
SOLUTION_SPECIES
e- = e-
log_k 0
H2O = H2O
log_k 0
Ag+ = Ag+
log_k 0
Al+3 = Al+3
log_k 0
H3AsO4 = H3AsO4
log_k 0
H3BO3 = H3BO3
log_k 0
Ba+2 = Ba+2
log_k 0
Be+2 = Be+2
log_k 0
Br- = Br-
log_k 0
CO3-2 = CO3-2
log_k 0
Cyanide- = Cyanide-
log_k 0
Dom_a = Dom_a
log_k 0
Dom_b = Dom_b
log_k 0
Dom_c = Dom_c
log_k 0
Ca+2 = Ca+2
log_k 0
Cd+2 = Cd+2
log_k 0
Cl- = Cl-
log_k 0

Co+3 = Co+3
log_k 0
CrO4-2 = CrO4-2
log_k 0
Cu+2 = Cu+2
log_k 0
F- = F-
log_k 0
Fe+3 = Fe+3
log_k 0
H+ = H+
log_k 0
Hg(OH)2 = Hg(OH)2
log_k 0
I- = I-
log_k 0
K+ = K+
log_k 0
Li+ = Li+
log_k 0
Mg+2 = Mg+2
log_k 0
Mn+3 = Mn+3
log_k 0
MoO4-2 = MoO4-2
log_k 0
NO3- = NO3-
log_k 0
Na+ = Na+
log_k 0
Ni+2 = Ni+2
log_k 0
PO4-3 = PO4-3
log_k 0
Pb+2 = Pb+2
log_k 0
SO4-2 = SO4-2
log_k 0
Sb(OH)6- = Sb(OH)6-
log_k 0
SeO4-2 = SeO4-2
log_k 0
H4SiO4 = H4SiO4
log_k 0
Sn(OH)6-2 = Sn(OH)6-2
log_k 0
Sr+2 = Sr+2
log_k 0
Tl(OH)3 = Tl(OH)3
log_k 0
UO2+2 = UO2+2
log_k 0
VO2+ = VO2+
log_k 0

Benzoate- = Benzoate-
log_k 0
Phenylacetate- = Phenylacetate-
log_k 0
Isophthalate-2 = Isophthalate-2
log_k 0
Zn+2 = Zn+2
log_k 0
Diethylamine = Diethylamine
log_k 0
Butylamine = Butylamine
log_k 0
Methylamine = Methylamine
log_k 0
Dimethylamine = Dimethylamine
log_k 0
Hexylamine = Hexylamine
log_k 0
Ethylenediamine = Ethylenediamine
log_k 0
Propylamine = Propylamine
log_k 0
Isopropylamine = Isopropylamine
log_k 0
Trimethylamine = Trimethylamine
log_k 0
Citrate-3 = Citrate-3
log_k 0
Nta-3 = Nta-3
log_k 0
Edta-4 = Edta-4
log_k 0
Propionate- = Propionate-
log_k 0
Butyrate- = Butyrate-
log_k 0
Isobutyrate- = Isobutyrate-
log_k 0
Two_picoline = Two_picoline
log_k 0
Three_picoline = Three_picoline
log_k 0
Four_picoline = Four_picoline
log_k 0
Formate- = Formate-
log_k 0
Isovalerate- = Isovalerate-
log_k 0
Valerate- = Valerate-
log_k 0
Acetate- = Acetate-
log_k 0
Tartarate-2 = Tartarate-2
log_k 0

Glycine- = Glycine-
log_k 0
Salicylate-2 = Salicylate-2
log_k 0
Glutamate-2 = Glutamate-2
log_k 0
Phthalate-2 = Phthalate-2
log_k 0
SOLUTION_SPECIES
Fe+3 + e- = Fe+2
log_k 13.032
delta_h -42.7 kJ
-gamma 0 0
Id: 2802810
log K source: Bard85
Delta H source: Bard85
#T and ionic strength:
H3AsO4 + 2e- + 2H+ = H3AsO3 + H2O
log_k 18.898
delta_h -125.6 kJ
-gamma 0 0
Id: 600610
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
Sb(OH)6- + 2e- + 3H+ = Sb(OH)3 + 3H2O
log_k 24.31
delta_h 0 kJ
-gamma 0 0
Id: 7407410
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
UO2+2 + 3e- + 4H+ = U+3 + 2H2O
log_k 0.42
delta_h -42 kJ
-gamma 0 0
Id: 8908930
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
UO2+2 + 2e- + 4H+ = U+4 + 2H2O
log_k 9.216
delta_h -144.1 kJ
-gamma 0 0
Id: 8918930
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
UO2+2 + e- = UO2+
log_k 2.785
delta_h -13.8 kJ
-gamma 0 0
Id: 8928930

log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
e- + Mn+3 = Mn+2
log_k 25.35
delta_h -107.8 kJ
-gamma 0 0
Id: 4704710
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
Co+3 + e- = Co+2
log_k 32.4
delta_h 0 kJ
-gamma 0 0
Id: 2002010
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
Cu+2 + e- = Cu+
log_k 2.69
delta_h 6.9 kJ
-gamma 0 0
Id: 2302310
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
V+3 + e- = V+2
log_k -4.31
delta_h 0 kJ
-gamma 0 0
Id: 9009010
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
VO+2 + e- + 2H+ = V+3 + H2O
log_k 5.696
delta_h 0 kJ
-gamma 0 0
Id: 9019020
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
VO2+ + e- + 2H+ = VO+2 + H2O
log_k 16.903
delta_h -122.7 kJ
-gamma 0 0
Id: 9029030
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
SO4-2 + 9H+ + 8e- = HS- + 4H2O
log_k 33.66
delta_h -60.14 kJ

-gamma 0 0
Id: 7307320
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Sn(OH)6-2 + 2e- + 4H+ = Sn(OH)2 + 4H2O
log_k 19.2
delta_h 0 kJ
-gamma 0 0
Id: 7907910
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
Tl(OH)3 + 2e- + 3H+ = Tl+ + 3H2O
log_k 45.55
delta_h 0 kJ
-gamma 0 0
Id: 8708710
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
HSeO3- + 6e- + 6H+ = HSe- + 3H2O
log_k 44.86
delta_h 0 kJ
-gamma 0 0
Id: 7607610
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
SeO4-2 + 2e- + 3H+ = HSeO3- + H2O
log_k 36.308
delta_h -201.2 kJ
-gamma 0 0
Id: 7617620
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
0.5Hg2+2 + e- = Hg
log_k 6.5667
delta_h -45.735 kJ
-gamma 0 0
Id: 3600000
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:

2Hg(OH)2 + 4H+ + 2e- = Hg2+2 + 4H2O
log_k 43.185
delta_h -63.59 kJ
-gamma 0 0
Id: 3603610
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:

Cr(OH)2+ + 2H+ + e- = Cr+2 + 2H2O
log_k 2.947
delta_h 6.36 kJ
-gamma 0 0
Id: 2102110
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
CrO4-2 + 6H+ + 3e- = Cr(OH)2+ + 2H2O
log_k 67.376
delta_h -103 kJ
-gamma 0 0
Id: 2112120
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:

2H2O = O2 + 4H+ + 4e-
# Adjusted for equation to aqueous species
log_k -85.9951
-analytic 38.0229 7.99407E-03 -2.7655e+004 -1.4506e+001 199838.45

2 H+ + 2 e- = H2
log_k -3.15
delta_h -1.759 kcal

NO3- + 2 H+ + 2 e- = NO2- + H2O
log_k 28.570
delta_h -43.760 kcal
-gamma 3.0000 0.0000

NO3- + 10 H+ + 8 e- = NH4+ + 3 H2O
log_k 119.077
delta_h -187.055 kcal
-gamma 2.5000 0.0000

Mn+2 + 4H2O = MnO4- + 8H+ + 5e-
log_k -127.794
delta_h 822.67 kJ
-gamma 3 0
Id: 4700020
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
Mn+2 + 4H2O = MnO4-2 + 8H+ + 4e-
log_k -118.422
delta_h 711.07 kJ
-gamma 5 0
Id: 4700021
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
HS- = S-2 + H+
log_k -17.3
delta_h 49.4 kJ
-gamma 5 0
Id: 3307301

log K source: LMa1987
Delta H source: NIST2.1.1
#T and ionic strength: 0.00 25.0
HSe- = Se-2 + H+
log_k -15
delta_h 48.116 kJ
-gamma 0 0
Id: 3307601
log K source: SCD3.02 (1968 DKa)
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Tl(OH)3 + 3H+ = Tl+3 + 3H2O
log_k 3.291
delta_h 0 kJ
-gamma 0 0
Id: 8713300
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
0.5Hg2+2 + e- = Hg
log_k 6.5667
delta_h -45.735 kJ
-gamma 0 0
Id: 3600000
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
Hg(OH)2 + 2H+ = Hg+2 + 2H2O
log_k 6.194
delta_h -39.72 kJ
-gamma 0 0
Id: 3613300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cr(OH)2+ + 2H+ = Cr+3 + 2H2O
log_k 9.5688
delta_h -129.62 kJ
-gamma 0 0
Id: 2113300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.10 20.0
H2O = OH- + H+
log_k -13.997
delta_h 55.81 kJ
-gamma 3.5 0
Id: 3300020
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Sn(OH)2 + 2H+ = Sn+2 + 2H2O
log_k 7.094
delta_h 0 kJ

-gamma 0 0
Id: 7903301
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Sn(OH)2 + H+ = SnOH+ + H2O
log_k 3.697
delta_h 0 kJ
-gamma 0 0
Id: 7903302
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Sn(OH)2 + H2O = Sn(OH)3- + H+
log_k -9.497
delta_h 0 kJ
-gamma 0 0
Id: 7903303
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
2Sn(OH)2 + 2H+ = Sn2(OH)2+2 + 2H2O
log_k 9.394
delta_h 0 kJ
-gamma 0 0
Id: 7903304
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
3Sn(OH)2 + 2H+ = Sn3(OH)4+2 + 2H2O
log_k 14.394
delta_h 0 kJ
-gamma 0 0
Id: 7903305
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Sn(OH)2 = HSnO2- + H+
log_k -8.9347
delta_h 0 kJ
-gamma 0 0
Id: 7903306
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
Sn(OH)6-2 + 6H+ = Sn+4 + 6H2O
log_k 21.2194
delta_h 0 kJ
-gamma 0 0
Id: 7913301
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
Sn(OH)6-2 = SnO3-2 + 3H2O

log_k -2.2099
delta_h 0 kJ
-gamma 0 0
Id: 7913302
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
Pb+2 + H2O = PbOH+ + H+
log_k -7.597
delta_h 0 kJ
-gamma 0 0
Id: 6003300
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Pb+2 + 2H2O = Pb(OH)2 + 2H+
log_k -17.094
delta_h 0 kJ
-gamma 0 0
Id: 6003301
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Pb+2 + 3H2O = Pb(OH)3- + 3H+
log_k -28.091
delta_h 0 kJ
-gamma 0 0
Id: 6003302
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
2Pb+2 + H2O = Pb2OH+3 + H+
log_k -6.397
delta_h 0 kJ
-gamma 0 0
Id: 6003303
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
3Pb+2 + 4H2O = Pb3(OH)4+2 + 4H+
log_k -23.888
delta_h 115.24 kJ
-gamma 0 0
Id: 6003304
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Pb+2 + 4H2O = Pb(OH)4-2 + 4H+
log_k -39.699
delta_h 0 kJ
-gamma 0 0
Id: 6003305
log K source: MTQ3.11
Delta H source: MTQ3.11

#T and ionic strength:
4Pb+2 + 4H2O = Pb4(OH)4+4 + 4H+
log_k -19.988
delta_h 88.24 kJ
-gamma 0 0
Id: 6003306
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
H3BO3 + F- = BF(OH)3-
log_k -0.399
delta_h 7.7404 kJ
-gamma 2.5 0
Id: 902700
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
H3BO3 + 2F- + H+ = BF2(OH)2- + H2O
log_k 7.63
delta_h 6.8408 kJ
-gamma 2.5 0
Id: 902701
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
H3BO3 + 3F- + 2H+ = BF3OH- + 2H2O
log_k 13.22
delta_h -20.4897 kJ
-gamma 2.5 0
Id: 902702
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
Al+3 + H2O = AlOH+2 + H+
log_k -4.997
delta_h 47.81 kJ
-gamma 5.4 0
Id: 303300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Al+3 + 2H2O = Al(OH)2+ + 2H+
log_k -10.094
delta_h 0 kJ
-gamma 5.4 0
Id: 303301
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Al+3 + 3H2O = Al(OH)3 + 3H+
log_k -16.791
delta_h 0 kJ
-gamma 0 0
Id: 303303

log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Al+3 + 4H2O = Al(OH)4- + 4H+
log_k -22.688
delta_h 173.24 kJ
-gamma 4.5 0
Id: 303302
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Tl+ + H2O = TlOH + H+
log_k -13.207
delta_h 56.81 kJ
-gamma 0 0
Id: 8703300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Tl(OH)3 + 2H+ = TlOH+2 + 2H2O
log_k 2.694
delta_h 0 kJ
-gamma 0 0
Id: 8713301
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Tl(OH)3 + H+ = Tl(OH)2+ + H2O
log_k 1.897
delta_h 0 kJ
-gamma 0 0
Id: 8713302
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Tl(OH)3 + H2O = Tl(OH)4- + H+
log_k -11.697
delta_h 0 kJ
-gamma 0 0
Id: 8713303
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Zn+2 + H2O = ZnOH+ + H+
log_k -8.997
delta_h 55.81 kJ
-gamma 0 0
Id: 9503300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Zn+2 + 2H2O = Zn(OH)2 + 2H+
log_k -17.794
delta_h 0 kJ

-gamma 0 0
Id: 9503301
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Zn+2 + 3H2O = Zn(OH)3- + 3H+
log_k -28.091
delta_h 0 kJ
-gamma 0 0
Id: 9503302
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Zn+2 + 4H2O = Zn(OH)4-2 + 4H+
log_k -40.488
delta_h 0 kJ
-gamma 0 0
Id: 9503303
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Cd+2 + H2O = CdOH+ + H+
log_k -10.097
delta_h 54.81 kJ
-gamma 0 0
Id: 1603300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cd+2 + 2H2O = Cd(OH)2 + 2H+
log_k -20.294
delta_h 0 kJ
-gamma 0 0
Id: 1603301
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Cd+2 + 3H2O = Cd(OH)3- + 3H+
log_k -32.505
delta_h 0 kJ
-gamma 0 0
Id: 1603302
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 3.00 25.0
Cd+2 + 4H2O = Cd(OH)4-2 + 4H+
log_k -47.288
delta_h 0 kJ
-gamma 0 0
Id: 1603303
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
2Cd+2 + H2O = Cd2OH+3 + H+

log_k -9.397
delta_h 45.81 kJ
-gamma 0 0
Id: 1603304
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Hg(OH)2 + H+ = HgOH+ + H2O
log_k 2.797
delta_h -18.91 kJ
-gamma 0 0
Id: 3613302
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Hg(OH)2 + H2O = Hg(OH)3- + H+
log_k -14.897
delta_h 0 kJ
-gamma 0 0
Id: 3613303
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Cu+2 + H2O = CuOH+ + H+
log_k -7.497
delta_h 35.81 kJ
-gamma 4 0
Id: 2313300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cu+2 + 2H2O = Cu(OH)2 + 2H+
log_k -16.194
delta_h 0 kJ
-gamma 0 0
Id: 2313301
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Cu+2 + 3H2O = Cu(OH)3- + 3H+
log_k -26.879
delta_h 0 kJ
-gamma 0 0
Id: 2313302
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Cu+2 + 4H2O = Cu(OH)4-2 + 4H+
log_k -39.98
delta_h 0 kJ
-gamma 0 0
Id: 2313303
log K source: NIST46.3
Delta H source: MTQ3.11

#T and ionic strength: 1.00 25.0
2Cu+2 + 2H2O = Cu2(OH)2+2 + 2H+
log_k -10.594
delta_h 76.62 kJ
-gamma 0 0
Id: 2313304
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ag+ + H2O = AgOH + H+
log_k -11.997
delta_h 0 kJ
-gamma 0 0
Id: 203300
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Ag+ + 2H2O = Ag(OH)2- + 2H+
log_k -24.004
delta_h 0 kJ
-gamma 0 0
Id: 203301
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Ni+2 + H2O = NiOH+ + H+
log_k -9.897
delta_h 51.81 kJ
-gamma 0 0
Id: 5403300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ni+2 + 2H2O = Ni(OH)2 + 2H+
log_k -18.994
delta_h 0 kJ
-gamma 0 0
Id: 5403301
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Ni+2 + 3H2O = Ni(OH)3- + 3H+
log_k -29.991
delta_h 0 kJ
-gamma 0 0
Id: 5403302
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Co+2 + H2O = CoOH+ + H+
log_k -9.697
delta_h 0 kJ
-gamma 0 0
Id: 2003300

log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Co+2 + 2H2O = Co(OH)2 + 2H+
log_k -18.794
delta_h 0 kJ
-gamma 0 0
Id: 2003301
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Co+2 + 3H2O = Co(OH)3- + 3H+
log_k -31.491
delta_h 0 kJ
-gamma 0 0
Id: 2003302
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Co+2 + 4H2O = Co(OH)4-2 + 4H+
log_k -46.288
delta_h 0 kJ
-gamma 0 0
Id: 2003303
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
2Co+2 + H2O = Co2OH+3 + H+
log_k -10.997
delta_h 0 kJ
-gamma 0 0
Id: 2003304
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
4Co+2 + 4H2O = Co4(OH)4+4 + 4H+
log_k -30.488
delta_h 0 kJ
-gamma 0 0
Id: 2003306
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Co+2 + 2H2O = CoOOH- + 3H+
log_k -32.0915
delta_h 260.454 kJ
-gamma 0 0
Id: 2003305
log K source: NIST2.1.1
Delta H source: MTQ3.11
#T and ionic strength:
Co+3 + H2O = CoOH+2 + H+
log_k -1.291
delta_h 0 kJ

-gamma 0 0
Id: 2013300
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 3.00 25.0
Fe+2 + H2O = FeOH+ + H+
log_k -9.397
delta_h 55.81 kJ
-gamma 5 0
Id: 2803300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Fe+2 + 2H2O = Fe(OH)2 + 2H+
log_k -20.494
delta_h 119.62 kJ
-gamma 0 0
Id: 2803302
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Fe+2 + 3H2O = Fe(OH)3- + 3H+
log_k -28.991
delta_h 126.43 kJ
-gamma 5 0
Id: 2803301
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Fe+3 + H2O = FeOH+2 + H+
log_k -2.187
delta_h 41.81 kJ
-gamma 5 0
Id: 2813300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Fe+3 + 2H2O = Fe(OH)2+ + 2H+
log_k -4.594
delta_h 0 kJ
-gamma 5.4 0
Id: 2813301
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Fe+3 + 3H2O = Fe(OH)3 + 3H+
log_k -12.56
delta_h 103.8 kJ
-gamma 0 0
Id: 2813302
log K source: Nord90
Delta H source: Nord90
#T and ionic strength: 0.00 25.0
Fe+3 + 4H2O = Fe(OH)4- + 4H+

log_k -21.588
delta_h 0 kJ
-gamma 5.4 0
Id: 2813303
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
2Fe+3 + 2H2O = Fe2(OH)2+4 + 2H+
log_k -2.854
delta_h 57.62 kJ
-gamma 0 0
Id: 2813304
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
3Fe+3 + 4H2O = Fe3(OH)4+5 + 4H+
log_k -6.288
delta_h 65.24 kJ
-gamma 0 0
Id: 2813305
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Mn+2 + H2O = MnOH+ + H+
log_k -10.597
delta_h 55.81 kJ
-gamma 5 0
Id: 4703300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Mn+2 + 3H2O = Mn(OH)3- + 3H+
log_k -34.8
delta_h 0 kJ
-gamma 5 0
Id: 4703301
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Mn+2 + 4H2O = Mn(OH)4-2 + 4H+
log_k -48.288
delta_h 0 kJ
-gamma 5 0
Id: 4703302
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Mn+2 + 4H2O = MnO4- + 8H+ + 5e-
log_k -127.794
delta_h 822.67 kJ
-gamma 3 0
Id: 4700020
log K source: NIST2.1.1
Delta H source: NIST2.1.1

#T and ionic strength:
Mn+2 + 4H2O = MnO4-2 + 8H+ + 4e-
log_k -118.422
delta_h 711.07 kJ
-gamma 5 0
Id: 4700021
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
Cr(OH)2+ + H+ = Cr(OH)+2 + H2O
log_k 5.9118
delta_h -77.91 kJ
-gamma 0 0
Id: 2113301
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cr(OH)2+ + H2O = Cr(OH)3 + H+
log_k -8.4222
delta_h 0 kJ
-gamma 0 0
Id: 2113302
log K source: SCD3.02 (1983 RCa)
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Cr(OH)2+ + 2H2O = Cr(OH)4- + 2H+
log_k -17.8192
delta_h 0 kJ
-gamma 0 0
Id: 2113303
log K source: SCD3.02 (1983 RCa)
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Cr(OH)2+ = CrO2- + 2H+
log_k -17.7456
delta_h 0 kJ
-gamma 0 0
Id: 2113304
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
V+2 + H2O = VOH+ + H+
log_k -6.487
delta_h 59.81 kJ
-gamma 0 0
Id: 9003300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
V+3 + H2O = VOH+2 + H+
log_k -2.297
delta_h 43.81 kJ
-gamma 0 0
Id: 9013300

log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
V+3 + 2H2O = V(OH)2+ + 2H+
log_k -6.274
delta_h 0 kJ
-gamma 0 0
Id: 9013301
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 20.0
V+3 + 3H2O = V(OH)3 + 3H+
log_k -3.0843
delta_h 0 kJ
-gamma 0 0
Id: 9013302
log K source: SCD3.02 (1978 TKa)
Delta H source: MTQ3.11
#T and ionic strength: 0.10 20.0
2V+3 + 2H2O = V2(OH)2+4 + 2H+
log_k -3.794
delta_h 0 kJ
-gamma 0 0
Id: 9013304
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
2V+3 + 3H2O = V2(OH)3+3 + 3H+
log_k -10.1191
delta_h 0 kJ
-gamma 0 0
Id: 9013303
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 3.00 25.0
VO+2 + 2H2O = V(OH)3+ + H+
log_k -5.697
delta_h 0 kJ
-gamma 0 0
Id: 9023300
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
2VO+2 + 2H2O = H2V2O4+2 + 2H+
log_k -6.694
delta_h 53.62 kJ
-gamma 0 0
Id: 9023301
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
U+4 + H2O = UOH+3 + H+
log_k -0.597
delta_h 47.81 kJ

-gamma 0 0
Id: 8913300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
U+4 + 2H2O = U(OH)2+2 + 2H+
log_k -2.27
delta_h 74.1823 kJ
-gamma 0 0
Id: 8913301
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
U+4 + 3H2O = U(OH)3+ + 3H+
log_k -4.935
delta_h 94.7467 kJ
-gamma 0 0
Id: 8913302
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
U+4 + 4H2O = U(OH)4 + 4H+
log_k -8.498
delta_h 103.596 kJ
-gamma 0 0
Id: 8913303
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
U+4 + 5H2O = U(OH)5- + 5H+
log_k -13.12
delta_h 115.374 kJ
-gamma 0 0
Id: 8913304
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
6U+4 + 15H2O = U6(OH)15+9 + 15H+
log_k -17.155
delta_h 0 kJ
-gamma 0 0
Id: 8913305
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
UO2+2 + H2O = UO2OH+ + H+
log_k -5.897
delta_h 47.81 kJ
-gamma 0 0
Id: 8933300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
2UO2+2 + 2H2O = (UO2)2(OH)2+2 + 2H+

log_k -5.574
delta_h 41.82 kJ
-gamma 0 0
Id: 8933301
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
3UO2+2 + 5H2O = (UO2)3(OH)5+ + 5H+
log_k -15.585
delta_h 108.05 kJ
-gamma 0 0
Id: 8933302
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Be+2 + H2O = BeOH+ + H+
log_k -5.397
delta_h 0 kJ
-gamma 6.5 0
Id: 1103301
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Be+2 + 2H2O = Be(OH)2 + 2H+
log_k -13.594
delta_h 0 kJ
-gamma 6.5 0
Id: 1103302
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Be+2 + 3H2O = Be(OH)3- + 3H+
log_k -23.191
delta_h 0 kJ
-gamma 6.5 0
Id: 1103303
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Be+2 + 4H2O = Be(OH)4-2 + 4H+
log_k -37.388
delta_h 0 kJ
-gamma 6.5 0
Id: 1103304
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
2Be+2 + H2O = Be2OH+3 + H+
log_k -3.177
delta_h 0 kJ
-gamma 6.5 0
Id: 1103305
log K source: NIST46.4
Delta H source: MTQ3.11

#T and ionic strength: 0.10 25.0
3Be+2 + 3H2O = Be3(OH)3+3 + 3H+
log_k -8.8076
delta_h 0 kJ
-gamma 6.5 0
Id: 1103306
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.10 25.0
Mg+2 + H2O = MgOH+ + H+
log_k -11.397
delta_h 67.81 kJ
-gamma 6.5 0
Id: 4603300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ca+2 + H2O = CaOH+ + H+
log_k -12.697
delta_h 64.11 kJ
-gamma 6 0
Id: 1503300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Sr+2 + H2O = SrOH+ + H+
log_k -13.177
delta_h 60.81 kJ
-gamma 5 0
Id: 8003300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ba+2 + H2O = BaOH+ + H+
log_k -13.357
delta_h 60.81 kJ
-gamma 5 0
Id: 1003300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
H+ + F- = HF
log_k 3.17
delta_h 13.3 kJ
-gamma 0 0
Id: 3302700
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
H+ + 2F- = HF2-
log_k 3.75
delta_h 17.4 kJ
-gamma 3.5 0
Id: 3302701

log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
2F- + 2H+ = H2F2
log_k 6.768
delta_h 0 kJ
-gamma 0 0
Id: 3302702
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Sb(OH)3 + F- + H+ = SbOF + 2H2O
log_k 6.1864
delta_h 0 kJ
-gamma 0 0
Id: 7402700
log K source: PNL89
Delta H source: PNL89
#T and ionic strength:
Sb(OH)3 + F- + H+ = Sb(OH)2F + H2O
log_k 6.1937
delta_h 0 kJ
-gamma 0 0
Id: 7402702
log K source: PNL89
Delta H source: PNL89
#T and ionic strength:
H4SiO4 + 4H+ + 6F- = SiF6-2 + 4H2O
log_k 30.18
delta_h -68 kJ
-gamma 5 0
Id: 7702700
log K source: Nord90
Delta H source: Nord90
#T and ionic strength: 0.00 25.0
Sn(OH)2 + 2H+ + F- = SnF+ + 2H2O
log_k 11.582
delta_h 0 kJ
-gamma 0 0
Id: 7902701
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Sn(OH)2 + 2H+ + 2F- = SnF2 + 2H2O
log_k 14.386
delta_h 0 kJ
-gamma 0 0
Id: 7902702
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Sn(OH)2 + 2H+ + 3F- = SnF3- + 2H2O
log_k 17.206
delta_h 0 kJ

-gamma 0 0
Id: 7902703
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Sn(OH)6-2 + 6H+ + 6F- = SnF6-2 + 6H2O
log_k 33.5844
delta_h 0 kJ
-gamma 0 0
Id: 7912701
log K source: Bard85
Delta H source: MTQ3.11
#T and ionic strength:
Pb+2 + F- = PbF+
log_k 1.848
delta_h 0 kJ
-gamma 0 0
Id: 6002700
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Pb+2 + 2F- = PbF2
log_k 3.142
delta_h 0 kJ
-gamma 0 0
Id: 6002701
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Pb+2 + 3F- = PbF3-
log_k 3.42
delta_h 0 kJ
-gamma 0 0
Id: 6002702
log K source: SCD3.02 (1956 TKa)
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Pb+2 + 4F- = PbF4-2
log_k 3.1
delta_h 0 kJ
-gamma 0 0
Id: 6002703
log K source: SCD3.02 (1956 TKa)
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
H3BO3 + 3H+ + 4F- = BF4- + 3H2O
log_k 19.912
delta_h -18.67 kJ
-gamma 2.5 0
Id: 902703
log K source: NIST46.3
Delta H source: NIST2.1.1
#T and ionic strength: 1.00 25.0
Al+3 + F- = AlF+2

log_k 7
delta_h 4.6 kJ
-gamma 5.4 0
Id: 302700
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Al+3 + 2F- = AlF2+
log_k 12.6
delta_h 8.3 kJ
-gamma 5.4 0
Id: 302701
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Al+3 + 3F- = AlF3
log_k 16.7
delta_h 8.7 kJ
-gamma 0 0
Id: 302702
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Al+3 + 4F- = AlF4-
log_k 19.4
delta_h 8.7 kJ
-gamma 4.5 0
Id: 302703
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Tl+ + F- = TlF
log_k 0.1
delta_h 0 kJ
-gamma 0 0
Id: 8702700
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Zn+2 + F- = ZnF+
log_k 1.3
delta_h 11 kJ
-gamma 0 0
Id: 9502700
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cd+2 + F- = CdF+
log_k 1.2
delta_h 5 kJ
-gamma 0 0
Id: 1602700
log K source: NIST46.3
Delta H source: NIST46.3

#T and ionic strength: 0.00 25.0
Cd+2 + 2F- = CdF2
log_k 1.5
delta_h 0 kJ
-gamma 0 0
Id: 1602701
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Hg(OH)2 + 2H+ + F- = HgF+ + 2H2O
log_k 7.763
delta_h -35.72 kJ
-gamma 0 0
Id: 3612701
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.50 25.0
Cu+2 + F- = CuF+
log_k 1.8
delta_h 13 kJ
-gamma 0 0
Id: 2312700
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ag+ + F- = AgF
log_k 0.4
delta_h 12 kJ
-gamma 0 0
Id: 202700
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ni+2 + F- = NiF+
log_k 1.4
delta_h 7.1 kJ
-gamma 0 0
Id: 5402700
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Co+2 + F- = CoF+
log_k 1.5
delta_h 9.2 kJ
-gamma 0 0
Id: 2002700
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Fe+3 + F- = FeF+2
log_k 6.04
delta_h 10 kJ
-gamma 5 0
Id: 2812700

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# log K source: NIST46.3
# Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Fe+3 + 2F- = FeF2+
log_k 10.4675
delta_h 17 kJ
-gamma 5 0
# Id: 2812701
# log K source: NIST46.3
# Delta H source: NIST46.3
#T and ionic strength: 0.50 25.0
Fe+3 + 3F- = FeF3
log_k 13.617
delta_h 29 kJ
-gamma 0 0
# Id: 2812702
# log K source: NIST46.3
# Delta H source: NIST46.3
#T and ionic strength: 0.50 25.0
Mn+2 + F- = MnF+
log_k 1.6
delta_h 11 kJ
-gamma 5 0
# Id: 4702700
# log K source: NIST46.3
# Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cr(OH)2+ + 2H+ + F- = CrF+2 + 2H2O
log_k 14.7688
delta_h -70.2452 kJ
-gamma 0 0
# Id: 2112700
# log K source: NIST46.3
# Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
VO+2 + F- = VOF+
log_k 3.778
delta_h 7.9 kJ
-gamma 0 0
# Id: 9022700
# log K source: NIST46.3
# Delta H source: NIST46.3
#T and ionic strength: 1.00 25.0
VO+2 + 2F- = VOF2
log_k 6.352
delta_h 14 kJ
-gamma 0 0
# Id: 9022701
# log K source: NIST46.3
# Delta H source: NIST46.3
#T and ionic strength: 1.00 25.0
VO+2 + 3F- = VOF3-
log_k 7.902
delta_h 20 kJ
```

-gamma 0 0
Id: 9022702
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 1.00 25.0
VO+2 + 4F- = VOF4-2
log_k 8.508
delta_h 26 kJ
-gamma 0 0
Id: 9022703
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 1.00 25.0
VO2+ + F- = VO2F
log_k 3.244
delta_h 0 kJ
-gamma 0 0
Id: 9032700
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
VO2+ + 2F- = VO2F2-
log_k 5.804
delta_h 0 kJ
-gamma 0 0
Id: 9032701
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 20.0
VO2+ + 3F- = VO2F3-2
log_k 6.9
delta_h 0 kJ
-gamma 0 0
Id: 9032702
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 20.0
VO2+ + 4F- = VO2F4-3
log_k 6.592
delta_h 0 kJ
-gamma 0 0
Id: 9032703
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 20.0
U+4 + F- = UF+3
log_k 9.3
delta_h 21.1292 kJ
-gamma 0 0
Id: 8912700
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
U+4 + 2F- = UF2+2

log_k 16.4
delta_h 30.1248 kJ
-gamma 0 0
Id: 8912701
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
U+4 + 3F- = UF3+
log_k 21.6
delta_h 29.9156 kJ
-gamma 0 0
Id: 8912702
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
U+4 + 4F- = UF4
log_k 23.64
delta_h 19.2464 kJ
-gamma 0 0
Id: 8912703
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
U+4 + 5F- = UF5-
log_k 25.238
delta_h 20.2924 kJ
-gamma 0 0
Id: 8912704
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
U+4 + 6F- = UF6-2
log_k 27.718
delta_h 13.8072 kJ
-gamma 0 0
Id: 8912705
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
UO2+2 + F- = UO2F+
log_k 5.14
delta_h 1 kJ
-gamma 0 0
Id: 8932700
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
UO2+2 + 2F- = UO2F2
log_k 8.6
delta_h 2 kJ
-gamma 0 0
Id: 8932701
log K source: NIST46.3
Delta H source: NIST46.3

#T and ionic strength: 0.00 25.0
UO2+2 + 3F- = UO2F3-
log_k 11
delta_h 2 kJ
-gamma 0 0
Id: 8932702
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
UO2+2 + 4F- = UO2F4-2
log_k 11.9
delta_h 0.4 kJ
-gamma 0 0
Id: 8932703
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Be+2 + F- = BeF+
log_k 5.249
delta_h 0 kJ
-gamma 0 0
Id: 1102701
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.50 25.0
Be+2 + 2F- = BeF2
log_k 9.1285
delta_h -4 kJ
-gamma 0 0
Id: 1102702
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.50 25.0
Be+2 + 3F- = BeF3-
log_k 11.9085
delta_h -8 kJ
-gamma 0 0
Id: 1102703
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.50 25.0
Mg+2 + F- = MgF+
log_k 2.05
delta_h 13 kJ
-gamma 4.5 0
Id: 4602700
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ca+2 + F- = CaF+
log_k 1.038
delta_h 14 kJ
-gamma 5 0
Id: 1502700

log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 1.00 25.0
Sr+2 + F- = SrF+
log_k 0.548
delta_h 16 kJ
-gamma 0 0
Id: 8002701
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 1.00 25.0
Na+ + F- = NaF
log_k -0.2
delta_h 12 kJ
-gamma 0 0
Id: 5002700
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Sn(OH)2 + 2H+ + Cl- = SnCl+ + 2H2O
log_k 8.734
delta_h 0 kJ
-gamma 0 0
Id: 7901801
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Sn(OH)2 + 2H+ + 2Cl- = SnCl2 + 2H2O
log_k 9.524
delta_h 0 kJ
-gamma 0 0
Id: 7901802
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Sn(OH)2 + 2H+ + 3Cl- = SnCl3- + 2H2O
log_k 8.3505
delta_h 0 kJ
-gamma 0 0
Id: 7901803
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 2.00 25.0
Pb+2 + Cl- = PbCl+
log_k 1.55
delta_h 8.7 kJ
-gamma 0 0
Id: 6001800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Pb+2 + 2Cl- = PbCl2
log_k 2.2
delta_h 12 kJ

-gamma 0 0
Id: 6001801
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Pb+2 + 3Cl- = PbCl3-
log_k 1.8
delta_h 4 kJ
-gamma 0 0
Id: 6001802
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Pb+2 + 4Cl- = PbCl4-2
log_k 1.46
delta_h 14.7695 kJ
-gamma 0 0
Id: 6001803
log K source: SCD3.02 (1984 SEa)
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Tl+ + Cl- = TlCl
log_k 0.51
delta_h -6.2 kJ
-gamma 0 0
Id: 8701800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Tl+ + 2Cl- = TlCl2-
log_k 0.28
delta_h 0 kJ
-gamma 0 0
Id: 8701801
log K source: SCD3.02 (1992 RAb)
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Tl(OH)3 + 3H+ + Cl- = TlCl+2 + 3H2O
log_k 11.011
delta_h 0 kJ
-gamma 0 0
Id: 8711800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Tl(OH)3 + 3H+ + 2Cl- = TlCl2+ + 3H2O
log_k 16.771
delta_h 0 kJ
-gamma 0 0
Id: 8711801
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Tl(OH)3 + 3H+ + 3Cl- = TlCl3 + 3H2O

log_k 19.791
delta_h 0 kJ
-gamma 0 0
Id: 8711802
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Tl(OH)3 + 3H+ + 4Cl- = TlCl4- + 3H2O
log_k 21.591
delta_h 0 kJ
-gamma 0 0
Id: 8711803
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Tl(OH)3 + Cl- + 2H+ = TlOHCl+ + 2H2O
log_k 10.629
delta_h 0 kJ
-gamma 0 0
Id: 8711804
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Zn+2 + Cl- = ZnCl+
log_k 0.4
delta_h 5.4 kJ
-gamma 4 0
Id: 9501800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Zn+2 + 2Cl- = ZnCl2
log_k 0.6
delta_h 37 kJ
-gamma 0 0
Id: 9501801
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Zn+2 + 3Cl- = ZnCl3-
log_k 0.5
delta_h 39.999 kJ
-gamma 4 0
Id: 9501802
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Zn+2 + 4Cl- = ZnCl4-2
log_k 0.199
delta_h 45.8566 kJ
-gamma 5 0
Id: 9501803
log K source: MTQ3.11
Delta H source: MTQ3.11

#T and ionic strength:
Zn+2 + H2O + Cl- = ZnOHCl + H+
log_k -7.48
delta_h 0 kJ
-gamma 0 0
Id: 9501804
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Cd+2 + Cl- = CdCl+
log_k 1.98
delta_h 1 kJ
-gamma 0 0
Id: 1601800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cd+2 + 2Cl- = CdCl2
log_k 2.6
delta_h 3 kJ
-gamma 0 0
Id: 1601801
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cd+2 + 3Cl- = CdCl3-
log_k 2.4
delta_h 10 kJ
-gamma 0 0
Id: 1601802
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cd+2 + H2O + Cl- = CdOHCl + H+
log_k -7.404
delta_h 18.2213 kJ
-gamma 0 0
Id: 1601803
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Hg(OH)2 + 2H+ + Cl- = HgCl+ + 2H2O
log_k 13.494
delta_h -62.72 kJ
-gamma 0 0
Id: 3611800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Hg(OH)2 + 2H+ + 2Cl- = HgCl2 + 2H2O
log_k 20.194
delta_h -92.42 kJ
-gamma 0 0
Id: 3611801

log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Hg(OH)2 + 2H+ + 3Cl- = HgCl3- + 2H2O
log_k 21.194
delta_h -94.02 kJ
-gamma 0 0
Id: 3611802
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Hg(OH)2 + 2H+ + 4Cl- = HgCl4-2 + 2H2O
log_k 21.794
delta_h -100.72 kJ
-gamma 0 0
Id: 3611803
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Hg(OH)2 + Cl- + I- + 2H+ = HgClI + 2H2O
log_k 25.532
delta_h -135.3 kJ
-gamma 0 0
Id: 3611804
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
Hg(OH)2 + H+ + Cl- = HgClOH + H2O
log_k 10.444
delta_h -42.72 kJ
-gamma 0 0
Id: 3611805
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 1.00 25.0
Cu+2 + Cl- = CuCl+
log_k 0.2
delta_h 8.3 kJ
-gamma 4 0
Id: 2311800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cu+2 + 2Cl- = CuCl2
log_k -0.26
delta_h 44.183 kJ
-gamma 0 0
Id: 2311801
log K source: SCD3.02 (1989 IPa)
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Cu+2 + 3Cl- = CuCl3-
log_k -2.29
delta_h 57.279 kJ

-gamma 4 0
Id: 2311802
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Cu+2 + 4Cl- = CuCl4-2
log_k -4.59
delta_h 32.5515 kJ
-gamma 5 0
Id: 2311803
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Cu+ + 2Cl- = CuCl2-
log_k 5.42
delta_h -1.7573 kJ
-gamma 4 0
Id: 2301800
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Cu+ + 3Cl- = CuCl3-2
log_k 4.75
delta_h 1.0878 kJ
-gamma 5 0
Id: 2301801
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Cu+ + Cl- = CuCl
log_k 3.1
delta_h 0 kJ
-gamma 0 0
Id: 2301802
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Ag+ + Cl- = AgCl
log_k 3.31
delta_h -12 kJ
-gamma 0 0
Id: 201800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ag+ + 2Cl- = AgCl2-
log_k 5.25
delta_h -16 kJ
-gamma 0 0
Id: 201801
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ag+ + 3Cl- = AgCl3-2

log_k 5.2
delta_h 0 kJ
-gamma 0 0
Id: 201802
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Ag+ + 4Cl- = AgCl4-3
log_k 5.51
delta_h 0 kJ
-gamma 0 0
Id: 201803
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Ni+2 + Cl- = NiCl+
log_k 0.408
delta_h 2 kJ
-gamma 0 0
Id: 5401800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 1.00 25.0
Ni+2 + 2Cl- = NiCl2
log_k -1.89
delta_h 0 kJ
-gamma 0 0
Id: 5401801
log K source: SCD3.02 (1989 IPa)
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Co+2 + Cl- = CoCl+
log_k 0.539
delta_h 2 kJ
-gamma 0 0
Id: 2001800
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.50 25.0
Co+3 + Cl- = CoCl+2
log_k 2.3085
delta_h 16 kJ
-gamma 0 0
Id: 2011800
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.50 25.0
Fe+3 + Cl- = FeCl+2
log_k 1.48
delta_h 23 kJ
-gamma 5 0
Id: 2811800
log K source: NIST46.3
Delta H source: NIST46.3

#T and ionic strength: 0.00 25.0
Fe+3 + 2Cl- = FeCl2+
log_k 2.13
delta_h 0 kJ
-gamma 5 0
Id: 2811801
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Fe+3 + 3Cl- = FeCl3
log_k 1.13
delta_h 0 kJ
-gamma 0 0
Id: 2811802
log K source: Nord90
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Mn+2 + Cl- = MnCl+
log_k 0.1
delta_h 0 kJ
-gamma 5 0
Id: 4701800
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 20.0
Mn+2 + 2Cl- = MnCl2
log_k 0.25
delta_h 0 kJ
-gamma 0 0
Id: 4701801
log K source: Nord90
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Mn+2 + 3Cl- = MnCl3-
log_k -0.31
delta_h 0 kJ
-gamma 5 0
Id: 4701802
log K source: Nord90
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Cr(OH)2+ + 2H+ + Cl- = CrCl+2 + 2H2O
log_k 9.6808
delta_h -103.62 kJ
-gamma 0 0
Id: 2111800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 1.00 25.0
Cr(OH)2+ + 2Cl- + 2H+ = CrCl2+ + 2H2O
log_k 8.658
delta_h -39.2208 kJ
-gamma 0 0
Id: 2111801

log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Cr(OH)2+ + 2Cl- + H+ = CrOHCl2 + H2O
log_k 2.9627
delta_h 0 kJ
-gamma 0 0
Id: 2111802
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
VO+2 + Cl- = VOCl+
log_k 0.448
delta_h 0 kJ
-gamma 0 0
Id: 9021800
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 20.0
U+4 + Cl- = UCl+3
log_k 1.7
delta_h -20 kJ
-gamma 0 0
Id: 8911800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
UO2+2 + Cl- = UO2Cl+
log_k 0.21
delta_h 16 kJ
-gamma 0 0
Id: 8931800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Be+2 + Cl- = BeCl+
log_k 0.2009
delta_h 0 kJ
-gamma 5 0
Id: 1101801
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.70 20.0
Sn(OH)2 + 2H+ + Br- = SnBr+ + 2H2O
log_k 8.254
delta_h 0 kJ
-gamma 0 0
Id: 7901301
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Sn(OH)2 + 2H+ + 2Br- = SnBr2 + 2H2O
log_k 8.794
delta_h 0 kJ

-gamma 0 0
Id: 7901302
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Sn(OH)2 + 2H+ + 3Br- = SnBr3- + 2H2O
log_k 7.48
delta_h 0 kJ
-gamma 0 0
Id: 7901303
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 3.00 25.0
Pb+2 + Br- = PbBr+
log_k 1.7
delta_h 8 kJ
-gamma 0 0
Id: 6001300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Pb+2 + 2Br- = PbBr2
log_k 2.6
delta_h -4 kJ
-gamma 0 0
Id: 6001301
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Tl+ + Br- = TlBr
log_k 0.91
delta_h -12 kJ
-gamma 0 0
Id: 8701300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Tl+ + 2Br- = TlBr2-
log_k -0.384
delta_h 12.36 kJ
-gamma 0 0
Id: 8701301
log K source: NIST46.3
Delta H source: NIST2.1.1
#T and ionic strength: 4.00 25.0
Tl+ + Br- + Cl- = TlBrCl-
log_k 0.8165
delta_h 0 kJ
-gamma 0 0
Id: 8701302
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Tl+ + I- + Br- = TlIBr-

log_k 2.185
delta_h 0 kJ
-gamma 0 0
Id: 8703802
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Tl(OH)3 + 3H+ + Br- = TlBr+2 + 3H2O
log_k 12.803
delta_h 0 kJ
-gamma 0 0
Id: 8711300
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Tl(OH)3 + 3H+ + 2Br- = TlBr2+ + 3H2O
log_k 20.711
delta_h 0 kJ
-gamma 0 0
Id: 8711301
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Tl(OH)3 + 3Br- + 3H+ = TlBr3 + 3H2O
log_k 27.0244
delta_h 0 kJ
-gamma 0 0
Id: 8711302
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Tl(OH)3 + 4Br- + 3H+ = TlBr4- + 3H2O
log_k 31.1533
delta_h 0 kJ
-gamma 0 0
Id: 8711303
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Zn+2 + Br- = ZnBr+
log_k -0.07
delta_h 1 kJ
-gamma 0 0
Id: 9501300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Zn+2 + 2Br- = ZnBr2
log_k -0.98
delta_h 0 kJ
-gamma 0 0
Id: 9501301
log K source: MTQ3.11
Delta H source: MTQ3.11

#T and ionic strength:
Cd+2 + Br- = CdBr+
log_k 2.15
delta_h -3 kJ
-gamma 0 0
Id: 1601300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cd+2 + 2Br- = CdBr2
log_k 3
delta_h -3 kJ
-gamma 0 0
Id: 1601301
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Hg(OH)2 + 2H+ + Br- = HgBr+ + 2H2O
log_k 15.803
delta_h -81.92 kJ
-gamma 0 0
Id: 3611301
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.50 25.0
Hg(OH)2 + 2H+ + 2Br- = HgBr2 + 2H2O
log_k 24.2725
delta_h -127.12 kJ
-gamma 0 0
Id: 3611302
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.50 25.0
Hg(OH)2 + 2H+ + 3Br- = HgBr3- + 2H2O
log_k 26.7025
delta_h -138.82 kJ
-gamma 0 0
Id: 3611303
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.50 25.0
Hg(OH)2 + 2H+ + 4Br- = HgBr4-2 + 2H2O
log_k 27.933
delta_h -153.72 kJ
-gamma 0 0
Id: 3611304
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.50 25.0
Hg(OH)2 + Br- + Cl- + 2H+ = HgBrCl + 2H2O
log_k 22.1811
delta_h -113.77 kJ
-gamma 0 0
Id: 3611305

log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
Hg(OH)2 + Br- + I- + 2H+ = HgBrI + 2H2O
log_k 27.3133
delta_h -151.27 kJ
-gamma 0 0
Id: 3611306
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
Hg(OH)2 + Br- + 3I- + 2H+ = HgBrI3-2 + 2H2O
log_k 34.2135
delta_h 0 kJ
-gamma 0 0
Id: 3611307
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Hg(OH)2 + 2Br- + 2I- + 2H+ = HgBr2I2-2 + 2H2O
log_k 32.3994
delta_h 0 kJ
-gamma 0 0
Id: 3611308
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Hg(OH)2 + 3Br- + I- + 2H+ = HgBr3I-2 + 2H2O
log_k 30.1528
delta_h 0 kJ
-gamma 0 0
Id: 3611309
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Hg(OH)2 + H+ + Br- = HgBrOH + H2O
log_k 12.433
delta_h 0 kJ
-gamma 0 0
Id: 3613301
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
Ag+ + Br- = AgBr
log_k 4.6
delta_h 0 kJ
-gamma 0 0
Id: 201300
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Ag+ + 2Br- = AgBr2-
log_k 7.5
delta_h 0 kJ

-gamma 0 0
Id: 201301
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Ag+ + 3Br- = AgBr3-2
log_k 8.1
delta_h 0 kJ
-gamma 0 0
Id: 201302
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Ni+2 + Br- = NiBr+
log_k 0.5
delta_h 0 kJ
-gamma 0 0
Id: 5401300
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Cr(OH)2+ + Br- + 2H+ = CrBr+2 + 2H2O
log_k 7.5519
delta_h -46.9068 kJ
-gamma 0 0
Id: 2111300
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Be+2 + Br- = BeBr+
log_k 0.1009
delta_h 0 kJ
-gamma 5 0
Id: 1101301
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.70 20.0
Pb+2 + I- = PbI+
log_k 2
delta_h 0 kJ
-gamma 0 0
Id: 6003800
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Pb+2 + 2I- = PbI2
log_k 3.2
delta_h 0 kJ
-gamma 0 0
Id: 6003801
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Tl+ + I- = TlI

log_k 1.4279
delta_h 0 kJ
-gamma 0 0
Id: 8703800
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Tl+ + 2I- = TlI2-
log_k 1.8588
delta_h 0 kJ
-gamma 0 0
Id: 8703801
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Tl(OH)3 + 4I- + 3H+ = TlI4- + 3H2O
log_k 34.7596
delta_h 0 kJ
-gamma 0 0
Id: 8713800
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Zn+2 + I- = ZnI+
log_k -2.0427
delta_h -4 kJ
-gamma 0 0
Id: 9503800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 3.00 25.0
Zn+2 + 2I- = ZnI2
log_k -1.69
delta_h 0 kJ
-gamma 0 0
Id: 9503801
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Cd+2 + I- = CdI+
log_k 2.28
delta_h -9.6 kJ
-gamma 0 0
Id: 1603800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cd+2 + 2I- = CdI2
log_k 3.92
delta_h -12 kJ
-gamma 0 0
Id: 1603801
log K source: NIST46.3
Delta H source: NIST46.3

#T and ionic strength: 0.00 25.0
Hg(OH)2 + 2H+ + I- = HgI+ + 2H2O
log_k 19.603
delta_h -111.22 kJ
-gamma 0 0
Id: 3613801
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.50 25.0
Hg(OH)2 + 2H+ + 2I- = HgI2 + 2H2O
log_k 30.8225
delta_h -182.72 kJ
-gamma 0 0
Id: 3613802
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.50 25.0
Hg(OH)2 + 2H+ + 3I- = HgI3- + 2H2O
log_k 34.6025
delta_h -194.22 kJ
-gamma 0 0
Id: 3613803
log K source: NIST46.4
Delta H source: NIST2.1.1
#T and ionic strength: 0.50 25.0
Hg(OH)2 + 2H+ + 4I- = HgI4-2 + 2H2O
log_k 36.533
delta_h -220.72 kJ
-gamma 0 0
Id: 3613804
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.50 25.0
Ag+ + I- = AgI
log_k 6.6
delta_h 0 kJ
-gamma 0 0
Id: 203800
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 18.0
Ag+ + 2I- = AgI2-
log_k 11.7
delta_h 0 kJ
-gamma 0 0
Id: 203801
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 18.0
Ag+ + 3I- = AgI3-2
log_k 12.6
delta_h -122 kJ
-gamma 0 0
Id: 203802

log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ag+ + 4I- = AgI4-3
log_k 14.229
delta_h 0 kJ
-gamma 0 0
Id: 203803
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 2.00 25.0
Cr(OH)2+ + I- + 2H+ = CrI+2 + 2H2O
log_k 4.8289
delta_h 0 kJ
-gamma 0 0
Id: 2113800
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
H+ + HS- = H2S
log_k 7.02
delta_h -22 kJ
-gamma 0 0
Id: 3307300
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Pb+2 + 2HS- = Pb(HS)2
log_k 15.27
delta_h 0 kJ
-gamma 0 0
Id: 6007300
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Pb+2 + 3HS- = Pb(HS)3-
log_k 16.57
delta_h 0 kJ
-gamma 0 0
Id: 6007301
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Tl+ + HS- = TlHS
log_k 2.474
delta_h 0 kJ
-gamma 0 0
Id: 8707300
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
2Tl+ + HS- = Tl2HS+
log_k 5.974
delta_h 0 kJ

-gamma 0 0
Id: 8707301
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
2Tl+ + 3HS- + H2O = Tl2OH(HS)3-2 + H+
log_k 1.0044
delta_h 0 kJ
-gamma 0 0
Id: 8707302
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
2Tl+ + 2HS- + 2H2O = Tl2(OH)2(HS)2-2 + 2H+
log_k -11.0681
delta_h 0 kJ
-gamma 0 0
Id: 8707303
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Zn+2 + 2HS- = Zn(HS)2
log_k 12.82
delta_h 0 kJ
-gamma 0 0
Id: 9507300
log K source: DHa1993
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Zn+2 + 3HS- = Zn(HS)3-
log_k 16.1
delta_h 0 kJ
-gamma 0 0
Id: 9507301
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Zn+2 + 3HS- = ZnS(HS)2-2 + H+
log_k 6.12
delta_h 0 kJ
-gamma 0 0
Id: 9507302
log K source: DHa1993
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Zn+2 + 2HS- + 2HS- = Zn(HS)4-2
log_k 14.64
delta_h 0 kJ
-gamma 0 0
Id: 9507303
log K source: DHa1993
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Zn+2 + 2HS- = ZnS(HS)- + H+

log_k 6.81
delta_h 0 kJ
-gamma 0 0
Id: 9507304
log K source: DHa1993
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Cd+2 + HS- = CdHS+
log_k 8.008
delta_h 0 kJ
-gamma 0 0
Id: 1607300
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Cd+2 + 2HS- = Cd(HS)2
log_k 15.212
delta_h 0 kJ
-gamma 0 0
Id: 1607301
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Cd+2 + 3HS- = Cd(HS)3-
log_k 17.112
delta_h 0 kJ
-gamma 0 0
Id: 1607302
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Cd+2 + 4HS- = Cd(HS)4-2
log_k 19.308
delta_h 0 kJ
-gamma 0 0
Id: 1607303
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Hg(OH)2 + 2HS- = HgS2-2 + 2H2O
log_k 29.414
delta_h 0 kJ
-gamma 0 0
Id: 3617300
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 1.00 20.0
Hg(OH)2 + 2H+ + 2HS- = Hg(HS)2 + 2H2O
log_k 44.516
delta_h 0 kJ
-gamma 0 0
Id: 3617301
log K source: NIST46.3
Delta H source: MTQ3.11

#T and ionic strength: 1.00 20.0
Hg(OH)2 + H+ + 2HS- = HgHS2- + 2H2O
log_k 38.122
delta_h 0 kJ
-gamma 0 0
Id: 3617302
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 1.00 20.0
Cu+2 + 3HS- = Cu(HS)3-
log_k 25.899
delta_h 0 kJ
-gamma 0 0
Id: 2317300
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Ag+ + HS- = AgHS
log_k 13.8145
delta_h 0 kJ
-gamma 0 0
Id: 207300
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.10 20.0
Ag+ + 2HS- = Ag(HS)2-
log_k 17.9145
delta_h 0 kJ
-gamma 0 0
Id: 207301
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.10 20.0
Fe+2 + 2HS- = Fe(HS)2
log_k 8.95
delta_h 0 kJ
-gamma 0 0
Id: 2807300
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Fe+2 + 3HS- = Fe(HS)3-
log_k 10.987
delta_h 0 kJ
-gamma 0 0
Id: 2807301
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
HS- = S2-2 + H+
log_k -11.7828
delta_h 46.4 kJ
-gamma 0 0
-no_check

Id: 7317300
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
HS- = S3-2 + H+
log_k -10.7667
delta_h 42.2 kJ
-gamma 0 0
-no_check
Id: 7317301
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
HS- = S4-2 + H+
log_k -9.9608
delta_h 39.3 kJ
-gamma 0 0
-no_check
Id: 7317302
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
HS- = S5-2 + H+
log_k -9.3651
delta_h 37.6 kJ
-gamma 0 0
-no_check
Id: 7317303
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
HS- = S6-2 + H+
log_k -9.881
delta_h 0 kJ
-gamma 0 0
-no_check
Id: 7317304
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
2Sb(OH)3 + 4HS- + 2H+ = Sb2S4-2 + 6H2O
log_k 49.3886
delta_h -321.78 kJ
-gamma 0 0
Id: 7407300
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
Cu+ + 2HS- = Cu(S4)2-3 + 2H+
log_k 3.39
delta_h 0 kJ
-gamma 23 0
-no_check
Id: 2307300

log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Cu+ + 2HS- = CuS4S5-3 + 2H+
log_k 2.66
delta_h 0 kJ
-gamma 25 0
-no_check
Id: 2307301
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Ag+ + 2HS- = Ag(S4)2-3 + 2H+
log_k 0.991
delta_h 0 kJ
-gamma 22 0
-no_check
Id: 207302
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Ag+ + 2HS- = AgS4S5-3 + 2H+
log_k 0.68
delta_h 0 kJ
-gamma 24 0
-no_check
Id: 207303
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Ag+ + 2HS- = Ag(HS)S4-2 + H+
log_k 10.431
delta_h 0 kJ
-gamma 15 0
-no_check
Id: 207304
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
H+ + SO4-2 = HSO4-
log_k 1.99
delta_h 22 kJ
-gamma 4.5 0
Id: 3307320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
NH4+ + SO4-2 = NH4SO4-
log_k 1.03
delta_h 0 kJ
-gamma 5 0
Id: 4907320
log K source: NIST46.3
Delta H source: MTQ3.11

#T and ionic strength: 0.00 25.0
Pb+2 + SO4-2 = PbSO4
log_k 2.69
delta_h 0 kJ
-gamma 0 0
Id: 6007320
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Pb+2 + 2SO4-2 = Pb(SO4)2-2
log_k 3.47
delta_h 0 kJ
-gamma 0 0
Id: 6007321
log K source: SCD3.02 (1960 RKa)
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Al+3 + SO4-2 = AlSO4+
log_k 3.89
delta_h 28 kJ
-gamma 4.5 0
Id: 307320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Al+3 + 2SO4-2 = Al(SO4)2-
log_k 4.92
delta_h 11.9 kJ
-gamma 4.5 0
Id: 307321
log K source: Nord90
Delta H source: Nord90
#T and ionic strength: 0.00 25.0
Tl+ + SO4-2 = TlSO4-
log_k 1.37
delta_h -0.8 kJ
-gamma 0 0
Id: 8707320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Zn+2 + SO4-2 = ZnSO4
log_k 2.34
delta_h 6.2 kJ
-gamma 0 0
Id: 9507320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Zn+2 + 2SO4-2 = Zn(SO4)2-2
log_k 3.28
delta_h 0 kJ
-gamma 0 0
Id: 9507321

log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Cd+2 + SO4-2 = CdSO4
log_k 2.37
delta_h 8.7 kJ
-gamma 0 0
Id: 1607320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cd+2 + 2SO4-2 = Cd(SO4)2-2
log_k 3.5
delta_h 0 kJ
-gamma 0 0
Id: 1607321
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Hg(OH)2 + 2H+ + SO4-2 = HgSO4 + 2H2O
log_k 8.612
delta_h 0 kJ
-gamma 0 0
Id: 3617320
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
Cu+2 + SO4-2 = CuSO4
log_k 2.36
delta_h 8.7 kJ
-gamma 0 0
Id: 2317320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ag+ + SO4-2 = AgSO4-
log_k 1.3
delta_h 6.2 kJ
-gamma 0 0
Id: 207320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ni+2 + SO4-2 = NiSO4
log_k 2.3
delta_h 5.8 kJ
-gamma 0 0
Id: 5407320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ni+2 + 2SO4-2 = Ni(SO4)2-2
log_k 0.82
delta_h 0 kJ

-gamma 0 0
Id: 5407321
log K source: SCD3.02 (1978 BLa)
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Co+2 + SO4-2 = CoSO4
log_k 2.3
delta_h 6.2 kJ
-gamma 0 0
Id: 2007320
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Fe+2 + SO4-2 = FeSO4
log_k 2.39
delta_h 8 kJ
-gamma 0 0
Id: 2807320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Fe+3 + SO4-2 = FeSO4+
log_k 4.05
delta_h 25 kJ
-gamma 5 0
Id: 2817320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Fe+3 + 2SO4-2 = Fe(SO4)2-
log_k 5.38
delta_h 19.2 kJ
-gamma 0 0
Id: 2817321
log K source: Nord90
Delta H source: Nord90
#T and ionic strength: 0.00 25.0
Mn+2 + SO4-2 = MnSO4
log_k 2.25
delta_h 8.7 kJ
-gamma 0 0
Id: 4707320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cr(OH)2+ + 2H+ + SO4-2 = CrSO4+ + 2H2O
log_k 12.9371
delta_h -98.62 kJ
-gamma 0 0
Id: 2117320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 1.00 50.0
Cr(OH)2+ + H+ + SO4-2 = CrOHSO4 + H2O

log_k 8.2871
delta_h 0 kJ
-gamma 0 0
Id: 2117321
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.10 25.0
2Cr(OH)2+ + SO4-2 + 2H+ = Cr2(OH)2SO4+2 + 2H2O
log_k 16.155
delta_h 0 kJ
-gamma 0 0
Id: 2117323
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
2Cr(OH)2+ + 2SO4-2 + 2H+ = Cr2(OH)2(SO4)2 + 2H2O
log_k 17.9288
delta_h 0 kJ
-gamma 0 0
Id: 2117324
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
U+4 + SO4-2 = USO4+2
log_k 6.6
delta_h 8 kJ
-gamma 0 0
Id: 8917320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
U+4 + 2SO4-2 = U(SO4)2
log_k 10.5
delta_h 33 kJ
-gamma 0 0
Id: 8917321
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
UO2+2 + SO4-2 = UO2SO4
log_k 3.18
delta_h 20 kJ
-gamma 0 0
Id: 8937320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
UO2+2 + 2SO4-2 = UO2(SO4)2-2
log_k 4.3
delta_h 38 kJ
-gamma 0 0
Id: 8937321
log K source: NIST46.3
Delta H source: NIST46.3

#T and ionic strength: 0.00 25.0
V+3 + SO4-2 = VSO4+
log_k 2.674
delta_h 0 kJ
-gamma 0 0
Id: 9017320
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
VO+2 + SO4-2 = VOSO4
log_k 2.44
delta_h 17 kJ
-gamma 0 0
Id: 9027320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
VO2+ + SO4-2 = VO2SO4-
log_k 1.378
delta_h 0 kJ
-gamma 0 0
Id: 9037320
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 20.0
Be+2 + SO4-2 = BeSO4
log_k 2.19
delta_h 29 kJ
-gamma 0 0
Id: 1107321
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Be+2 + 2SO4-2 = Be(SO4)2-2
log_k 2.596
delta_h 0 kJ
-gamma 0 0
Id: 1107322
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Mg+2 + SO4-2 = MgSO4
log_k 2.26
delta_h 5.8 kJ
-gamma 0 0
Id: 4607320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ca+2 + SO4-2 = CaSO4
log_k 2.36
delta_h 7.1 kJ
-gamma 0 0
Id: 1507320

log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Sr+2 + SO4-2 = SrSO4
log_k 2.3
delta_h 8 kJ
-gamma 0 0
Id: 8007321
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Li+ + SO4-2 = LiSO4-
log_k 0.64
delta_h 0 kJ
-gamma 5 0
Id: 4407320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Na+ + SO4-2 = NaSO4-
log_k 0.73
delta_h 1 kJ
-gamma 5.4 0
Id: 5007320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
K+ + SO4-2 = KSO4-
log_k 0.85
delta_h 4.1 kJ
-gamma 5.4 0
Id: 4107320
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
HSe- + H+ = H2Se
log_k 3.89
delta_h 3.3 kJ
-gamma 0 0
Id: 3307600
log K source: NIST46.3
Delta H source: NIST2.1.1
#T and ionic strength: 0.00 25.0
2Ag+ + HSe- = Ag2Se + H+
log_k 34.911
delta_h 0 kJ
-gamma 0 0
Id: 207600
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Ag+ + H2O + 2HSe- = AgOH(Se)2-4 + 3H+
log_k -20.509
delta_h 0 kJ

-gamma 0 0
Id: 207601
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Mn+2 + HSe- = MnSe + H+
log_k -5.385
delta_h 0 kJ
-gamma 0 0
Id: 4707600
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
HSeO3- = SeO3-2 + H+
log_k -8.4
delta_h 5.02 kJ
-gamma 0 0
Id: 3307611
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
HSeO3- + H+ = H2SeO3
log_k 2.63
delta_h 6.2 kJ
-gamma 0 0
Id: 3307610
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cd+2 + 2HSeO3- = Cd(SeO3)2-2 + 2H+
log_k -10.884
delta_h 0 kJ
-gamma 0 0
Id: 1607610
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Ag+ + HSeO3- = AgSeO3- + H+
log_k -5.592
delta_h 0 kJ
-gamma 0 0
Id: 207610
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Ag+ + 2HSeO3- = Ag(SeO3)2-3 + 2H+
log_k -13.04
delta_h 0 kJ
-gamma 0 0
Id: 207611
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Fe+3 + HSeO3- = FeHSeO3+2

log_k 3.422
delta_h 25 kJ
-gamma 0 0
Id: 2817610
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 1.00 25.0
SeO4-2 + H+ = HSeO4-
log_k 1.7
delta_h 23 kJ
-gamma 0 0
Id: 3307620
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Zn+2 + SeO4-2 = ZnSeO4
log_k 2.19
delta_h 0 kJ
-gamma 0 0
Id: 9507620
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Zn+2 + 2SeO4-2 = Zn(SeO4)2-2
log_k 2.196
delta_h 0 kJ
-gamma 0 0
Id: 9507621
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Cd+2 + SeO4-2 = CdSeO4
log_k 2.27
delta_h 0 kJ
-gamma 0 0
Id: 1607620
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Ni+2 + SeO4-2 = NiSeO4
log_k 2.67
delta_h 14 kJ
-gamma 0 0
Id: 5407620
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Co+2 + SeO4-2 = CoSeO4
log_k 2.7
delta_h 12 kJ
-gamma 0 0
Id: 2007621
log K source: NIST46.4
Delta H source: NIST46.4

#T and ionic strength: 0.00 25.0
Mn+2 + SeO4-2 = MnSeO4
log_k 2.43
delta_h 14 kJ
-gamma 0 0
Id: 4707620
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
NH4+ = NH3 + H+
log_k -9.244
delta_h 52 kJ
-gamma 0 0
Id: 3304900
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ag+ + NH4+ = AgNH3+ + H+
log_k -5.934
delta_h -72 kJ
-gamma 0 0
Id: 204901
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ag+ + 2NH4+ = Ag(NH3)2+ + 2H+
log_k -11.268
delta_h -160 kJ
-gamma 0 0
Id: 204902
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Hg(OH)2 + H+ + NH4+ = HgNH3+2 + 2H2O
log_k 5.75
delta_h 0 kJ
-gamma 0 0
Id: 3614900
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 2.00 22.0
Hg(OH)2 + 2NH4+ = Hg(NH3)2+2 + 2H2O
log_k 5.506
delta_h -246.72 kJ
-gamma 0 0
Id: 3614901
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 1.00 25.0
Hg(OH)2 + 3NH4+ = Hg(NH3)3+2 + 2H2O + H+
log_k -3.138
delta_h -312.72 kJ
-gamma 0 0
Id: 3614902

log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 2.00 25.0
Hg(OH)2 + 4NH4+ = Hg(NH3)4+2 + 2H2O + 2H+
log_k -11.482
delta_h -379.72 kJ
-gamma 0 0
Id: 3614903
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.10 25.0
Cu+2 + NH4+ = CuNH3+2 + H+
log_k -5.234
delta_h -72 kJ
-gamma 0 0
Id: 2314901
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ni+2 + NH4+ = NiNH3+2 + H+
log_k -6.514
delta_h -67 kJ
-gamma 0 0
Id: 5404901
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Ni+2 + 2NH4+ = Ni(NH3)2+2 + 2H+
log_k -13.598
delta_h -111.6 kJ
-gamma 0 0
Id: 5404902
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Co+2 + NH4+ = Co(NH3)+2 + H+
log_k -7.164
delta_h -65 kJ
-gamma 0 0
Id: 2004900
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Co+2 + 2NH4+ = Co(NH3)2+2 + 2H+
log_k -14.778
delta_h 0 kJ
-gamma 0 0
Id: 2004901
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 2.00 25.0
Co+2 + 3NH4+ = Co(NH3)3+2 + 3H+
log_k -22.922
delta_h 0 kJ

-gamma 0 0
Id: 2004902
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 2.00 25.0
Co+2 + 4NH4+ = Co(NH3)4+2 + 4H+
log_k -31.446
delta_h 0 kJ
-gamma 0 0
Id: 2004903
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 2.00 30.0
Co+2 + 5NH4+ = Co(NH3)5+2 + 5H+
log_k -40.47
delta_h 0 kJ
-gamma 0 0
Id: 2004904
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 2.00 30.0
Co+3 + 6NH4+ + H2O = Co(NH3)6OH+2 + 7H+
log_k -43.7148
delta_h 0 kJ
-gamma 0 0
Id: 2014901
log K source: NIST2.1.1
Delta H source: MTQ3.11
#T and ionic strength:
Co+3 + 5NH4+ + Cl- = Co(NH3)5Cl+2 + 5H+
log_k -17.9584
delta_h 113.38 kJ
-gamma 0 0
Id: 2014902
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
Co+3 + 6NH4+ + Cl- = Co(NH3)6Cl+2 + 6H+
log_k -33.9179
delta_h 104.34 kJ
-gamma 0 0
Id: 2014903
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
Co+3 + 6NH4+ + Br- = Co(NH3)6Br+2 + 6H+
log_k -33.8884
delta_h 110.57 kJ
-gamma 0 0
Id: 2014904
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
Co+3 + 6NH4+ + I- = Co(NH3)6I+2 + 6H+

log_k -33.4808
delta_h 115.44 kJ
-gamma 0 0
Id: 2014905
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
Co+3 + 6NH4+ + SO4-2 = Co(NH3)6SO4+ + 6H+
log_k -28.9926
delta_h 124.5 kJ
-gamma 0 0
Id: 2014906
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
Cr(OH)2+ + 6NH4+ = Cr(NH3)6+3 + 2H2O + 4H+
log_k -32.8952
delta_h 0 kJ
-gamma 0 0
Id: 2114900
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 4.50 25.0
Cr(OH)2+ + 5NH4+ = Cr(NH3)5OH+2 + 4H+ + H2O
log_k -30.2759
delta_h 0 kJ
-gamma 0 0
Id: 2114901
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Cr(OH)2+ + 6NH4+ + Cl- = Cr(NH3)6Cl+2 + 2H2O + 4H+
log_k -31.7932
delta_h 0 kJ
-gamma 0 0
Id: 2114904
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Cr(OH)2+ + 6NH4+ + Br- = Cr(NH3)6Br+2 + 4H+ + 2H2O
log_k -31.887
delta_h 0 kJ
-gamma 0 0
Id: 2114905
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Cr(OH)2+ + 6NH4+ + I- = Cr(NH3)6I+2 + 4H+ + 2H2O
log_k -32.008
delta_h 0 kJ
-gamma 0 0
Id: 2114906
log K source: MTQ3.11
Delta H source: MTQ3.11

#T and ionic strength:
#Cr(OH)2+ + 4NH4+ = cis+ + 4H+
log_k -29.8574
delta_h 0 kJ
-gamma 0 0
Id: 4902113
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
#Cr(OH)2+ + 4NH4+ = trans+ + 4H+
log_k -30.5537
delta_h 0 kJ
-gamma 0 0
Id: 4902114
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Ca+2 + NH4+ = CaNH3+2 + H+
log_k -9.144
delta_h 0 kJ
-gamma 0 0
Id: 1504901
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
Ca+2 + 2NH4+ = Ca(NH3)2+2 + 2H+
log_k -18.788
delta_h 0 kJ
-gamma 0 0
Id: 1504902
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
Sr+2 + NH4+ = SrNH3+2 + H+
log_k -9.344
delta_h 0 kJ
-gamma 0 0
Id: 8004901
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
Ba+2 + NH4+ = BaNH3+2 + H+
log_k -9.444
delta_h 0 kJ
-gamma 0 0
Id: 1004901
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
Tl+ + NO2- = TlNO2
log_k 0.83
delta_h 0 kJ
-gamma 0 0
Id: 8704910

log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Ag+ + NO2- = AgNO2
log_k 2.32
delta_h -29 kJ
-gamma 0 0
Id: 204911
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ag+ + 2NO2- = Ag(NO2)2-
log_k 2.51
delta_h -46 kJ
-gamma 0 0
Id: 204910
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cu+2 + NO2- = CuNO2+
log_k 2.02
delta_h 0 kJ
-gamma 0 0
Id: 2314911
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Cu+2 + 2NO2- = Cu(NO2)2
log_k 3.03
delta_h 0 kJ
-gamma 0 0
Id: 2314912
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Co+2 + NO2- = CoNO2+
log_k 0.848
delta_h 0 kJ
-gamma 0 0
Id: 2004911
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Sn(OH)2 + 2H+ + NO3- = SnNO3+ + 2H2O
log_k 7.942
delta_h 0 kJ
-gamma 0 0
Id: 7904921
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Pb+2 + NO3- = PbNO3+
log_k 1.17
delta_h 2 kJ

-gamma 0 0
Id: 6004920
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Pb+2 + 2NO3- = Pb(NO3)2
log_k 1.4
delta_h -6.6 kJ
-gamma 0 0
Id: 6004921
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Tl+ + NO3- = TlNO3
log_k 0.33
delta_h -2 kJ
-gamma 0 0
Id: 8704920
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Tl(OH)3 + NO3- + 3H+ = TlNO3+2 + 3H2O
log_k 7.0073
delta_h 0 kJ
-gamma 0 0
Id: 8714920
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Cd+2 + NO3- = CdNO3+
log_k 0.5
delta_h -21 kJ
-gamma 0 0
Id: 1604920
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Cd+2 + 2NO3- = Cd(NO3)2
log_k 0.2
delta_h 0 kJ
-gamma 0 0
Id: 1604921
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Hg(OH)2 + 2H+ + NO3- = HgNO3+ + 2H2O
log_k 5.7613
delta_h 0 kJ
-gamma 0 0
Id: 3614920
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 3.00 25.0
Hg(OH)2 + 2H+ + 2NO3- = Hg(NO3)2 + 2H2O

log_k 5.38
delta_h 0 kJ
-gamma 0 0
Id: 3614921
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 3.00 25.0
Cu+2 + NO3- = CuNO3+
log_k 0.5
delta_h -4.1 kJ
-gamma 0 0
Id: 2314921
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Cu+2 + 2NO3- = Cu(NO3)2
log_k -0.4
delta_h 0 kJ
-gamma 0 0
Id: 2314922
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Zn+2 + NO3- = ZnNO3+
log_k 0.4
delta_h -4.6 kJ
-gamma 0 0
Id: 9504921
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Zn+2 + 2NO3- = Zn(NO3)2
log_k -0.3
delta_h 0 kJ
-gamma 0 0
Id: 9504922
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Ag+ + NO3- = AgNO3
log_k -0.1
delta_h 22.6 kJ
-gamma 0 0
Id: 204920
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ni+2 + NO3- = NiNO3+
log_k 0.4
delta_h 0 kJ
-gamma 0 0
Id: 5404921
log K source: NIST46.4
Delta H source: MTQ3.11

#T and ionic strength: 0.00 25.0
Co+2 + NO3- = CoNO3+
log_k 0.2
delta_h 0 kJ
-gamma 0 0
Id: 2004921
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Co+2 + 2NO3- = Co(NO3)2
log_k 0.5085
delta_h 0 kJ
-gamma 0 0
Id: 2004922
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
Fe+3 + NO3- = FeNO3+2
log_k 1
delta_h -37 kJ
-gamma 0 0
Id: 2814921
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Mn+2 + NO3- = MnNO3+
log_k 0.2
delta_h 0 kJ
-gamma 0 0
Id: 4704921
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Mn+2 + 2NO3- = Mn(NO3)2
log_k 0.6
delta_h -1.6569 kJ
-gamma 0 0
Id: 4704920
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Cr(OH)2+ + NO3- + 2H+ = CrNO3+2 + 2H2O
log_k 8.2094
delta_h -65.4378 kJ
-gamma 0 0
Id: 2114920
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
UO2+2 + NO3- = UO2NO3+
log_k 0.3
delta_h -12 kJ
-gamma 0 0
Id: 8934921

log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
VO2+ + NO3- = VO2NO3
log_k -0.296
delta_h 0 kJ
-gamma 0 0
Id: 9034920
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 1.00 20.0
Ca+2 + NO3- = CaNO3+
log_k 0.5
delta_h -5.4 kJ
-gamma 0 0
Id: 1504921
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Sr+2 + NO3- = SrNO3+
log_k 0.6
delta_h -10 kJ
-gamma 0 0
Id: 8004921
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ba+2 + NO3- = BaNO3+
log_k 0.7
delta_h -13 kJ
-gamma 0 0
Id: 1004921
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
H+ + Cyanide- = HCyanide
log_k 9.21
delta_h -43.63 kJ
-gamma 0 0
Id: 3301431
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Cd+2 + Cyanide- = CdCyanide+
log_k 6.01
delta_h -30 kJ
-gamma 0 0
Id: 1601431
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Cd+2 + 2Cyanide- = Cd(Cyanide)2
log_k 11.12
delta_h -54.3 kJ

-gamma 0 0
Id: 1601432
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Cd+2 + 3Cyanide- = Cd(Cyanide)3-
log_k 15.65
delta_h -90.3 kJ
-gamma 0 0
Id: 1601433
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Cd+2 + 4Cyanide- = Cd(Cyanide)4-2
log_k 17.92
delta_h -112 kJ
-gamma 0 0
Id: 1601434
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Hg(OH)2 + 2H+ + Cyanide- = HgCyanide+ + 2H2O
log_k 23.194
delta_h -136.72 kJ
-gamma 0 0
Id: 3611431
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Hg(OH)2 + 2H+ + 2Cyanide- = Hg(Cyanide)2 + 2H2O
log_k 38.944
delta_h 154.28 kJ
-gamma 0 0
Id: 3611432
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Hg(OH)2 + 2H+ + 3Cyanide- = Hg(Cyanide)3- + 2H2O
log_k 42.504
delta_h -262.72 kJ
-gamma 0 0
Id: 3611433
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Hg(OH)2 + 2H+ + 4Cyanide- = Hg(Cyanide)4-2 + 2H2O
log_k 45.164
delta_h -288.72 kJ
-gamma 0 0
Id: 3611434
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Cu+ + 2Cyanide- = Cu(Cyanide)2-

log_k 21.9145
delta_h -121 kJ
-gamma 0 0
Id: 2301432
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Cu+ + 3Cyanide- = Cu(Cyanide)3-2
log_k 27.2145
delta_h -167.4 kJ
-gamma 0 0
Id: 2301433
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Cu+ + 4Cyanide- = Cu(Cyanide)4-3
log_k 28.7145
delta_h -214.2 kJ
-gamma 0 0
Id: 2301431
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ag+ + 2Cyanide- = Ag(Cyanide)2-
log_k 20.48
delta_h -137 kJ
-gamma 0 0
Id: 201432
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ag+ + 3Cyanide- = Ag(Cyanide)3-2
log_k 21.7
delta_h -140 kJ
-gamma 0 0
Id: 201433
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ag+ + H2O + Cyanide- = Ag(Cyanide)OH- + H+
log_k -0.777
delta_h 0 kJ
-gamma 0 0
Id: 201431
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Ni+2 + 4Cyanide- = Ni(Cyanide)4-2
log_k 30.2
delta_h -180 kJ
-gamma 0 0
Id: 5401431
log K source: NIST46.4
Delta H source: NIST46.4

#T and ionic strength: 0.00 25.0
Ni+2 + 4Cyanide- + H+ = NiH(Cyanide)4-
log_k 36.0289
delta_h 0 kJ
-gamma 0 0
Id: 5401432
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.10 25.0
Ni+2 + 4Cyanide- + 2H+ = NiH2Cyanide4
log_k 40.7434
delta_h 0 kJ
-gamma 0 0
Id: 5401433
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.10 25.0
Ni+2 + 4Cyanide- + 3H+ = NiH3(Cyanide)4+
log_k 43.3434
delta_h 0 kJ
-gamma 0 0
Id: 5401434
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.10 25.0
Co+2 + 3Cyanide- = Co(Cyanide)3-
log_k 14.312
delta_h 0 kJ
-gamma 0 0
Id: 2001431
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 1.00 25.0
Co+2 + 5Cyanide- = Co(Cyanide)5-3
log_k 23
delta_h -257 kJ
-gamma 0 0
Id: 2001432
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 1.00 25.0
Fe+2 + 6Cyanide- = Fe(Cyanide)6-4
log_k 35.4
delta_h -358 kJ
-gamma 0 0
Id: 2801431
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
H+ + Fe+2 + 6Cyanide- = HFe(Cyanide)6-3
log_k 39.71
delta_h -356 kJ
-gamma 0 0
Id: 2801432

log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
2H+ + Fe+2 + 6Cyanide- = H2Fe(Cyanide)6-2
log_k 42.11
delta_h -352 kJ
-gamma 0 0
Id: 2801433
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Fe+3 + 6Cyanide- = Fe(Cyanide)6-3
log_k 43.6
delta_h -293 kJ
-gamma 0 0
Id: 2811431
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
2Fe+3 + 6Cyanide- = Fe2(Cyanide)6
log_k 47.6355
delta_h -218 kJ
-gamma 0 0
Id: 2811432
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.50 25.0
Sn(OH)2 + Fe+3 + 6Cyanide- + 2H+ = SnFe(Cyanide)6- + 2H2O
log_k 53.54
delta_h 0 kJ
-gamma 0 0
Id: 7901431
log K source: Ba1987
Delta H source:
#T and ionic strength: 0.00 25.0
NH4+ + Fe+2 + 6Cyanide- = NH4Fe(Cyanide)6-3
log_k 37.7
delta_h -354 kJ
-gamma 0 0
Id: 4901431
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Tl+ + Fe+2 + 6Cyanide- = TlFe(Cyanide)6-3
log_k 38.4
delta_h -365.5 kJ
-gamma 0 0
Id: 8701432
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Mg+2 + Fe+3 + 6Cyanide- = MgFe(Cyanide)6-
log_k 46.39
delta_h -290 kJ

-gamma 0 0
Id: 4601431
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Mg+2 + Fe+2 + 6Cyanide- = MgFe(Cyanide)6-2
log_k 39.21
delta_h -346 kJ
-gamma 0 0
Id: 4601432
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ca+2 + Fe+3 + 6Cyanide- = CaFe(Cyanide)6-
log_k 46.43
delta_h -291 kJ
-gamma 0 0
Id: 1501431
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ca+2 + Fe+2 + 6Cyanide- = CaFe(Cyanide)6-2
log_k 39.1
delta_h -347 kJ
-gamma 0 0
Id: 1501432
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
2Ca+2 + Fe+2 + 6Cyanide- = Ca2Fe(Cyanide)6
log_k 40.6
delta_h -350.201 kJ
-gamma 0 0
Id: 1501433
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Sr+2 + Fe+3 + 6Cyanide- = SrFe(Cyanide)6-
log_k 46.45
delta_h -292 kJ
-gamma 0 0
Id: 8001431
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Sr+2 + Fe+2 + 6Cyanide- = SrFe(Cyanide)6-2
log_k 39.1
delta_h -350 kJ
-gamma 0 0
Id: 8001432
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ba+2 + Fe+2 + 6Cyanide- = BaFe(Cyanide)6-2

log_k 39.19
delta_h -342 kJ
-gamma 0 0
Id: 1001430
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ba+2 + Fe+3 + 6Cyanide- = BaFe(Cyanide)6-
log_k 46.48
delta_h -292 kJ
-gamma 0 0
Id: 1001431
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Na+ + Fe+2 + 6Cyanide- = NaFe(Cyanide)6-3
log_k 37.6
delta_h -354 kJ
-gamma 0 0
Id: 5001431
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
K+ + Fe+2 + 6Cyanide- = KFe(Cyanide)6-3
log_k 37.75
delta_h -353.9 kJ
-gamma 0 0
Id: 4101433
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
K+ + Fe+3 + 6Cyanide- = KFe(Cyanide)6-2
log_k 45.04
delta_h -291 kJ
-gamma 0 0
Id: 4101430
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
H+ + PO4-3 = HPO4-2
log_k 12.375
delta_h -15 kJ
-gamma 5 0
Id: 3305800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
2H+ + PO4-3 = H2PO4-
log_k 19.573
delta_h -18 kJ
-gamma 5.4 0
Id: 3305801
log K source: NIST46.3
Delta H source: NIST46.3

#T and ionic strength: 0.00 25.0
3H+ + PO4-3 = H3PO4
log_k 21.721
delta_h -10.1 kJ
-gamma 0 0
Id: 3305802
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Co+2 + H+ + PO4-3 = CoHPO4
log_k 15.4128
delta_h 0 kJ
-gamma 0 0
Id: 2005800
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.10 25.0
Fe+2 + 2H+ + PO4-3 = FeH2PO4+
log_k 22.273
delta_h 0 kJ
-gamma 5.4 0
Id: 2805800
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Fe+2 + H+ + PO4-3 = FeHPO4
log_k 15.975
delta_h 0 kJ
-gamma 0 0
Id: 2805801
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Fe+3 + 2H+ + PO4-3 = FeH2PO4+2
log_k 23.8515
delta_h 0 kJ
-gamma 5.4 0
Id: 2815801
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
Fe+3 + H+ + PO4-3 = FeHPO4+
log_k 22.292
delta_h -30.5432 kJ
-gamma 5.4 0
Id: 2815800
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
Cr(OH)2+ + 4H+ + PO4-3 = CrH2PO4+2 + 2H2O
log_k 31.9068
delta_h 0 kJ
-gamma 0 0
Id: 2115800

log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
U+4 + PO4-3 + H+ = UHPO4+2
log_k 24.443
delta_h 31.38 kJ
-gamma 0 0
Id: 8915800
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
U+4 + 2PO4-3 + 2H+ = U(HPO4)2
log_k 46.833
delta_h 7.1128 kJ
-gamma 0 0
Id: 8915801
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
U+4 + 3PO4-3 + 3H+ = U(HPO4)3-2
log_k 67.564
delta_h -32.6352 kJ
-gamma 0 0
Id: 8915802
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
U+4 + 4PO4-3 + 4H+ = U(HPO4)4-4
log_k 88.483
delta_h -110.876 kJ
-gamma 0 0
Id: 8915803
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
UO2+2 + H+ + PO4-3 = UO2HPO4
log_k 19.655
delta_h -8.7864 kJ
-gamma 0 0
Id: 8935800
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
UO2+2 + 2PO4-3 + 2H+ = UO2(HPO4)2-2
log_k 42.988
delta_h -47.6934 kJ
-gamma 0 0
Id: 8935801
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
UO2+2 + 2H+ + PO4-3 = UO2H2PO4+
log_k 22.833
delta_h -15.4808 kJ

-gamma 0 0
Id: 8935802
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
UO2+2 + 2PO4-3 + 4H+ = UO2(H2PO4)2
log_k 44.7
delta_h -69.036 kJ
-gamma 0 0
Id: 8935803
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
UO2+2 + 3PO4-3 + 6H+ = UO2(H2PO4)3-
log_k 66.245
delta_h -119.662 kJ
-gamma 0 0
Id: 8935804
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
UO2+2 + PO4-3 = UO2PO4-
log_k 13.25
delta_h 0 kJ
-gamma 0 0
Id: 8935805
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Mg+2 + PO4-3 = MgPO4-
log_k 4.654
delta_h 12.9704 kJ
-gamma 5.4 0
Id: 4605800
log K source: SCD3.02 (1993 GMa)
Delta H source: MTQ3.11
#T and ionic strength: 0.20 25.0
Mg+2 + 2H+ + PO4-3 = MgH2PO4+
log_k 21.2561
delta_h -4.6861 kJ
-gamma 5.4 0
Id: 4605801
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 37.0
Mg+2 + H+ + PO4-3 = MgHPO4
log_k 15.175
delta_h -3 kJ
-gamma 0 0
Id: 4605802
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ca+2 + H+ + PO4-3 = CaHPO4

log_k 15.035
delta_h -3 kJ
-gamma 0 0
Id: 1505800
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ca+2 + PO4-3 = CaPO4-
log_k 6.46
delta_h 12.9704 kJ
-gamma 5.4 0
Id: 1505801
log K source: SCD3.02 (1993 GMa)
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Ca+2 + 2H+ + PO4-3 = CaH2PO4+
log_k 20.923
delta_h -6 kJ
-gamma 5.4 0
Id: 1505802
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Sr+2 + H+ + PO4-3 = SrHPO4
log_k 14.8728
delta_h 0 kJ
-gamma 0 0
Id: 8005800
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.10 25.0
Sr+2 + 2H+ + PO4-3 = SrH2PO4+
log_k 20.4019
delta_h 0 kJ
-gamma 0 0
Id: 8005801
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.10 20.0
Na+ + H+ + PO4-3 = NaHPO4-
log_k 13.445
delta_h 0 kJ
-gamma 5.4 0
Id: 5005800
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
K+ + H+ + PO4-3 = KHPO4-
log_k 13.255
delta_h 0 kJ
-gamma 5.4 0
Id: 4105800
log K source: NIST46.3
Delta H source: MTQ3.11

#T and ionic strength: 0.00 25.0
H3AsO3 = AsO3-3 + 3H+
log_k -34.744
delta_h 84.726 kJ
-gamma 0 0
Id: 3300602
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
H3AsO3 = HAsO3-2 + 2H+
log_k -21.33
delta_h 59.4086 kJ
-gamma 0 0
Id: 3300601
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
H3AsO3 = H2AsO3- + H+
log_k -9.29
delta_h 27.41 kJ
-gamma 0 0
Id: 3300600
log K source: NIST46.4
Delta H source: NIST2.1.1
#T and ionic strength: 0.00 25.0
H3AsO3 + H+ = H4AsO3+
log_k -0.305
delta_h 0 kJ
-gamma 0 0
Id: 3300603
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
H3AsO4 = AsO4-3 + 3H+
log_k -20.7
delta_h 12.9 kJ
-gamma 0 0
Id: 3300613
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
H3AsO4 = HAsO4-2 + 2H+
log_k -9.2
delta_h -4.1 kJ
-gamma 0 0
Id: 3300612
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
H3AsO4 = H2AsO4- + H+
log_k -2.24
delta_h -7.1 kJ
-gamma 0 0
Id: 3300611

log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Sb(OH)3 + H2O = Sb(OH)4- + H+
log_k -12.0429
delta_h 69.8519 kJ
-gamma 0 0
Id: 7400020
log K source: PNL89
Delta H source: PNL89
#T and ionic strength:
Sb(OH)3 + H+ = Sb(OH)2+ + H2O
log_k 1.3853
delta_h 0 kJ
-gamma 0 0
Id: 7403302
log K source: PNL89
Delta H source: PNL89
#T and ionic strength:
Sb(OH)3 = HSbO2 + H2O
log_k -0.0105
delta_h -0.13 kJ
-gamma 0 0
Id: 7400021
log K source: NIST2.1.1
Delta H source: NIST2.1.1
#T and ionic strength:
Sb(OH)3 = SbO2- + H2O + H+
log_k -11.8011
delta_h 70.1866 kJ
-gamma 0 0
Id: 7403301
log K source: PNL89
Delta H source: PNL89
#T and ionic strength:
Sb(OH)3 + H+ = SbO+ + 2H2O
log_k 0.9228
delta_h 8.2425 kJ
-gamma 0 0
Id: 7403300
log K source: PNL89
Delta H source: PNL89
#T and ionic strength:
Sb(OH)6- = SbO3- + 3H2O
log_k 2.9319
delta_h 0 kJ
-gamma 0 0
Id: 7410021
log K source: PNL89
Delta H source: PNL89
#T and ionic strength:
Sb(OH)6- + 2H+ = SbO2+ + 4H2O
log_k 2.3895
delta_h 0 kJ

-gamma 0 0
Id: 7413300
log K source: PNL89
Delta H source: PNL89
#T and ionic strength:
H+ + CO3-2 = HCO3-
log_k 10.329
delta_h -14.6 kJ
-gamma 5.4 0
Id: 3301400
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
2H+ + CO3-2 = H2CO3
log_k 16.681
delta_h -23.76 kJ
-gamma 0 0
Id: 3301401
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Pb+2 + 2CO3-2 = Pb(CO3)2-2
log_k 9.938
delta_h 0 kJ
-gamma 0 0
Id: 6001400
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
Pb+2 + CO3-2 = PbCO3
log_k 6.478
delta_h 0 kJ
-gamma 0 0
Id: 6001401
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
Pb+2 + CO3-2 + H+ = PbHCO3+
log_k 13.2
delta_h 0 kJ
-gamma 0 0
Id: 6001402
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
Zn+2 + CO3-2 = ZnCO3
log_k 4.76
delta_h 0 kJ
-gamma 0 0
Id: 9501401
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Zn+2 + H+ + CO3-2 = ZnHCO3+

log_k 11.829
delta_h 0 kJ
-gamma 0 0
Id: 9501400
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Hg(OH)2 + 2H+ + CO3-2 = HgCO3 + 2H2O
log_k 18.272
delta_h 0 kJ
-gamma 0 0
Id: 3611401
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
Hg(OH)2 + 2H+ + 2CO3-2 = Hg(CO3)2-2 + 2H2O
log_k 21.772
delta_h 0 kJ
-gamma 0 0
Id: 3611402
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
Hg(OH)2 + 3H+ + CO3-2 = HgHCO3+ + 2H2O
log_k 22.542
delta_h 0 kJ
-gamma 0 0
Id: 3611403
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
Cd+2 + CO3-2 = CdCO3
log_k 4.3578
delta_h 0 kJ
-gamma 0 0
Id: 1601401
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.10 25.0
Cd+2 + H+ + CO3-2 = CdHCO3+
log_k 10.6863
delta_h 0 kJ
-gamma 0 0
Id: 1601400
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 3.00 25.0
Cd+2 + 2CO3-2 = Cd(CO3)2-2
log_k 7.2278
delta_h 0 kJ
-gamma 0 0
Id: 1601403
log K source: NIST46.4
Delta H source: MTQ3.11

#T and ionic strength: 0.10 20.0
Cu+2 + CO3-2 = CuCO3
log_k 6.77
delta_h 0 kJ
-gamma 0 0
Id: 2311400
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Cu+2 + H+ + CO3-2 = CuHCO3+
log_k 12.129
delta_h 0 kJ
-gamma 0 0
Id: 2311402
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Cu+2 + 2CO3-2 = Cu(CO3)2-2
log_k 10.2
delta_h 0 kJ
-gamma 0 0
Id: 2311401
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Ni+2 + CO3-2 = NiCO3
log_k 4.5718
delta_h 0 kJ
-gamma 0 0
Id: 5401401
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.70 25.0
Ni+2 + H+ + CO3-2 = NiHCO3+
log_k 12.4199
delta_h 0 kJ
-gamma 0 0
Id: 5401400
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.70 25.0
Co+2 + CO3-2 = CoCO3
log_k 4.228
delta_h 0 kJ
-gamma 0 0
Id: 2001400
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
Co+2 + H+ + CO3-2 = CoHCO3+
log_k 12.2199
delta_h 0 kJ
-gamma 0 0
Id: 2001401

log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.70 25.0
Fe+2 + H+ + CO3-2 = FeHCO3+
log_k 11.429
delta_h 0 kJ
-gamma 6 0
Id: 2801400
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Mn+2 + H+ + CO3-2 = MnHCO3+
log_k 11.629
delta_h -10.6 kJ
-gamma 5 0
Id: 4701400
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
UO2+2 + CO3-2 = UO2CO3
log_k 9.6
delta_h 4 kJ
-gamma 0 0
Id: 8931400
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
UO2+2 + 2CO3-2 = UO2(CO3)2-2
log_k 16.9
delta_h 16 kJ
-gamma 0 0
Id: 8931401
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
UO2+2 + 3CO3-2 = UO2(CO3)3-4
log_k 21.6
delta_h -40 kJ
-gamma 0 0
Id: 8931402
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Be+2 + CO3-2 = BeCO3
log_k 6.2546
delta_h 0 kJ
-gamma 0 0
Id: 1101401
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 3.00 25.0
Mg+2 + CO3-2 = MgCO3
log_k 2.92
delta_h 12 kJ

-gamma 0 0
Id: 4601400
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Mg+2 + H+ + CO3-2 = MgHCO3+
log_k 11.339
delta_h -10.6 kJ
-gamma 4 0
Id: 4601401
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Ca+2 + H+ + CO3-2 = CaHCO3+
log_k 11.599
delta_h 5.4 kJ
-gamma 6 0
Id: 1501400
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
CO3-2 + Ca+2 = CaCO3
log_k 3.2
delta_h 16 kJ
-gamma 0 0
Id: 1501401
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
Sr+2 + CO3-2 = SrCO3
log_k 2.81
delta_h 20 kJ
-gamma 0 0
Id: 8001401
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Sr+2 + H+ + CO3-2 = SrHCO3+
log_k 11.539
delta_h 10.4 kJ
-gamma 6 0
Id: 8001400
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ba+2 + CO3-2 = BaCO3
log_k 2.71
delta_h 16 kJ
-gamma 0 0
Id: 1001401
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ba+2 + H+ + CO3-2 = BaHCO3+

log_k 11.309
delta_h 10.4 kJ
-gamma 6 0
Id: 1001400
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Na+ + CO3-2 = NaCO3-
log_k 1.27
delta_h -20.35 kJ
-gamma 5.4 0
Id: 5001400
log K source: NIST46.3
Delta H source: NIST2.1.1
#T and ionic strength: 0.00 25.0
Na+ + H+ + CO3-2 = NaHCO3
log_k 10.079
delta_h -28.3301 kJ
-gamma 0 0
Id: 5001401
log K source: NIST46.3
Delta H source: NIST2.1.1
#T and ionic strength: 0.00 25.0
H4SiO4 = H2SiO4-2 + 2H+
log_k -23.04
delta_h 61 kJ
-gamma 5.4 0
Id: 3307701
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
H4SiO4 = H3SiO4- + H+
log_k -9.84
delta_h 20 kJ
-gamma 4 0
Id: 3307700
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
UO2+2 + H4SiO4 = UO2H3SiO4+ + H+
log_k -1.9111
delta_h 0 kJ
-gamma 0 0
Id: 8937700
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.10 25.0
H3BO3 = H2BO3- + H+
log_k -9.236
delta_h 13 kJ
-gamma 2.5 0
Id: 3300900
log K source: NIST46.4
Delta H source: NIST46.4

#T and ionic strength: 0.00 25.0
2H3BO3 = H5(BO3)2- + H+
log_k -9.306
delta_h 8.4 kJ
-gamma 2.5 0
Id: 3300901
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
3H3BO3 = H8(BO3)3- + H+
log_k -7.306
delta_h 29.4 kJ
-gamma 2.5 0
Id: 3300902
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ag+ + H3BO3 = AgH2BO3 + H+
log_k -8.036
delta_h 0 kJ
-gamma 2.5 0
Id: 200901
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Mg+2 + H3BO3 = MgH2BO3+ + H+
log_k -7.696
delta_h 13 kJ
-gamma 2.5 0
Id: 4600901
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ca+2 + H3BO3 = CaH2BO3+ + H+
log_k -7.476
delta_h 17 kJ
-gamma 2.5 0
Id: 1500901
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Sr+2 + H3BO3 = SrH2BO3+ + H+
log_k -7.686
delta_h 17 kJ
-gamma 2.5 0
Id: 8000901
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ba+2 + H3BO3 = BaH2BO3+ + H+
log_k -7.746
delta_h 17 kJ
-gamma 2.5 0
Id: 1000901

log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Na+ + H3BO3 = NaH2BO3 + H+
log_k -9.036
delta_h 0 kJ
-gamma 2.5 0
Id: 5000901
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
CrO4-2 + H+ = HCrO4-
log_k 6.51
delta_h 2 kJ
-gamma 0 0
Id: 2123300
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
CrO4-2 + 2H+ = H2CrO4
log_k 6.4188
delta_h 39 kJ
-gamma 0 0
Id: 2123301
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 20.0
2CrO4-2 + 2H+ = Cr2O7-2 + H2O
log_k 14.56
delta_h -15 kJ
-gamma 0 0
Id: 2123302
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
CrO4-2 + Cl- + 2H+ = CrO3Cl- + H2O
log_k 7.3086
delta_h 0 kJ
-gamma 0 0
Id: 2121800
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
CrO4-2 + SO4-2 + 2H+ = CrO3SO4-2 + H2O
log_k 8.9937
delta_h 0 kJ
-gamma 0 0
Id: 2127320
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
CrO4-2 + 4H+ + PO4-3 = CrO3H2PO4- + H2O
log_k 29.3634
delta_h 0 kJ

-gamma 0 0
Id: 2125800
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
CrO4-2 + 3H+ + PO4-3 = CrO3HPO4-2 + H2O
log_k 26.6806
delta_h 0 kJ
-gamma 0 0
Id: 2125801
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
CrO4-2 + Na+ = NaCrO4-
log_k 0.6963
delta_h 0 kJ
-gamma 0 0
Id: 5002120
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
K+ + CrO4-2 = KCrO4-
log_k 0.57
delta_h 0 kJ
-gamma 0 0
Id: 4102120
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.00 18.0
MoO4-2 + H+ = HMoO4-
log_k 4.2988
delta_h 20 kJ
-gamma 0 0
Id: 3304801
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 20.0
MoO4-2 + 2H+ = H2MoO4
log_k 8.1636
delta_h -26 kJ
-gamma 0 0
Id: 3304802
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 20.0
7MoO4-2 + 8H+ = Mo7O24-6 + 4H2O
log_k 52.99
delta_h -228 kJ
-gamma 0 0
Id: 3304803
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
7MoO4-2 + 9H+ = HMo7O24-5 + 4H2O

log_k 59.3768
delta_h -218 kJ
-gamma 0 0
Id: 3304804
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
7MoO4-2 + 10H+ = H2Mo7O24-4 + 4H2O
log_k 64.159
delta_h -215 kJ
-gamma 0 0
Id: 3304805
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
7MoO4-2 + 11H+ = H3Mo7O24-3 + 4H2O
log_k 67.405
delta_h -217 kJ
-gamma 0 0
Id: 3304806
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 1.00 25.0
6MoO4-2 + Al+3 + 6H+ = AlMo6O21-3 + 3H2O
log_k 54.9925
delta_h 0 kJ
-gamma 0 0
Id: 304801
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.50 25.0
MoO4-2 + 2Ag+ = Ag2MoO4
log_k -0.4219
delta_h -1.18 kJ
-gamma 0 0
Id: 204801
log K source: Bard85
Delta H source: Bard85
#T and ionic strength:
VO2+ + 2H2O = VO4-3 + 4H+
log_k -30.2
delta_h -25 kJ
-gamma 0 0
Id: 9033303
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
VO2+ + 2H2O = HVO4-2 + 3H+
log_k -15.9
delta_h 0 kJ
-gamma 0 0
Id: 9033302
log K source: NIST46.3
Delta H source: NIST46.3

#T and ionic strength: 0.00 25.0
VO2+ + 2H2O = H2VO4- + 2H+
log_k -7.3
delta_h 0 kJ
-gamma 0 0
Id: 9033301
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
VO2+ + 2H2O = H3VO4 + H+
log_k -3.3
delta_h 44.4759 kJ
-gamma 0 0
Id: 9033300
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
2VO2+ + 3H2O = V2O7-4 + 6H+
log_k -31.24
delta_h -28 kJ
-gamma 0 0
Id: 9030020
log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
2VO2+ + 3H2O = HV2O7-3 + 5H+
log_k -20.67
delta_h 0 kJ
-gamma 0 0
Id: 9030021
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
2VO2+ + 3H2O = H3V2O7- + 3H+
log_k -3.79
delta_h 0 kJ
-gamma 0 0
Id: 9030022
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
3VO2+ + 3H2O = V3O9-3 + 6H+
log_k -15.88
delta_h 0 kJ
-gamma 0 0
Id: 9030023
log K source: MTQ3.11
Delta H source: MTQ3.11
#T and ionic strength:
4VO2+ + 4H2O = V4O12-4 + 8H+
log_k -20.56
delta_h -87 kJ
-gamma 0 0
Id: 9030024

log K source: NIST46.3
Delta H source: NIST46.3
#T and ionic strength: 0.00 25.0
10VO2+ + 8H2O = V10O28-6 + 16H+
log_k -24.0943
delta_h 0 kJ
-gamma 0 0
Id: 9030025
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.10 20.0
10VO2+ + 8H2O = HV10O28-5 + 15H+
log_k -15.9076
delta_h 90.0397 kJ
-gamma 0 0
Id: 9030026
log K source: NIST46.4
Delta H source: MTQ3.11
#T and ionic strength: 0.10 20.0
10VO2+ + 8H2O = H2V10O28-4 + 14H+
log_k -10.7
delta_h 0 kJ
-gamma 0 0
Id: 9030027
log K source: NIST46.3
Delta H source: MTQ3.11
#T and ionic strength: 0.00 25.0
Benzoate- + H+ = H(Benzoate)
log_k 4.202
delta_h -0.4602 kJ
-gamma 0 0
Id: 3309171
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Benzoate- + Pb+2 = Pb(Benzoate)+
log_k 2.4
delta_h 0 kJ
-gamma 0 0
Id: 6009171
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Benzoate- + Al+3 = Al(Benzoate)+2
log_k 2.05
delta_h 0 kJ
-gamma 0 0
Id: 309171
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Benzoate- + Al+3 + H2O = AlOH(Benzoate)+ + H+
log_k -0.56
delta_h 0 kJ

-gamma 0 0
Id: 309172
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Benzoate- + Zn+2 = Zn(Benzoate)+
log_k 1.7
delta_h 0 kJ
-gamma 0 0
Id: 9509171
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Benzoate- + Cd+2 = Cd(Benzoate)+
log_k 1.8
delta_h 0 kJ
-gamma 0 0
Id: 1609171
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
2Benzoate- + Cd+2 = Cd(Benzoate)2
log_k 1.82
delta_h 0 kJ
-gamma 0 0
Id: 1609172
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Benzoate- + Cu+2 = Cu(Benzoate)+
log_k 2.19
delta_h 0 kJ
-gamma 0 0
Id: 2319171
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Benzoate- + Ag+ = Ag(Benzoate)
log_k 0.91
delta_h 0 kJ
-gamma 0 0
Id: 209171
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Benzoate- + Ni+2 = Ni(Benzoate)+
log_k 1.86
delta_h 0 kJ
-gamma 0 0
Id: 5409171
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Co+2 + Benzoate- = Co(Benzoate)+

log_k 1.0537
delta_h 12 kJ
-gamma 0 0
Id: 2009171
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.50 30.0
Benzoate- + Mn+2 = Mn(Benzoate)+
log_k 2.06
delta_h 0 kJ
-gamma 0 0
Id: 4709171
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Benzoate- + Mg+2 = Mg(Benzoate)+
log_k 1.26
delta_h 0 kJ
-gamma 0 0
Id: 4609171
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Benzoate- + Ca+2 = Ca(Benzoate)+
log_k 1.55
delta_h 0 kJ
-gamma 0 0
Id: 1509171
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Phenylacetate- + H+ = H(Phenylacetate)
log_k 4.31
delta_h 2.1757 kJ
-gamma 0 0
Id: 3309181
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Phenylacetate- + Zn+2 = Zn(Phenylacetate)+
log_k 1.57
delta_h 0 kJ
-gamma 0 0
Id: 9509181
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Phenylacetate- + Cu+2 = Cu(Phenylacetate)+
log_k 1.97
delta_h 0 kJ
-gamma 0 0
Id: 2319181
log K source: NIST46.2
Delta H source: NIST46.2

#T and ionic strength:
Co+2 + Phenylacetate- = Co(Phenylacetate)+
log_k 0.591
delta_h 0 kJ
-gamma 0 0
Id: 2009181
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 2.00 25.0
Co+2 + 2Phenylacetate- = Co(Phenylacetate)2
log_k 0.4765
delta_h 0 kJ
-gamma 0 0
Id: 2009182
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 2.00 25.0
Isophthalate-2 + H+ = H(Isophthalate)-
log_k 4.5
delta_h 1.6736 kJ
-gamma 0 0
Id: 3309201
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Isophthalate-2 + 2H+ = H2(Isophthalate)
log_k 8
delta_h 1.6736 kJ
-gamma 0 0
Id: 3309202
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Isophthalate-2 + Pb+2 = Pb(Isophthalate)
log_k 2.99
delta_h 0 kJ
-gamma 0 0
Id: 6009201
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
2Isophthalate-2 + Pb+2 = Pb(Isophthalate)2-2
log_k 4.18
delta_h 0 kJ
-gamma 0 0
Id: 6009202
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Isophthalate-2 + Pb+2 + H+ = PbH(Isophthalate)+
log_k 6.69
delta_h 0 kJ
-gamma 0 0
Id: 6009203

log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Isophthalate-2 + Cd+2 = Cd(Isophthalate)
log_k 2.15
delta_h 0 kJ
-gamma 0 0
Id: 1609201
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
2Isophthalate-2 + Cd+2 = Cd(Isophthalate)2-2
log_k 2.99
delta_h 0 kJ
-gamma 0 0
Id: 1609202
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Isophthalate-2 + Cd+2 + H+ = CdH(Isophthalate)+
log_k 5.73
delta_h 0 kJ
-gamma 0 0
Id: 1609203
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Isophthalate-2 + Ca+2 = Ca(Isophthalate)
log_k 2
delta_h 0 kJ
-gamma 0 0
Id: 1509200
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Isophthalate-2 + Ba+2 = Ba(Isophthalate)
log_k 1.55
delta_h 0 kJ
-gamma 0 0
Id: 1009201
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
H+ + Diethylamine = H(Diethylamine)+
log_k 10.933
delta_h -53.1368 kJ
-gamma 0 0
Id: 3309551
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Diethylamine = Zn(Diethylamine)+2
log_k 2.74
delta_h 0 kJ

-gamma 0 0
Id: 9509551
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Zn+2 + 2Diethylamine = Zn(Diethylamine)2+2
log_k 5.27
delta_h 0 kJ
-gamma 0 0
Id: 9509552
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Zn+2 + 3Diethylamine = Zn(Diethylamine)3+2
log_k 7.71
delta_h 0 kJ
-gamma 0 0
Id: 9509553
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Zn+2 + 4Diethylamine = Zn(Diethylamine)4+2
log_k 9.84
delta_h 0 kJ
-gamma 0 0
Id: 9509554
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + Diethylamine = Cd(Diethylamine)+2
log_k 2.73
delta_h 0 kJ
-gamma 0 0
Id: 1609551
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + 2Diethylamine = Cd(Diethylamine)2+2
log_k 4.86
delta_h 0 kJ
-gamma 0 0
Id: 1609552
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + 3Diethylamine = Cd(Diethylamine)3+2
log_k 6.37
delta_h 0 kJ
-gamma 0 0
Id: 1609553
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + 4Diethylamine = Cd(Diethylamine)4+2

log_k 7.32
delta_h 0 kJ
-gamma 0 0
Id: 1609554
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Ag+ + Diethylamine = Ag(Diethylamine)+
log_k 2.98
delta_h 0 kJ
-gamma 0 0
Id: 209551
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + 2Diethylamine = Ag(Diethylamine)2+
log_k 6.38
delta_h -44.7688 kJ
-gamma 0 0
Id: 209552
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Diethylamine = Ni(Diethylamine)+2
log_k 2.78
delta_h 0 kJ
-gamma 0 0
Id: 5409551
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Ni+2 + 2Diethylamine = Ni(Diethylamine)2+2
log_k 4.97
delta_h 0 kJ
-gamma 0 0
Id: 5409552
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Ni+2 + 3Diethylamine = Ni(Diethylamine)3+2
log_k 6.72
delta_h 0 kJ
-gamma 0 0
Id: 5409553
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Ni+2 + 4Diethylamine = Ni(Diethylamine)4+2
log_k 7.93
delta_h 0 kJ
-gamma 0 0
Id: 5409554
log K source: SCD2.62
Delta H source: SCD2.62

#T and ionic strength:
Ni+2 + 5Diethylamine = Ni(Diethylamine)5+2
log_k 8.87
delta_h 0 kJ
-gamma 0 0
Id: 5409555
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
H+ + Butylamine = H(Butylamine)+
log_k 10.64
delta_h -58.2831 kJ
-gamma 0 0
Id: 3309561
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + Butylamine + 2H+ = Hg(Butylamine)+2 + 2H2O
log_k 14.84
delta_h 0 kJ
-gamma 0 0
Id: 3619561
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + 2Butylamine + 2H+ = Hg(Butylamine)2+2 + 2H2O
log_k 24.24
delta_h 0 kJ
-gamma 0 0
Id: 3619562
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + 3Butylamine + 2H+ = Hg(Butylamine)3+2 + 2H2O
log_k 25.1
delta_h 0 kJ
-gamma 0 0
Id: 3619563
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + 4Butylamine + 2H+ = Hg(Butylamine)4+2 + 2H2O
log_k 26.1
delta_h 0 kJ
-gamma 0 0
Id: 3619564
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + Butylamine = Ag(Butylamine)+
log_k 3.42
delta_h -16.736 kJ
-gamma 0 0
Id: 209561

log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + 2Butylamine = Ag(Butylamine)2+
log_k 7.47
delta_h -52.7184 kJ
-gamma 0 0
Id: 209562
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
H+ + Methylamine = H(Methylamine)+
log_k 10.64
delta_h -55.2288 kJ
-gamma 0 0
Id: 3309581
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Methylamine = Cd(Methylamine)+2
log_k 2.75
delta_h 0 kJ
-gamma 0 0
Id: 1609581
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + 2Methylamine = Cd(Methylamine)2+2
log_k 4.81
delta_h -29.288 kJ
-gamma 0 0
Id: 1609582
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + 3Methylamine = Cd(Methylamine)3+2
log_k 5.94
delta_h 0 kJ
-gamma 0 0
Id: 1609583
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + 4Methylamine = Cd(Methylamine)4+2
log_k 6.55
delta_h -58.576 kJ
-gamma 0 0
Id: 1609584
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + Methylamine + 2H+ = Hg(Methylamine)+2 + 2H2O
log_k 14.76
delta_h 0 kJ

-gamma 0 0
Id: 3619581
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + 2Methylamine + 2H+ = Hg(Methylamine)2+2 + 2H2O
log_k 23.96
delta_h 0 kJ
-gamma 0 0
Id: 3619582
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + 3Methylamine + 2H+ = Hg(Methylamine)3+2 + 2H2O
log_k 24.3
delta_h 0 kJ
-gamma 0 0
Id: 3619583
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + 4Methylamine + 2H+ = Hg(Methylamine)4+2 + 2H2O
log_k 24.6
delta_h 0 kJ
-gamma 0 0
Id: 3619584
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Methylamine = Cu(Methylamine)+2
log_k 4.11
delta_h 0 kJ
-gamma 0 0
Id: 2319581
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 2Methylamine = Cu(Methylamine)2+2
log_k 7.51
delta_h 0 kJ
-gamma 0 0
Id: 2319582
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 3Methylamine = Cu(Methylamine)3+2
log_k 10.21
delta_h 0 kJ
-gamma 0 0
Id: 2319583
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 4Methylamine = Cu(Methylamine)4+2

log_k 12.08
delta_h 0 kJ
-gamma 0 0
Id: 2319584
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + Methylamine = Ag(Methylamine)+
log_k 3.07
delta_h -12.552 kJ
-gamma 0 0
Id: 209581
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + 2Methylamine = Ag(Methylamine)2+
log_k 6.89
delta_h -48.9528 kJ
-gamma 0 0
Id: 209582
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Methylamine = Ni(Methylamine)+2
log_k 2.23
delta_h 0 kJ
-gamma 0 0
Id: 5409581
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
H+ + Dimethylamine = H(Dimethylamine)+
log_k 10.774
delta_h -50.208 kJ
-gamma 0 0
Id: 3309591
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + 2Dimethylamine = Ag(Dimethylamine)2+
log_k 5.37
delta_h -40.5848 kJ
-gamma 0 0
Id: 209591
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Dimethylamine = Ni(Dimethylamine)+2
log_k 1.47
delta_h 0 kJ
-gamma 0 0
Id: 5409591
log K source: NIST46.2
Delta H source: NIST46.2

#T and ionic strength:
H+ + Hexylamine = H(Hexylamine)+
log_k 10.63
delta_h -58.576 kJ
-gamma 0 0
Id: 3309611
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + Hexylamine = Ag(Hexylamine)+
log_k 3.54
delta_h -25.104 kJ
-gamma 0 0
Id: 209611
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + 2Hexylamine = Ag(Hexylamine)2+
log_k 7.55
delta_h -53.1368 kJ
-gamma 0 0
Id: 209612
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
H+ + Ethylenediamine = H(Ethylenediamine)+
log_k 9.928
delta_h -49.7896 kJ
-gamma 0 0
Id: 3309631
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
2H+ + Ethylenediamine = H2(Ethylenediamine)+2
log_k 16.776
delta_h -95.3952 kJ
-gamma 0 0
Id: 3309632
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Pb+2 + Ethylenediamine = Pb(Ethylenediamine)+2
log_k 5.04
delta_h 0 kJ
-gamma 0 0
Id: 6009631
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Pb+2 + 2Ethylenediamine = Pb(Ethylenediamine)2+2
log_k 8.5
delta_h 0 kJ
-gamma 0 0
Id: 6009632

log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Ethylenediamine = Zn(Ethylenediamine)+2
log_k 5.66
delta_h -29.288 kJ
-gamma 0 0
Id: 9509631
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + 2Ethylenediamine = Zn(Ethylenediamine)2+2
log_k 10.6
delta_h -48.116 kJ
-gamma 0 0
Id: 9509632
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + 3Ethylenediamine = Zn(Ethylenediamine)3+2
log_k 13.9
delta_h -71.5464 kJ
-gamma 0 0
Id: 9509633
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Ethylenediamine = Cd(Ethylenediamine)+2
log_k 5.41
delta_h -28.4512 kJ
-gamma 0 0
Id: 1609631
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + 2Ethylenediamine = Cd(Ethylenediamine)2+2
log_k 9.9
delta_h -55.6472 kJ
-gamma 0 0
Id: 1609632
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + 3Ethylenediamine = Cd(Ethylenediamine)3+2
log_k 11.6
delta_h -82.4248 kJ
-gamma 0 0
Id: 1609633
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + Ethylenediamine + 2H+ = Hg(Ethylenediamine)+2 + 2H2O
log_k 20.4
delta_h 0 kJ

-gamma 0 0
Id: 3619631
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + 2Ethylenediamine + 2H+ = Hg(Ethylenediamine)2+2 + 2H2O
log_k 29.3
delta_h -173.218 kJ
-gamma 0 0
Id: 3619632
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + 2Ethylenediamine + 3H+ = HgH(Ethylenediamine)2+3 + 2H2O
log_k 34.7
delta_h 0 kJ
-gamma 0 0
Id: 3619633
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+ + 2Ethylenediamine = Cu(Ethylenediamine)2+
log_k 11.2
delta_h 0 kJ
-gamma 0 0
Id: 2309631
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Ethylenediamine = Cu(Ethylenediamine)+2
log_k 10.5
delta_h -52.7184 kJ
-gamma 0 0
Id: 2319631
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 2Ethylenediamine = Cu(Ethylenediamine)2+2
log_k 19.6
delta_h -105.437 kJ
-gamma 0 0
Id: 2319632
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + Ethylenediamine = Ag(Ethylenediamine)+
log_k 4.6
delta_h -48.9528 kJ
-gamma 0 0
Id: 209631
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + 2Ethylenediamine = Ag(Ethylenediamine)2+

log_k 7.5
delta_h -52.3 kJ
-gamma 0 0
Id: 209632
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + Ethylenediamine + H+ = AgH(Ethylenediamine)+2
log_k 11.99
delta_h -75.312 kJ
-gamma 0 0
Id: 209633
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
2Ag+ + Ethylenediamine = Ag2(Ethylenediamine)+2
log_k 6.5
delta_h 0 kJ
-gamma 0 0
Id: 209634
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
2Ag+ + 2Ethylenediamine = Ag2(Ethylenediamine)2+2
log_k 12.7
delta_h -97.0688 kJ
-gamma 0 0
Id: 209635
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + 2Ethylenediamine + 2H+ = Ag(HEthylenediamine)2+3
log_k 24
delta_h -150.206 kJ
-gamma 0 0
Id: 209636
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + 2Ethylenediamine + H+ = AgH(Ethylenediamine)2+2
log_k 8.4
delta_h -47.6976 kJ
-gamma 0 0
Id: 209637
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Ethylenediamine = Ni(Ethylenediamine)+2
log_k 7.32
delta_h -37.656 kJ
-gamma 0 0
Id: 5409631
log K source: NIST46.2
Delta H source: NIST46.2

#T and ionic strength:
Ni+2 + 2Ethylenediamine = Ni(Ethylenediamine)2+2
log_k 13.5
delta_h -76.5672 kJ
-gamma 0 0
Id: 5409632
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + 3Ethylenediamine = Ni(Ethylenediamine)3+2
log_k 17.6
delta_h -117.152 kJ
-gamma 0 0
Id: 5409633
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Co+2 + Ethylenediamine = Co(Ethylenediamine)+2
log_k 5.5
delta_h -28 kJ
-gamma 0 0
Id: 2009631
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Co+2 + 2Ethylenediamine = Co(Ethylenediamine)2+2
log_k 10.1
delta_h -58.5 kJ
-gamma 0 0
Id: 2009632
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Co+2 + 3Ethylenediamine = Co(Ethylenediamine)3+2
log_k 13.2
delta_h -92.8 kJ
-gamma 0 0
Id: 2009633
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Co+3 + 2Ethylenediamine = Co(Ethylenediamine)2+3
log_k 34.7
delta_h 0 kJ
-gamma 0 0
Id: 2019631
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 1.00 25.0
Co+3 + 3Ethylenediamine = Co(Ethylenediamine)3+3
log_k 48.69
delta_h 0 kJ
-gamma 0 0
Id: 2019632

log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 1.50 30.0
Fe+2 + Ethylenediamine = Fe(Ethylenediamine)+2
log_k 4.26
delta_h 0 kJ
-gamma 0 0
Id: 2809631
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+2 + 2Ethylenediamine = Fe(Ethylenediamine)2+2
log_k 7.73
delta_h 0 kJ
-gamma 0 0
Id: 2809632
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+2 + 3Ethylenediamine = Fe(Ethylenediamine)3+2
log_k 10.17
delta_h 0 kJ
-gamma 0 0
Id: 2809633
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mn+2 + Ethylenediamine = Mn(Ethylenediamine)+2
log_k 2.74
delta_h -11.7152 kJ
-gamma 0 0
Id: 4709631
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mn+2 + 2Ethylenediamine = Mn(Ethylenediamine)2+2
log_k 4.8
delta_h -25.104 kJ
-gamma 0 0
Id: 4709632
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cr(OH)2+ + 2Ethylenediamine + 2H+ = Cr(Ethylenediamine)2+3 + 2H2O
log_k 22.57
delta_h 0 kJ
-gamma 0 0
Id: 2119631
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cr(OH)2+ + 3Ethylenediamine + 2H+ = Cr(Ethylenediamine)3+3 + 2H2O
log_k 29
delta_h 0 kJ

-gamma 0 0
Id: 2119632
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mg+2 + Ethylenediamine = Mg(Ethylenediamine)+2
log_k 0.37
delta_h 0 kJ
-gamma 0 0
Id: 4609631
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Ethylenediamine = Ca(Ethylenediamine)+2
log_k 0.11
delta_h 0 kJ
-gamma 0 0
Id: 1509631
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
H+ + Propylamine = H(Propylamine)+
log_k 10.566
delta_h -57.53 kJ
-gamma 0 0
Id: 3309641
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Propylamine = Zn(Propylamine)+2
log_k 2.42
delta_h 0 kJ
-gamma 0 0
Id: 9509641
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Zn+2 + 2Propylamine = Zn(Propylamine)2+2
log_k 4.85
delta_h 0 kJ
-gamma 0 0
Id: 9509642
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Zn+2 + 3Propylamine = Zn(Propylamine)3+2
log_k 7.38
delta_h 0 kJ
-gamma 0 0
Id: 9509643
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Zn+2 + 4Propylamine = Zn(Propylamine)4+2

log_k 9.49
delta_h 0 kJ
-gamma 0 0
Id: 9509644
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + Propylamine = Cd(Propylamine)+2
log_k 2.62
delta_h 0 kJ
-gamma 0 0
Id: 1609641
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + 2Propylamine = Cd(Propylamine)2+2
log_k 4.64
delta_h 0 kJ
-gamma 0 0
Id: 1609642
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + 3Propylamine = Cd(Propylamine)3+2
log_k 6.03
delta_h 0 kJ
-gamma 0 0
Id: 1609643
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Ag+ + Propylamine = Ag(Propylamine)+
log_k 3.45
delta_h -12.552 kJ
-gamma 0 0
Id: 209641
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + 2Propylamine = Ag(Propylamine)2+
log_k 7.44
delta_h -53.1368 kJ
-gamma 0 0
Id: 209642
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Propylamine = Ni(Propylamine)+2
log_k 2.81
delta_h 0 kJ
-gamma 0 0
Id: 5409641
log K source: SCD2.62
Delta H source: SCD2.62

#T and ionic strength:
Ni+2 + 2Propylamine = Ni(Propylamine)2+2
log_k 5.02
delta_h 0 kJ
-gamma 0 0
Id: 5409642
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Ni+2 + 3Propylamine = Ni(Propylamine)3+2
log_k 6.79
delta_h 0 kJ
-gamma 0 0
Id: 5409643
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Ni+2 + 4Propylamine = Ni(Propylamine)4+2
log_k 8.31
delta_h 0 kJ
-gamma 0 0
Id: 5409644
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
H+ + Isopropylamine = H(Isopropylamine)+
log_k 10.67
delta_h -58.3668 kJ
-gamma 0 0
Id: 3309651
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Isopropylamine = Zn(Isopropylamine)+2
log_k 2.37
delta_h 0 kJ
-gamma 0 0
Id: 9509651
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Zn+2 + 2Isopropylamine = Zn(Isopropylamine)2+2
log_k 4.67
delta_h 0 kJ
-gamma 0 0
Id: 9509652
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Zn+2 + 3Isopropylamine = Zn(Isopropylamine)3+2
log_k 7.14
delta_h 0 kJ
-gamma 0 0
Id: 9509653

log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Zn+2 + 4Isopropylamine = Zn(Isopropylamine)4+2
log_k 9.44
delta_h 0 kJ
-gamma 0 0
Id: 9509654
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + Isopropylamine = Cd(Isopropylamine)+2
log_k 2.55
delta_h 0 kJ
-gamma 0 0
Id: 1609651
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + 2Isopropylamine = Cd(Isopropylamine)2+2
log_k 4.57
delta_h 0 kJ
-gamma 0 0
Id: 1609652
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + 3Isopropylamine = Cd(Isopropylamine)3+2
log_k 6.07
delta_h 0 kJ
-gamma 0 0
Id: 1609653
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + 4Isopropylamine = Cd(Isopropylamine)4+2
log_k 6.9
delta_h 0 kJ
-gamma 0 0
Id: 1609654
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Hg(OH)2 + Isopropylamine + 2H+ = Hg(Isopropylamine)+2 + 2H2O
log_k 14.85
delta_h 0 kJ
-gamma 0 0
Id: 3619651
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + 2Isopropylamine + 2H+ = Hg(Isopropylamine)2+2 + 2H2O
log_k 24.37
delta_h 0 kJ

-gamma 0 0
Id: 3619652
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + Isopropylamine = Ag(Isopropylamine)+
log_k 3.67
delta_h -23.8488 kJ
-gamma 0 0
Id: 209651
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + 2Isopropylamine = Ag(Isopropylamine)2+
log_k 7.77
delta_h -59.8312 kJ
-gamma 0 0
Id: 209652
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Isopropylamine = Ni(Isopropylamine)+2
log_k 2.71
delta_h 0 kJ
-gamma 0 0
Id: 5409651
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Ni+2 + 2Isopropylamine = Ni(Isopropylamine)2+2
log_k 4.86
delta_h 0 kJ
-gamma 0 0
Id: 5409652
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Ni+2 + 3Isopropylamine = Ni(Isopropylamine)3+2
log_k 6.57
delta_h 0 kJ
-gamma 0 0
Id: 5409653
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Ni+2 + 4Isopropylamine = Ni(Isopropylamine)4+2
log_k 7.83
delta_h 0 kJ
-gamma 0 0
Id: 5409654
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Ni+2 + 5Isopropylamine = Ni(Isopropylamine)5+2

log_k 8.43
delta_h 0 kJ
-gamma 0 0
Id: 5409655
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
H+ + Trimethylamine = H(Trimethylamine)+
log_k 9.8
delta_h -36.8192 kJ
-gamma 0 0
Id: 3309661
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + Trimethylamine = Ag(Trimethylamine)+
log_k 1.701
delta_h 0 kJ
-gamma 0 0
Id: 209661
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
H+ + Citrate-3 = H(Citrate)-2
log_k 6.396
delta_h 3.3472 kJ
-gamma 0 0
Id: 3309671
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
2H+ + Citrate-3 = H2(Citrate)-
log_k 11.157
delta_h 1.297 kJ
-gamma 0 0
Id: 3309672
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
3H+ + Citrate-3 = H3(Citrate)
log_k 14.285
delta_h -2.7614 kJ
-gamma 0 0
Id: 3309673
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Pb+2 + Citrate-3 = Pb(Citrate)-
log_k 7.27
delta_h 0 kJ
-gamma 0 0
Id: 6009671
log K source: SCD2.62
Delta H source: SCD2.62

#T and ionic strength:
Pb+2 + 2Citrate-3 = Pb(Citrate)2-4
log_k 6.53
delta_h 0 kJ
-gamma 0 0
Id: 6009672
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Al+3 + Citrate-3 = Al(Citrate)
log_k 9.97
delta_h 0 kJ
-gamma 0 0
Id: 309671
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Al+3 + 2Citrate-3 = Al(Citrate)2-3
log_k 14.8
delta_h 0 kJ
-gamma 0 0
Id: 309672
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Al+3 + Citrate-3 + H+ = AlH(Citrate)+
log_k 12.85
delta_h 0 kJ
-gamma 0 0
Id: 309673
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Tl+ + Citrate-3 = Tl(Citrate)-2
log_k 1.48
delta_h 0 kJ
-gamma 0 0
Id: 8709671
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Citrate-3 = Zn(Citrate)-
log_k 6.21
delta_h 8.368 kJ
-gamma 0 0
Id: 9509671
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + 2Citrate-3 = Zn(Citrate)2-4
log_k 7.4
delta_h 25.104 kJ
-gamma 0 0
Id: 9509672

log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Citrate-3 + H+ = ZnH(Citrate)
log_k 10.2
delta_h 3.3472 kJ
-gamma 0 0
Id: 9509673
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Citrate-3 + 2H+ = ZnH2(Citrate)+
log_k 12.84
delta_h 0 kJ
-gamma 0 0
Id: 9509674
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + Citrate-3 = Cd(Citrate)-
log_k 4.98
delta_h 8.368 kJ
-gamma 0 0
Id: 1609671
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Citrate-3 + H+ = CdH(Citrate)
log_k 9.44
delta_h 3.3472 kJ
-gamma 0 0
Id: 1609672
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Citrate-3 + 2H+ = CdH2(Citrate)+
log_k 12.9
delta_h 0 kJ
-gamma 0 0
Id: 1609673
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + 2Citrate-3 = Cd(Citrate)2-4
log_k 5.9
delta_h 20.92 kJ
-gamma 0 0
Id: 1609674
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + Citrate-3 + 2H+ = Hg(Citrate)- + 2H2O
log_k 18.3
delta_h 0 kJ

-gamma 0 0
Id: 3619671
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Citrate-3 = Cu(Citrate)-
log_k 7.57
delta_h 0 kJ
-gamma 0 0
Id: 2319671
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cu+2 + 2Citrate-3 = Cu(Citrate)2-4
log_k 8.9
delta_h 0 kJ
-gamma 0 0
Id: 2319672
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cu+2 + Citrate-3 + H+ = CuH(Citrate)
log_k 10.87
delta_h 11.7152 kJ
-gamma 0 0
Id: 2319673
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Citrate-3 + 2H+ = CuH2(Citrate)+
log_k 13.23
delta_h 0 kJ
-gamma 0 0
Id: 2319674
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
2Cu+2 + 2Citrate-3 = Cu2(Citrate)2-2
log_k 16.9
delta_h 41.84 kJ
-gamma 0 0
Id: 2319675
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Citrate-3 = Ni(Citrate)-
log_k 6.59
delta_h 16.736 kJ
-gamma 0 0
Id: 5409671
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Citrate-3 + H+ = NiH(Citrate)

log_k 10.5
delta_h 15.8992 kJ
-gamma 0 0
Id: 5409672
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Citrate-3 + 2H+ = NiH2(Citrate)+
log_k 13.3
delta_h 0 kJ
-gamma 0 0
Id: 5409673
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + 2Citrate-3 = Ni(Citrate)2-4
log_k 8.77
delta_h 12.552 kJ
-gamma 0 0
Id: 5409674
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + 2Citrate-3 + H+ = NiH(Citrate)2-3
log_k 14.9
delta_h 32.6352 kJ
-gamma 0 0
Id: 5409675
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Co+2 + Citrate-3 = Co(Citrate)-
log_k 6.1867
delta_h 0 kJ
-gamma 0 0
Id: 2009671
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Co+2 + H+ + Citrate-3 = CoHCitrate
log_k 10.4438
delta_h 0 kJ
-gamma 0 0
Id: 2009672
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Co+2 + 2H+ + Citrate-3 = CoH2Citrate+
log_k 12.7859
delta_h 0 kJ
-gamma 0 0
Id: 2009673
log K source: NIST46.4
Delta H source: NIST46.2

#T and ionic strength: 0.10 20.0
Fe+2 + Citrate-3 = Fe(Citrate)-
log_k 6.1
delta_h 0 kJ
-gamma 0 0
Id: 2809671
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+2 + Citrate-3 + H+ = FeH(Citrate)
log_k 10.2
delta_h 0 kJ
-gamma 0 0
Id: 2809672
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+3 + Citrate-3 = Fe(Citrate)
log_k 13.1
delta_h 0 kJ
-gamma 0 0
Id: 2819671
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+3 + Citrate-3 + H+ = FeH(Citrate)+
log_k 14.4
delta_h 0 kJ
-gamma 0 0
Id: 2819672
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mn+2 + Citrate-3 = Mn(Citrate)-
log_k 4.28
delta_h 0 kJ
-gamma 0 0
Id: 4709671
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Mn+2 + Citrate-3 + H+ = MnH(Citrate)
log_k 9.6
delta_h 0 kJ
-gamma 0 0
Id: 4709672
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Be+2 + Citrate-3 = Be(Citrate)-
log_k 5.534
delta_h 0 kJ
-gamma 0 0
Id: 1109671

```
# log K source: NIST46.4
# Delta H source: NIST46.2
#T and ionic strength: 1.00 25.0
Be+2 + H+ + Citrate-3 = BeH(Citrate)
log_k 9.442
delta_h 0 kJ
-gamma 0 0
# Id: 1109672
# log K source: NIST46.4
# Delta H source: NIST46.2
#T and ionic strength: 1.00 25.0
Ca+2 + Citrate-3 = Ca(Citrate)-
log_k 4.87
delta_h -8.368 kJ
-gamma 0 0
# Id: 1509671
# log K source: NIST46.2
# Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Citrate-3 + H+ = CaH(Citrate)
log_k 9.26
delta_h -0.8368 kJ
-gamma 0 0
# Id: 1509672
# log K source: NIST46.2
# Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Citrate-3 + 2H+ = CaH2(Citrate)+
log_k 12.257
delta_h 0 kJ
-gamma 0 0
# Id: 1509673
# log K source: SCD2.62
# Delta H source: SCD2.62
#T and ionic strength:
Mg+2 + Citrate-3 = Mg(Citrate)-
log_k 4.89
delta_h 8.368 kJ
-gamma 0 0
# Id: 4609671
# log K source: NIST46.2
# Delta H source: NIST46.2
#T and ionic strength:
Mg+2 + Citrate-3 + H+ = MgH(Citrate)
log_k 8.91
delta_h 3.3472 kJ
-gamma 0 0
# Id: 4609672
# log K source: NIST46.2
# Delta H source: NIST46.2
#T and ionic strength:
Mg+2 + Citrate-3 + 2H+ = MgH2(Citrate)+
log_k 12.2
delta_h 0 kJ
```

-gamma 0 0
Id: 4609673
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Sr+2 + Citrate-3 = Sr(Citrate)-
log_k 4.3367
delta_h 0 kJ
-gamma 0 0
Id: 8009671
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Sr+2 + H+ + Citrate-3 = SrH(Citrate)
log_k 8.9738
delta_h 0 kJ
-gamma 0 0
Id: 8009672
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Sr+2 + 2H+ + Citrate-3 = SrH2(Citrate)+
log_k 12.4859
delta_h 0 kJ
-gamma 0 0
Id: 8009673
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Ba+2 + Citrate-3 = Ba(Citrate)-
log_k 4.1
delta_h 0 kJ
-gamma 0 0
Id: 1009671
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ba+2 + Citrate-3 + H+ = BaH(Citrate)
log_k 8.74
delta_h 0 kJ
-gamma 0 0
Id: 1009672
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ba+2 + Citrate-3 + 2H+ = BaH2(Citrate)+
log_k 12.3
delta_h 0 kJ
-gamma 0 0
Id: 1009673
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Na+ + Citrate-3 = Na(Citrate)-2

log_k 1.03
delta_h -2.8033 kJ
-gamma 0 0
Id: 5009671
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
2Na+ + Citrate-3 = Na2(Citrate)-
log_k 1.5
delta_h -5.1045 kJ
-gamma 0 0
Id: 5009672
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Na+ + Citrate-3 + H+ = NaH(Citrate)-
log_k 6.45
delta_h -3.5982 kJ
-gamma 0 0
Id: 5009673
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
K+ + Citrate-3 = K(Citrate)-2
log_k 1.1
delta_h 5.4392 kJ
-gamma 0 0
Id: 4109671
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
H+ + Nta-3 = H(Nta)-2
log_k 10.278
delta_h -18.828 kJ
-gamma 0 0
Id: 3309681
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
2H+ + Nta-3 = H2(Nta)-
log_k 13.22
delta_h -17.9912 kJ
-gamma 0 0
Id: 3309682
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
3H+ + Nta-3 = H3(Nta)
log_k 15.22
delta_h -16.3176 kJ
-gamma 0 0
Id: 3309683
log K source: NIST46.2
Delta H source: NIST46.2

#T and ionic strength:
4H+ + Nta-3 = H4(Nta)+
log_k 16.22
delta_h -16.3176 kJ
-gamma 0 0
Id: 3309684
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Pb+2 + Nta-3 = Pb(Nta)-
log_k 12.7
delta_h -15.8992 kJ
-gamma 0 0
Id: 6009681
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Pb+2 + Nta-3 + H+ = PbH(Nta)
log_k 15.3
delta_h 0 kJ
-gamma 0 0
Id: 6009682
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Al+3 + Nta-3 = Al(Nta)
log_k 13.3
delta_h 0 kJ
-gamma 0 0
Id: 309681
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Al+3 + Nta-3 + H+ = AlH(Nta)+
log_k 15.2
delta_h 0 kJ
-gamma 0 0
Id: 309682
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Al+3 + Nta-3 + H2O = AlOH(Nta)- + H+
log_k 8
delta_h 0 kJ
-gamma 0 0
Id: 309683
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Tl+ + Nta-3 = Tl(Nta)-2
log_k 5.39
delta_h 0 kJ
-gamma 0 0
Id: 8709681

log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Nta-3 = Zn(Nta)-
log_k 11.95
delta_h -3.7656 kJ
-gamma 0 0
Id: 9509681
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + 2Nta-3 = Zn(Nta)2-4
log_k 14.88
delta_h -15.0624 kJ
-gamma 0 0
Id: 9509682
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Nta-3 + H2O = ZnOH(Nta)-2 + H+
log_k 1.46
delta_h 46.4424 kJ
-gamma 0 0
Id: 9509683
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Nta-3 = Cd(Nta)-
log_k 11.07
delta_h -16.736 kJ
-gamma 0 0
Id: 1609681
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + 2Nta-3 = Cd(Nta)2-4
log_k 15.03
delta_h -38.0744 kJ
-gamma 0 0
Id: 1609682
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Nta-3 + H2O = CdOH(Nta)-2 + H+
log_k -0.61
delta_h 29.288 kJ
-gamma 0 0
Id: 1609683
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + Nta-3 + 2H+ = Hg(Nta)- + 2H2O
log_k 21.7
delta_h 0 kJ

-gamma 0 0
Id: 3619681
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Nta-3 = Cu(Nta)-
log_k 14.4
delta_h -7.9496 kJ
-gamma 0 0
Id: 2319681
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 2Nta-3 = Cu(Nta)2-4
log_k 18.1
delta_h -37.2376 kJ
-gamma 0 0
Id: 2319682
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Nta-3 + H+ = CuH(Nta)
log_k 16.2
delta_h 0 kJ
-gamma 0 0
Id: 2319683
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Nta-3 + H2O = CuOH(Nta)-2 + H+
log_k 4.8
delta_h 25.5224 kJ
-gamma 0 0
Id: 2319684
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + Nta-3 = Ag(Nta)-2
log_k 6
delta_h -26.3592 kJ
-gamma 0 0
Id: 209681
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Nta-3 = Ni(Nta)-
log_k 12.79
delta_h -10.0416 kJ
-gamma 0 0
Id: 5409681
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + 2Nta-3 = Ni(Nta)2-4

log_k 16.96
delta_h -32.6352 kJ
-gamma 0 0
Id: 5409682
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Nta-3 + H2O = NiOH(Nta)-2 + H+
log_k 1.5
delta_h 15.0624 kJ
-gamma 0 0
Id: 5409683
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Co+2 + Nta-3 = Co(Nta)-
log_k 11.6667
delta_h -0.4 kJ
-gamma 0 0
Id: 2009681
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Co+2 + 2Nta-3 = Co(Nta)2-4
log_k 14.9734
delta_h -20 kJ
-gamma 0 0
Id: 2009682
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Co+2 + Nta-3 + H2O = CoOH(Nta)-2 + H+
log_k 0.4378
delta_h 45.6 kJ
-gamma 0 0
Id: 2009683
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Fe+2 + Nta-3 = Fe(Nta)-
log_k 10.19
delta_h 0 kJ
-gamma 0 0
Id: 2809681
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+2 + 2Nta-3 = Fe(Nta)2-4
log_k 12.62
delta_h 0 kJ
-gamma 0 0
Id: 2809682
log K source: NIST46.2
Delta H source: NIST46.2

#T and ionic strength:
Fe+2 + Nta-3 + H+ = FeH(Nta)
log_k 12.29
delta_h 0 kJ
-gamma 0 0
Id: 2809683
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+2 + Nta-3 + H2O = FeOH(Nta)-2 + H+
log_k -1.06
delta_h 0 kJ
-gamma 0 0
Id: 2809684
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+3 + Nta-3 = Fe(Nta)
log_k 17.8
delta_h 13.3888 kJ
-gamma 0 0
Id: 2819681
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+3 + 2Nta-3 = Fe(Nta)2-3
log_k 25.9
delta_h 0 kJ
-gamma 0 0
Id: 2819682
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+3 + Nta-3 + H2O = FeOH(Nta)- + H+
log_k 13.23
delta_h 0 kJ
-gamma 0 0
Id: 2819683
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mn+2 + Nta-3 = Mn(Nta)-
log_k 8.573
delta_h 5.8576 kJ
-gamma 0 0
Id: 4709681
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mn+2 + 2Nta-3 = Mn(Nta)2-4
log_k 11.58
delta_h -17.1544 kJ
-gamma 0 0
Id: 4709682

log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cr(OH)2+ + Nta-3 + 2H+ = Cr(Nta) + 2H2O
log_k 21.2
delta_h 0 kJ
-gamma 0 0
Id: 2119681
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cr(OH)2+ + 2Nta-3 + 2H+ = Cr(Nta)2-3 + 2H2O
log_k 29.5
delta_h 0 kJ
-gamma 0 0
Id: 2119682
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
MoO4-2 + 2H+ + Nta-3 = MoO3(Nta)-3 + H2O
log_k 19.5434
delta_h -69 kJ
-gamma 0 0
Id: 4809681
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
MoO4-2 + 3H+ + Nta-3 = MoO3H(Nta)-2 + H2O
log_k 23.3954
delta_h -71 kJ
-gamma 0 0
Id: 4809682
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 1.00 25.0
MoO4-2 + 4H+ + Nta-3 = MoO3H2(Nta)- + H2O
log_k 25.3534
delta_h -71 kJ
-gamma 0 0
Id: 4809683
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 1.00 25.0
Be+2 + Nta-3 = Be(Nta)-
log_k 9.0767
delta_h 25 kJ
-gamma 0 0
Id: 1109681
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Mg+2 + Nta-3 = Mg(Nta)-
log_k 6.5
delta_h 17.9912 kJ

-gamma 0 0
Id: 4609681
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Nta-3 = Ca(Nta)-
log_k 7.608
delta_h -5.6902 kJ
-gamma 0 0
Id: 1509681
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + 2Nta-3 = Ca(Nta)2-4
log_k 8.81
delta_h -32.6352 kJ
-gamma 0 0
Id: 1509682
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Sr+2 + Nta-3 = Sr(Nta)-
log_k 6.2767
delta_h -2.2 kJ
-gamma 0 0
Id: 8009681
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Ba+2 + Nta-3 = Ba(Nta)-
log_k 5.875
delta_h -6.025 kJ
-gamma 0 0
Id: 1009681
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
H+ + Edta-4 = H(Edta)-3
log_k 10.948
delta_h -23.4304 kJ
-gamma 0 0
Id: 3309691
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
2H+ + Edta-4 = H2(Edta)-2
log_k 17.221
delta_h -41.0032 kJ
-gamma 0 0
Id: 3309692
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
3H+ + Edta-4 = H3(Edta)-

log_k 20.34
delta_h -35.564 kJ
-gamma 0 0
Id: 3309693
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
4H+ + Edta-4 = H4(Edta)
log_k 22.5
delta_h -34.3088 kJ
-gamma 0 0
Id: 3309694
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
5H+ + Edta-4 = H5(Edta)+
log_k 24
delta_h -32.2168 kJ
-gamma 0 0
Id: 3309695
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Sn(OH)2 + 2H+ + Edta-4 = Sn(Edta)-2 + 2H2O
log_k 27.026
delta_h 0 kJ
-gamma 0 0
Id: 7909691
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 1.00 20.0
Sn(OH)2 + 3H+ + Edta-4 = SnH(Edta)- + 2H2O
log_k 29.934
delta_h 0 kJ
-gamma 0 0
Id: 7909692
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 1.00 20.0
Sn(OH)2 + 4H+ + Edta-4 = SnH2(Edta) + 2H2O
log_k 31.638
delta_h 0 kJ
-gamma 0 0
Id: 7909693
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 1.00 20.0
Pb+2 + Edta-4 = Pb(Edta)-2
log_k 19.8
delta_h -54.8104 kJ
-gamma 0 0
Id: 6009691
log K source: NIST46.2
Delta H source: NIST46.2

#T and ionic strength:
Pb+2 + Edta-4 + H+ = PbH(Edta)-
log_k 23
delta_h 0 kJ
-gamma 0 0
Id: 6009692
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Pb+2 + Edta-4 + 2H+ = PbH2(Edta)
log_k 24.9
delta_h 0 kJ
-gamma 0 0
Id: 6009693
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Al+3 + Edta-4 = Al(Edta)-
log_k 19.1
delta_h 52.7184 kJ
-gamma 0 0
Id: 309690
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Al+3 + Edta-4 + H+ = AlH(Edta)
log_k 21.8
delta_h 36.4008 kJ
-gamma 0 0
Id: 309691
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Al+3 + Edta-4 + H2O = AlOH(Edta)-2 + H+
log_k 12.8
delta_h 73.6384 kJ
-gamma 0 0
Id: 309692
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Tl+ + Edta-4 = Tl(Edta)-3
log_k 7.27
delta_h -43.5136 kJ
-gamma 0 0
Id: 8709691
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Tl+ + Edta-4 + H+ = TlH(Edta)-2
log_k 13.68
delta_h 0 kJ
-gamma 0 0
Id: 8709692

log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Edta-4 = Zn(Edta)-2
log_k 18
delta_h -19.2464 kJ
-gamma 0 0
Id: 9509691
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Edta-4 + H+ = ZnH(Edta)-
log_k 21.4
delta_h -28.4512 kJ
-gamma 0 0
Id: 9509692
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Edta-4 + H2O = ZnOH(Edta)-3 + H+
log_k 5.8
delta_h 0 kJ
-gamma 0 0
Id: 9509693
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Edta-4 = Cd(Edta)-2
log_k 18.2
delta_h -38.0744 kJ
-gamma 0 0
Id: 1609691
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Edta-4 + H+ = CdH(Edta)-
log_k 21.5
delta_h -39.748 kJ
-gamma 0 0
Id: 1609692
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + Edta-4 + 2H+ = Hg(Edta)-2 + 2H2O
log_k 29.3
delta_h -125.102 kJ
-gamma 0 0
Id: 3619691
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + Edta-4 + 3H+ = HgH(Edta)- + 2H2O
log_k 32.9
delta_h -128.449 kJ

-gamma 0 0
Id: 3619692
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Edta-4 = Cu(Edta)-2
log_k 20.5
delta_h -34.7272 kJ
-gamma 0 0
Id: 2319691
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Edta-4 + H+ = CuH(Edta)-
log_k 24
delta_h -43.0952 kJ
-gamma 0 0
Id: 2319692
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Edta-4 + 2H+ = CuH2(Edta)
log_k 26.2
delta_h 0 kJ
-gamma 0 0
Id: 2319693
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Edta-4 + H2O = CuOH(Edta)-3 + H+
log_k 8.5
delta_h 0 kJ
-gamma 0 0
Id: 2319694
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + Edta-4 = Ag(Edta)-3
log_k 8.08
delta_h -31.38 kJ
-gamma 0 0
Id: 209691
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + Edta-4 + H+ = AgH(Edta)-2
log_k 15.21
delta_h 0 kJ
-gamma 0 0
Id: 209693
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Ni+2 + Edta-4 = Ni(Edta)-2

log_k 20.1
delta_h -30.9616 kJ
-gamma 0 0
Id: 5409691
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Edta-4 + H+ = NiH(Edta)-
log_k 23.6
delta_h -38.4928 kJ
-gamma 0 0
Id: 5409692
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Edta-4 + H2O = NiOH(Edta)-3 + H+
log_k 7.6
delta_h 0 kJ
-gamma 0 0
Id: 5409693
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Co+2 + Edta-4 = Co(Edta)-2
log_k 18.1657
delta_h -15 kJ
-gamma 0 0
Id: 2009691
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Co+2 + Edta-4 + H+ = CoH(Edta)-
log_k 21.5946
delta_h -22.9 kJ
-gamma 0 0
Id: 2009692
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Co+2 + Edta-4 + 2H+ = CoH2(Edta)
log_k 23.4986
delta_h 0 kJ
-gamma 0 0
Id: 2009693
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 1.00 25.0
Co+3 + Edta-4 = Co(Edta)-
log_k 43.9735
delta_h 0 kJ
-gamma 0 0
Id: 2019691
log K source: NIST46.4
Delta H source: NIST46.2

#T and ionic strength: 0.10 25.0
Co+3 + Edta-4 + H+ = CoH(Edta)
log_k 47.168
delta_h 0 kJ
-gamma 0 0
Id: 2019692
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 20.0
Fe+2 + Edta-4 = Fe(Edta)-2
log_k 16
delta_h -16.736 kJ
-gamma 0 0
Id: 2809690
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+2 + Edta-4 + H+ = FeH(Edta)-
log_k 19.06
delta_h -27.6144 kJ
-gamma 0 0
Id: 2809691
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+2 + Edta-4 + H2O = FeOH(Edta)-3 + H+
log_k 6.5
delta_h 0 kJ
-gamma 0 0
Id: 2809692
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Fe+2 + Edta-4 + 2H2O = Fe(OH)2(Edta)-4 + 2H+
log_k -4
delta_h 0 kJ
-gamma 0 0
Id: 2809693
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Fe+3 + Edta-4 = Fe(Edta)-
log_k 27.7
delta_h -11.2968 kJ
-gamma 0 0
Id: 2819690
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+3 + Edta-4 + H+ = FeH(Edta)
log_k 29.2
delta_h -11.7152 kJ
-gamma 0 0
Id: 2819691

log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+3 + Edta-4 + H2O = FeOH(Edta)-2 + H+
log_k 19.9
delta_h 0 kJ
-gamma 0 0
Id: 2819692
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+3 + Edta-4 + 2H2O = Fe(OH)2(Edta)-3 + 2H+
log_k 9.85
delta_h 0 kJ
-gamma 0 0
Id: 2819693
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Mn+2 + Edta-4 = Mn(Edta)-2
log_k 15.6
delta_h -19.2464 kJ
-gamma 0 0
Id: 4709691
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mn+2 + Edta-4 + H+ = MnH(Edta)-
log_k 19.1
delta_h -24.2672 kJ
-gamma 0 0
Id: 4709692
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cr+2 + Edta-4 = Cr(Edta)-2
log_k 15.3
delta_h 0 kJ
-gamma 0 0
Id: 2109691
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cr+2 + Edta-4 + H+ = CrH(Edta)-
log_k 19.1
delta_h 0 kJ
-gamma 0 0
Id: 2109692
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cr(OH)2+ + Edta-4 + 2H+ = Cr(Edta)- + 2H2O
log_k 35.5
delta_h 0 kJ

-gamma 0 0
Id: 2119691
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cr(OH)2+ + Edta-4 + 3H+ = CrH(Edta) + 2H2O
log_k 37.4
delta_h 0 kJ
-gamma 0 0
Id: 2119692
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cr(OH)2+ + Edta-4 + H+ = CrOH(Edta)-2 + H2O
log_k 27.7
delta_h 0 kJ
-gamma 0 0
Id: 2119693
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Be+2 + Edta-4 = Be(Edta)-2
log_k 11.4157
delta_h 41 kJ
-gamma 0 0
Id: 1109691
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Mg+2 + Edta-4 = Mg(Edta)-2
log_k 10.57
delta_h 13.8072 kJ
-gamma 0 0
Id: 4609690
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mg+2 + Edta-4 + H+ = MgH(Edta)-
log_k 14.97
delta_h 0 kJ
-gamma 0 0
Id: 4609691
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Edta-4 = Ca(Edta)-2
log_k 12.42
delta_h -25.5224 kJ
-gamma 0 0
Id: 1509690
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Edta-4 + H+ = CaH(Edta)-

log_k 15.9
delta_h 0 kJ
-gamma 0 0
Id: 1509691
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Sr+2 + Edta-4 = Sr(Edta)-2
log_k 10.4357
delta_h -17 kJ
-gamma 0 0
Id: 8009691
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Sr+2 + Edta-4 + H+ = SrH(Edta)-
log_k 14.7946
delta_h 0 kJ
-gamma 0 0
Id: 8009692
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 20.0
Ba+2 + Edta-4 = Ba(Edta)-2
log_k 7.72
delta_h -20.5016 kJ
-gamma 0 0
Id: 1009691
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Na+ + Edta-4 = Na(Edta)-3
log_k 2.7
delta_h -5.8576 kJ
-gamma 0 0
Id: 5009690
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
K+ + Edta-4 = K(Edta)-3
log_k 1.7
delta_h 0 kJ
-gamma 0 0
Id: 4109690
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
H+ + Propionate- = H(Propionate)
log_k 4.874
delta_h 0.66 kJ
-gamma 0 0
Id: 3309711
log K source: NIST46.4
Delta H source: NIST46.4

#T and ionic strength: 0.00 25.0
Pb+2 + Propionate- = Pb(Propionate)+
log_k 2.64
delta_h 0 kJ
-gamma 0 0
Id: 6009711
log K source: NIST46.4
Delta H source: SCD2.62
#T and ionic strength: 0.00 35.0
Pb+2 + 2Propionate- = Pb(Propionate)2
log_k 3.1765
delta_h 0 kJ
-gamma 0 0
Id: 6009712
log K source: NIST46.4
Delta H source: SCD2.62
#T and ionic strength: 2.00 25.0
Zn+2 + Propionate- = Zn(Propionate)+
log_k 1.4389
delta_h 0 kJ
-gamma 0 0
Id: 9509711
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Zn+2 + 2Propionate- = Zn(Propionate)2
log_k 1.842
delta_h 0 kJ
-gamma 0 0
Id: 9509712
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 1.00 25.0
Cd+2 + Propionate- = Cd(Propionate)+
log_k 1.598
delta_h 0 kJ
-gamma 0 0
Id: 1609711
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 1.00 25.0
Cd+2 + 2Propionate- = Cd(Propionate)2
log_k 2.472
delta_h 0 kJ
-gamma 0 0
Id: 1609712
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 1.00 25.0
Hg(OH)2 + 2H+ + Propionate- = Hg(Propionate)+ + 2H2O
log_k 10.594
delta_h 0 kJ
-gamma 0 0
Id: 3619711

log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 25.0
Cu+2 + Propionate- = Cu(Propionate)+
log_k 2.22
delta_h 4.1 kJ
-gamma 0 0
Id: 2319711
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Cu+2 + 2Propionate- = Cu(Propionate)2
log_k 3.5
delta_h 0 kJ
-gamma 0 0
Id: 2319712
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 25.0
Ni+2 + Propionate- = Ni(Propionate)+
log_k 0.908
delta_h 0 kJ
-gamma 0 0
Id: 5409711
log K source: NIST46.4
Delta H source: SCD2.62
#T and ionic strength: 1.00 25.0
Co+2 + Propionate- = Co(Propionate)+
log_k 0.671
delta_h 4.6 kJ
-gamma 0 0
Id: 2009711
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 2.00 25.0
Co+2 + 2Propionate- = Co(Propionate)2
log_k 0.5565
delta_h 16 kJ
-gamma 0 0
Id: 2009712
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 2.00 25.0
Fe+3 + Propionate- = Fe(Propionate)+2
log_k 4.012
delta_h 0 kJ
-gamma 0 0
Id: 2819711
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 1.00 20.0
Cr(OH)2+ + 2H+ + Propionate- = Cr(Propionate)+2 + 2H2O
log_k 15.0773
delta_h 0 kJ

-gamma 0 0
Id: 2119711
log K source: NIST46.4
Delta H source: SCD2.62
#T and ionic strength: 0.50 25.0
Cr(OH)2+ + 2H+ + 2Propionate- = Cr(Propionate)2+ + 2H2O
log_k 17.9563
delta_h 0 kJ
-gamma 0 0
Id: 2119712
log K source: NIST46.4
Delta H source: SCD2.62
#T and ionic strength: 0.50 25.0
Cr(OH)2+ + 2H+ + 3Propionate- = Cr(Propionate)3 + 2H2O
log_k 20.8858
delta_h 0 kJ
-gamma 0 0
Id: 2119713
log K source: NIST46.4
Delta H source: SCD2.62
#T and ionic strength: 0.50 25.0
Mg+2 + Propionate- = Mg(Propionate)+
log_k 0.9689
delta_h 4.2677 kJ
-gamma 0 0
Id: 4609710
log K source: NIST46.4
Delta H source: SCD2.62
#T and ionic strength: 0.10 25.0
Ca+2 + Propionate- = Ca(Propionate)+
log_k 0.9289
delta_h 3.3472 kJ
-gamma 0 0
Id: 1509710
log K source: NIST46.4
Delta H source: SCD2.62
#T and ionic strength: 0.10 25.0
Sr+2 + Propionate- = Sr(Propionate)+
log_k 0.8589
delta_h 0 kJ
-gamma 0 0
Id: 8009711
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Ba+2 + Propionate- = Ba(Propionate)+
log_k 0.7689
delta_h 0 kJ
-gamma 0 0
Id: 1009711
log K source: NIST46.4
Delta H source: SCD2.62
#T and ionic strength: 0.10 25.0
Ba+2 + 2Propionate- = Ba(Propionate)2

log_k 0.9834
delta_h 0 kJ
-gamma 0 0
Id: 1009712
log K source: NIST46.4
Delta H source: SCD2.62
#T and ionic strength: 0.10 25.0
H+ + Butyrate- = H(Butyrate)
log_k 4.819
delta_h 2.8 kJ
-gamma 0 0
Id: 3309721
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Pb+2 + Butyrate- = Pb(Butyrate)+
log_k 2.101
delta_h 0 kJ
-gamma 0 0
Id: 6009721
log K source: NIST46.4
Delta H source: SCD2.62
#T and ionic strength: 2.00 25.0
Zn+2 + Butyrate- = Zn(Butyrate)+
log_k 1.4289
delta_h 0 kJ
-gamma 0 0
Id: 9509721
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Hg(OH)2 + 2H+ + Butyrate- = Hg(Butyrate)+ + 2H2O
log_k 10.3529
delta_h 0 kJ
-gamma 0 0
Id: 3619721
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Cu+2 + Butyrate- = Cu(Butyrate)+
log_k 2.14
delta_h 0 kJ
-gamma 0 0
Id: 2319721
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 25.0
Ni+2 + Butyrate- = Ni(Butyrate)+
log_k 0.691
delta_h 0 kJ
-gamma 0 0
Id: 5409721
log K source: NIST46.4
Delta H source: SCD2.62

#T and ionic strength: 2.00 25.0
Co+2 + Butyrate- = Co(Butyrate)+
log_k 0.591
delta_h 0 kJ
-gamma 0 0
Id: 2009721
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 2.00 25.0
Co+2 + 2Butyrate- = Co(Butyrate)2
log_k 0.7765
delta_h 0 kJ
-gamma 0 0
Id: 2009722
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 2.00 25.0
Mg+2 + Butyrate- = Mg(Butyrate)+
log_k 0.9589
delta_h 0 kJ
-gamma 0 0
Id: 4609720
log K source: NIST46.4
Delta H source: SCD2.62
#T and ionic strength: 0.10 25.0
Ca+2 + Butyrate- = Ca(Butyrate)+
log_k 0.9389
delta_h 3.3472 kJ
-gamma 0 0
Id: 1509720
log K source: NIST46.4
Delta H source: SCD2.62
#T and ionic strength: 0.10 25.0
Sr+2 + Butyrate- = Sr(Butyrate)+
log_k 0.7889
delta_h 0 kJ
-gamma 0 0
Id: 8009721
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Ba+2 + Butyrate- = Ba(Butyrate)+
log_k 0.7389
delta_h 0 kJ
-gamma 0 0
Id: 1009721
log K source: NIST46.4
Delta H source: SCD2.62
#T and ionic strength: 0.10 25.0
Ba+2 + 2Butyrate- = Ba(Butyrate)2
log_k 0.88
delta_h 0 kJ
-gamma 0 0
Id: 1009722

log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
H+ + Isobutyrate- = H(Isobutyrate)
log_k 4.849
delta_h 3.2217 kJ
-gamma 0 0
Id: 3309731
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Isobutyrate- = Zn(Isobutyrate)+
log_k 1.44
delta_h 0 kJ
-gamma 0 0
Id: 9509731
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Isobutyrate- = Cu(Isobutyrate)+
log_k 2.17
delta_h 0 kJ
-gamma 0 0
Id: 2319731
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 2Isobutyrate- = Cu(Isobutyrate)2
log_k 3.3
delta_h 0 kJ
-gamma 0 0
Id: 2319732
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+3 + Isobutyrate- = Fe(Isobutyrate)+2
log_k 4.2
delta_h 0 kJ
-gamma 0 0
Id: 2819731
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Isobutyrate- = Ca(Isobutyrate)+
log_k 0.51
delta_h 0 kJ
-gamma 0 0
Id: 1509731
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
H+ + Two_picoline = H(Two_picoline)+
log_k 5.95
delta_h -25.5224 kJ

-gamma 0 0
Id: 3309801
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Two_picoline = Cu(Two_picoline)+2
log_k 1.3
delta_h 0 kJ
-gamma 0 0
Id: 2319801
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 2Two_picoline = Cu(Two_picoline)2+2
log_k 2.8
delta_h 0 kJ
-gamma 0 0
Id: 2319802
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+ + Two_picoline = Cu(Two_picoline)+
log_k 5.4
delta_h 0 kJ
-gamma 0 0
Id: 2309801
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+ + 2Two_picoline = Cu(Two_picoline)2+
log_k 7.65
delta_h 0 kJ
-gamma 0 0
Id: 2309802
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+ + 3Two_picoline = Cu(Two_picoline)3+
log_k 8.5
delta_h 0 kJ
-gamma 0 0
Id: 2309803
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + Two_picoline = Ag(Two_picoline)+
log_k 2.32
delta_h -24.2672 kJ
-gamma 0 0
Id: 209801
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + 2Two_picoline = Ag(Two_picoline)2+

log_k 4.68
delta_h -42.6768 kJ
-gamma 0 0
Id: 209802
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Two_picoline = Ni(Two_picoline)+2
log_k 0.4
delta_h 0 kJ
-gamma 0 0
Id: 5409801
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
H+ + Three_picoline = H(Three_picoline)+
log_k 5.7
delta_h -23.8488 kJ
-gamma 0 0
Id: 3309811
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Three_picoline = Zn(Three_picoline)+2
log_k 1
delta_h 0 kJ
-gamma 0 0
Id: 9509811
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + 2Three_picoline = Zn(Three_picoline)2+2
log_k 2.1
delta_h 0 kJ
-gamma 0 0
Id: 9509812
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + 3Three_picoline = Zn(Three_picoline)3+2
log_k 2.6
delta_h 0 kJ
-gamma 0 0
Id: 9509813
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + 4Three_picoline = Zn(Three_picoline)4+2
log_k 3.7
delta_h 0 kJ
-gamma 0 0
Id: 9509814
log K source: NIST46.2
Delta H source: NIST46.2

#T and ionic strength:
Cd+2 + Three_picoline = Cd(Three_picoline)+2
log_k 1.42
delta_h 0 kJ
-gamma 0 0
Id: 1609811
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + 2Three_picoline = Cd(Three_picoline)2+2
log_k 2.27
delta_h 0 kJ
-gamma 0 0
Id: 1609812
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + 3Three_picoline = Cd(Three_picoline)3+2
log_k 3.6
delta_h 0 kJ
-gamma 0 0
Id: 1609813
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + 4Three_picoline = Cd(Three_picoline)4+2
log_k 4
delta_h 0 kJ
-gamma 0 0
Id: 1609814
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+ + Three_picoline = Cu(Three_picoline)+
log_k 5.6
delta_h 0 kJ
-gamma 0 0
Id: 2309811
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+ + 2Three_picoline = Cu(Three_picoline)2+
log_k 7.78
delta_h 0 kJ
-gamma 0 0
Id: 2309812
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+ + 3Three_picoline = Cu(Three_picoline)3+
log_k 8.6
delta_h 0 kJ
-gamma 0 0
Id: 2309813

log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+ + 4Three_picoline = Cu(Three_picoline)4+
log_k 9
delta_h 0 kJ
-gamma 0 0
Id: 2309814
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Three_picoline = Cu(Three_picoline)+2
log_k 2.77
delta_h 0 kJ
-gamma 0 0
Id: 2319811
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 2Three_picoline = Cu(Three_picoline)2+2
log_k 4.8
delta_h 0 kJ
-gamma 0 0
Id: 2319812
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 3Three_picoline = Cu(Three_picoline)3+2
log_k 6.3
delta_h 0 kJ
-gamma 0 0
Id: 2319813
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 4Three_picoline = Cu(Three_picoline)4+2
log_k 7.2
delta_h 0 kJ
-gamma 0 0
Id: 2319814
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + Three_picoline = Ag(Three_picoline)+
log_k 2.2
delta_h -21.7568 kJ
-gamma 0 0
Id: 209811
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + 2Three_picoline = Ag(Three_picoline)2+
log_k 4.46
delta_h -49.7896 kJ

-gamma 0 0
Id: 209812
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Three_picoline = Ni(Three_picoline)+2
log_k 1.87
delta_h 0 kJ
-gamma 0 0
Id: 5409811
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + 2Three_picoline = Ni(Three_picoline)2+2
log_k 3.3
delta_h 0 kJ
-gamma 0 0
Id: 5409812
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + 3Three_picoline = Ni(Three_picoline)3+2
log_k 4.1
delta_h 0 kJ
-gamma 0 0
Id: 5409813
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + 4Three_picoline = Ni(Three_picoline)4+2
log_k 4.6
delta_h 0 kJ
-gamma 0 0
Id: 5409814
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Co+2 + Three_picoline = Co(Three_picoline)+2
log_k 1.4
delta_h 0 kJ
-gamma 0 0
Id: 2009811
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.50 25.0
Co+2 + 2Three_picoline = Co(Three_picoline)2+2
log_k 2.2
delta_h 0 kJ
-gamma 0 0
Id: 2009812
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.50 25.0
Co+2 + 3Three_picoline = Co(Three_picoline)3+2

log_k 2.5
delta_h 0 kJ
-gamma 0 0
Id: 2009813
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.50 25.0
H+ + Four_picoline = H(Four_picoline)+
log_k 6.03
delta_h -25.3132 kJ
-gamma 0 0
Id: 3309821
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Four_picoline = Zn(Four_picoline)+2
log_k 1.4
delta_h 0 kJ
-gamma 0 0
Id: 9509821
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + 2Four_picoline = Zn(Four_picoline)2+2
log_k 2.11
delta_h 0 kJ
-gamma 0 0
Id: 9509822
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + 3Four_picoline = Zn(Four_picoline)3+2
log_k 2.85
delta_h 0 kJ
-gamma 0 0
Id: 9509823
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Four_picoline = Cd(Four_picoline)+2
log_k 1.59
delta_h 0 kJ
-gamma 0 0
Id: 1609821
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + 2Four_picoline = Cd(Four_picoline)2+2
log_k 2.4
delta_h 0 kJ
-gamma 0 0
Id: 1609822
log K source: SCD2.62
Delta H source: SCD2.62

#T and ionic strength:
Cd+2 + 3Four_picoline = Cd(Four_picoline)3+2
log_k 3.18
delta_h 0 kJ
-gamma 0 0
Id: 1609823
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + 4Four_picoline = Cd(Four_picoline)4+2
log_k 4
delta_h 0 kJ
-gamma 0 0
Id: 1609824
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+ + Four_picoline = Cu(Four_picoline)+
log_k 5.65
delta_h 0 kJ
-gamma 0 0
Id: 2309821
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+ + 2Four_picoline = Cu(Four_picoline)2+
log_k 8.2
delta_h 0 kJ
-gamma 0 0
Id: 2309822
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+ + 3Four_picoline = Cu(Four_picoline)3+
log_k 8.8
delta_h 0 kJ
-gamma 0 0
Id: 2309823
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+ + 4Four_picoline = Cu(Four_picoline)4+
log_k 9.2
delta_h 0 kJ
-gamma 0 0
Id: 2309824
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Four_picoline = Cu(Four_picoline)+2
log_k 2.88
delta_h 0 kJ
-gamma 0 0
Id: 2319821

log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 2Four_picoline = Cu(Four_picoline)2+2
log_k 5.16
delta_h 0 kJ
-gamma 0 0
Id: 2319822
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 3Four_picoline = Cu(Four_picoline)3+2
log_k 6.77
delta_h 0 kJ
-gamma 0 0
Id: 2319823
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 4Four_picoline = Cu(Four_picoline)4+2
log_k 8.08
delta_h 0 kJ
-gamma 0 0
Id: 2319824
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 5Four_picoline = Cu(Four_picoline)5+2
log_k 8.3
delta_h 0 kJ
-gamma 0 0
Id: 2319825
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + Four_picoline = Ag(Four_picoline)+
log_k 2.03
delta_h -25.5224 kJ
-gamma 0 0
Id: 209821
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + 2Four_picoline = Ag(Four_picoline)2+
log_k 4.39
delta_h -53.5552 kJ
-gamma 0 0
Id: 209822
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Four_picoline = Ni(Four_picoline)+2
log_k 2.11
delta_h 0 kJ

-gamma 0 0
Id: 5409821
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + 2Four_picoline = Ni(Four_picoline)2+2
log_k 3.59
delta_h 0 kJ
-gamma 0 0
Id: 5409822
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + 3Four_picoline = Ni(Four_picoline)3+2
log_k 4.34
delta_h 0 kJ
-gamma 0 0
Id: 5409823
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + 4Four_picoline = Ni(Four_picoline)4+2
log_k 4.7
delta_h 0 kJ
-gamma 0 0
Id: 5409824
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Co+2 + Four_picoline = Co(Four_picoline)+2
log_k 1.56
delta_h 0 kJ
-gamma 0 0
Id: 2009821
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.50 25.0
Co+2 + 2Four_picoline = Co(Four_picoline)2+2
log_k 2.51
delta_h 0 kJ
-gamma 0 0
Id: 2009822
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.50 25.0
Co+2 + 3Four_picoline = Co(Four_picoline)3+2
log_k 2.94
delta_h 0 kJ
-gamma 0 0
Id: 2009823
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.50 25.0
Co+2 + 4Four_picoline = Co(Four_picoline)4+2

log_k 3.17
delta_h 0 kJ
-gamma 0 0
Id: 2009824
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.50 25.0
H+ + Formate- = H(Formate)
log_k 3.745
delta_h 0.1674 kJ
-gamma 0 0
Id: 3309831
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Pb+2 + Formate- = Pb(Formate)+
log_k 2.2
delta_h 0 kJ
-gamma 0 0
Id: 6009831
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Zn+2 + Formate- = Zn(Formate)+
log_k 1.44
delta_h 0 kJ
-gamma 0 0
Id: 9509831
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Formate- = Cd(Formate)+
log_k 1.7
delta_h 0 kJ
-gamma 0 0
Id: 1609831
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Hg(OH)2 + Formate- + 2H+ = Hg(Formate)+ + 2H2O
log_k 9.6
delta_h 0 kJ
-gamma 0 0
Id: 3619831
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Formate- = Cu(Formate)+
log_k 2
delta_h 0 kJ
-gamma 0 0
Id: 2319831
log K source: NIST46.2
Delta H source: NIST46.2

#T and ionic strength:
Ni+2 + Formate- = Ni(Formate)+
log_k 1.22
delta_h 0 kJ
-gamma 0 0
Id: 5409831
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Co+2 + Formate- = Co(Formate)+
log_k 1.209
delta_h 0 kJ
-gamma 0 0
Id: 2009831
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.50 30.0
Co+2 + 2Formate- = Co(Formate)2
log_k 1.1365
delta_h 0 kJ
-gamma 0 0
Id: 2009832
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 2.00 25.0
Cr+2 + Formate- = Cr(Formate)+
log_k 1.07
delta_h 0 kJ
-gamma 0 0
Id: 2109831
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mg+2 + Formate- = Mg(Formate)+
log_k 1.43
delta_h 0 kJ
-gamma 0 0
Id: 4609831
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Formate- = Ca(Formate)+
log_k 1.43
delta_h 4.184 kJ
-gamma 0 0
Id: 1509831
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Sr+2 + Formate- = Sr(Formate)+
log_k 1.39
delta_h 4 kJ
-gamma 0 0
Id: 8009831

log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ba+2 + Formate- = Ba(Formate)+
log_k 1.38
delta_h 0 kJ
-gamma 0 0
Id: 1009831
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
H+ + Isovalerate- = H(Isovalerate)
log_k 4.781
delta_h 4.5606 kJ
-gamma 0 0
Id: 3309841
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Isovalerate- = Zn(Isovalerate)+
log_k 1.39
delta_h 0 kJ
-gamma 0 0
Id: 9509841
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Isovalerate- = Cu(Isovalerate)+
log_k 2.08
delta_h 0 kJ
-gamma 0 0
Id: 2319841
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Isovalerate- = Ca(Isovalerate)+
log_k 0.2
delta_h 0 kJ
-gamma 0 0
Id: 1509841
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
H+ + Valerate- = H(Valerate)
log_k 4.843
delta_h 2.887 kJ
-gamma 0 0
Id: 3309851
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Valerate- = Cu(Valerate)+
log_k 2.12
delta_h 0 kJ

-gamma 0 0
Id: 2319851
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Valerate- = Ca(Valerate)+
log_k 0.3
delta_h 0 kJ
-gamma 0 0
Id: 1509851
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Ba+2 + Valerate- = Ba(Valerate)+
log_k -0.2
delta_h 0 kJ
-gamma 0 0
Id: 1009851
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
H+ + Acetate- = H(Acetate)
log_k 4.757
delta_h 0.41 kJ
-gamma 0 0
Id: 3309921
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Sn(OH)2 + 2H+ + Acetate- = Sn(Acetate)+ + 2H2O
log_k 10.0213
delta_h 0 kJ
-gamma 0 0
Id: 7909921
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 3.00 25.0
Sn(OH)2 + 2H+ + 2Acetate- = Sn(Acetate)2 + 2H2O
log_k 12.32
delta_h 0 kJ
-gamma 0 0
Id: 7909922
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 3.00 25.0
Sn(OH)2 + 2H+ + 3Acetate- = Sn(Acetate)3- + 2H2O
log_k 13.55
delta_h 0 kJ
-gamma 0 0
Id: 7909923
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 3.00 25.0
Pb+2 + Acetate- = Pb(Acetate)+

log_k 2.68
delta_h -0.4 kJ
-gamma 0 0
Id: 6009921
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Pb+2 + 2Acetate- = Pb(Acetate)2
log_k 4.08
delta_h -0.8 kJ
-gamma 0 0
Id: 6009922
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Tl+ + Acetate- = Tl(Acetate)
log_k -0.11
delta_h 0 kJ
-gamma 0 0
Id: 8709921
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 25.0
Zn+2 + Acetate- = Zn(Acetate)+
log_k 1.58
delta_h 8.3 kJ
-gamma 0 0
Id: 9509921
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Zn+2 + 2Acetate- = Zn(Acetate)2
log_k 2.6434
delta_h 22 kJ
-gamma 0 0
Id: 9509922
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Cd+2 + Acetate- = Cd(Acetate)+
log_k 1.93
delta_h 9.6 kJ
-gamma 0 0
Id: 1609921
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Cd+2 + 2Acetate- = Cd(Acetate)2
log_k 2.86
delta_h 15 kJ
-gamma 0 0
Id: 1609922
log K source: NIST46.4
Delta H source: NIST46.4

#T and ionic strength: 0.00 25.0
Hg(OH)2 + 2H+ + Acetate- = Hg(Acetate)+ + 2H2O
log_k 10.494
delta_h 0 kJ
-gamma 0 0
Id: 3619920
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 25.0
Hg(OH)2 + 2H+ + 2Acetate- = Hg(Acetate)2 + 2H2O
log_k 13.83
delta_h 0 kJ
-gamma 0 0
Id: 3619921
log K source: NIST46.4
Delta H source: SCD2.62
#T and ionic strength: 3.00 25.0
Cu+2 + Acetate- = Cu(Acetate)+
log_k 2.21
delta_h 7.1 kJ
-gamma 0 0
Id: 2319921
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Cu+2 + 2Acetate- = Cu(Acetate)2
log_k 3.4
delta_h 12 kJ
-gamma 0 0
Id: 2319922
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Cu+2 + 3Acetate- = Cu(Acetate)3-
log_k 3.9434
delta_h 6.2 kJ
-gamma 0 0
Id: 2319923
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Ag+ + Acetate- = Ag(Acetate)
log_k 0.73
delta_h 3 kJ
-gamma 0 0
Id: 209921
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ag+ + 2Acetate- = Ag(Acetate)2-
log_k 0.64
delta_h 3 kJ
-gamma 0 0
Id: 209922

log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ni+2 + Acetate- = Ni(Acetate)+
log_k 1.37
delta_h 8.7 kJ
-gamma 0 0
Id: 5409921
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Ni+2 + 2Acetate- = Ni(Acetate)2
log_k 2.1
delta_h 10 kJ
-gamma 0 0
Id: 5409922
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Co+2 + Acetate- = Co(Acetate)+
log_k 1.38
delta_h 0 kJ
-gamma 0 0
Id: 2009921
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 25.0
Co+2 + 2Acetate- = Co(Acetate)2
log_k 0.7565
delta_h 0 kJ
-gamma 0 0
Id: 2009922
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 2.00 25.0
Fe+2 + Acetate- = Fe(Acetate)+
log_k 1.4
delta_h 0 kJ
-gamma 0 0
Id: 2809920
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 25.0
Fe+3 + Acetate- = Fe(Acetate)+2
log_k 4.0234
delta_h 0 kJ
-gamma 0 0
Id: 2819920
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 20.0
Fe+3 + 2Acetate- = Fe(Acetate)2+
log_k 7.5723
delta_h 0 kJ

-gamma 0 0
Id: 2819921
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 20.0
Fe+3 + 3Acetate- = Fe(Acetate)3
log_k 9.5867
delta_h 0 kJ
-gamma 0 0
Id: 2819922
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 20.0
Mn+2 + Acetate- = Mn(Acetate)+
log_k 1.4
delta_h 0 kJ
-gamma 0 0
Id: 4709920
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 25.0
Cr+2 + Acetate- = Cr(Acetate)+
log_k 1.8
delta_h 0 kJ
-gamma 0 0
Id: 2109921
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 25.0
Cr+2 + 2Acetate- = Cr(Acetate)2
log_k 2.92
delta_h 0 kJ
-gamma 0 0
Id: 2109922
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 25.0
Cr(OH)2+ + 2H+ + Acetate- = Cr(Acetate)+2 + 2H2O
log_k 15.0073
delta_h -125.62 kJ
-gamma 0 0
Id: 2119921
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.50 25.0
Cr(OH)2+ + 2H+ + 2Acetate- = Cr(Acetate)2+ + 2H2O
log_k 17.9963
delta_h -117.62 kJ
-gamma 0 0
Id: 2119922
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.50 25.0
Cr(OH)2+ + 2H+ + 3Acetate- = Cr(Acetate)3 + 2H2O

log_k 20.7858
delta_h -96.62 kJ
-gamma 0 0
Id: 2119923
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.50 25.0
Be+2 + Acetate- = Be(Acetate)+
log_k 2.0489
delta_h 0 kJ
-gamma 0 0
Id: 1109921
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Be+2 + 2Acetate- = Be(Acetate)2
log_k 3.0034
delta_h 0 kJ
-gamma 0 0
Id: 1109922
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Mg+2 + Acetate- = Mg(Acetate)+
log_k 1.27
delta_h 0 kJ
-gamma 0 0
Id: 4609920
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 25.0
Ca+2 + Acetate- = Ca(Acetate)+
log_k 1.18
delta_h 4 kJ
-gamma 0 0
Id: 1509920
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Sr+2 + Acetate- = Sr(Acetate)+
log_k 1.14
delta_h 0 kJ
-gamma 0 0
Id: 8009921
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 25.0
Ba+2 + Acetate- = Ba(Acetate)+
log_k 1.07
delta_h 0 kJ
-gamma 0 0
Id: 1009921
log K source: NIST46.4
Delta H source: NIST46.2

#T and ionic strength: 0.00 25.0
Na+ + Acetate- = Na(Acetate)
log_k -0.18
delta_h 12 kJ
-gamma 0 0
Id: 5009920
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
K+ + Acetate- = K(Acetate)
log_k -0.1955
delta_h 4.184 kJ
-gamma 0 0
Id: 4109921
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
H+ + Tartarate-2 = H(Tartarate)-
log_k 4.366
delta_h -0.7531 kJ
-gamma 0 0
Id: 3309931
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
2H+ + Tartarate-2 = H2(Tartarate)
log_k 7.402
delta_h -3.6819 kJ
-gamma 0 0
Id: 3309932
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Sn(OH)2 + 2H+ + Tartarate-2 = Sn(Tartarate) + 2H2O
log_k 13.1518
delta_h 0 kJ
-gamma 0 0
Id: 7909931
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 20.0
Pb+2 + Tartarate-2 = Pb(Tartarate)
log_k 3.98
delta_h 0 kJ
-gamma 0 0
Id: 6009931
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Al+3 + 2Tartarate-2 = Al(Tartarate)2-
log_k 9.37
delta_h 0 kJ
-gamma 0 0
Id: 309931

log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Tl+ + Tartarate-2 = Tl(Tartarate)-
log_k 1.4
delta_h 0 kJ
-gamma 0 0
Id: 8709931
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Tl+ + Tartarate-2 + H+ = TlH(Tartarate)
log_k 4.8
delta_h 0 kJ
-gamma 0 0
Id: 8709932
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Tartarate-2 = Zn(Tartarate)
log_k 3.43
delta_h 0 kJ
-gamma 0 0
Id: 9509931
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + 2Tartarate-2 = Zn(Tartarate)2-2
log_k 5.5
delta_h 0 kJ
-gamma 0 0
Id: 9509932
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Tartarate-2 + H+ = ZnH(Tartarate)+
log_k 5.9
delta_h 0 kJ
-gamma 0 0
Id: 9509933
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Tartarate-2 = Cd(Tartarate)
log_k 2.7
delta_h 0 kJ
-gamma 0 0
Id: 1609931
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + 2Tartarate-2 = Cd(Tartarate)2-2
log_k 4.1
delta_h 0 kJ

-gamma 0 0
Id: 1609932
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + Tartarate-2 + 2H+ = Hg(Tartarate) + 2H2O
log_k 14
delta_h 0 kJ
-gamma 0 0
Id: 3619931
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Tartarate-2 = Cu(Tartarate)
log_k 3.97
delta_h 0 kJ
-gamma 0 0
Id: 2319931
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Tartarate-2 + H+ = CuH(Tartarate)+
log_k 6.7
delta_h 0 kJ
-gamma 0 0
Id: 2319932
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Tartarate-2 = Ni(Tartarate)
log_k 3.46
delta_h 0 kJ
-gamma 0 0
Id: 5409931
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Tartarate-2 + H+ = NiH(Tartarate)+
log_k 5.89
delta_h 0 kJ
-gamma 0 0
Id: 5409932
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Co+2 + Tartarate-2 = Co(Tartarate)
log_k 3.05
delta_h 0 kJ
-gamma 0 0
Id: 2009931
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 25.0
Co+2 + 2Tartarate-2 = Co(Tartarate)2-2

log_k 4
delta_h 0 kJ
-gamma 0 0
Id: 2009932
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 25.0
Co+2 + H+ + Tartarate-2 = CoH(Tartarate)+
log_k 5.754
delta_h 0 kJ
-gamma 0 0
Id: 2009933
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 1.00 20.0
Fe+2 + Tartarate-2 = Fe(Tartarate)
log_k 3.1
delta_h 0 kJ
-gamma 0 0
Id: 2809931
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+3 + Tartarate-2 = Fe(Tartarate)+
log_k 7.78
delta_h 0 kJ
-gamma 0 0
Id: 2819931
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mn+2 + Tartarate-2 = Mn(Tartarate)
log_k 3.38
delta_h 0 kJ
-gamma 0 0
Id: 4709931
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mn+2 + Tartarate-2 + H+ = MnH(Tartarate)+
log_k 6
delta_h 0 kJ
-gamma 0 0
Id: 4709932
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mg+2 + Tartarate-2 = Mg(Tartarate)
log_k 2.3
delta_h 0 kJ
-gamma 0 0
Id: 4609931
log K source: NIST46.2
Delta H source: NIST46.2

#T and ionic strength:
Mg+2 + Tartarate-2 + H+ = MgH(Tartarate)+
log_k 5.75
delta_h 0 kJ
-gamma 0 0
Id: 4609932
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Be+2 + Tartarate-2 = Be(Tartarate)
log_k 2.768
delta_h 0 kJ
-gamma 0 0
Id: 1109931
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.50 25.0
Be+2 + 2Tartarate-2 = Be(Tartarate)2-2
log_k 4.008
delta_h 0 kJ
-gamma 0 0
Id: 1109932
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.50 25.0
Ca+2 + Tartarate-2 = Ca(Tartarate)
log_k 2.8
delta_h -8.368 kJ
-gamma 0 0
Id: 1509931
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Tartarate-2 + H+ = CaH(Tartarate)+
log_k 5.86
delta_h -9.1211 kJ
-gamma 0 0
Id: 1509932
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Sr+2 + Tartarate-2 = Sr(Tartarate)
log_k 2.55
delta_h 0 kJ
-gamma 0 0
Id: 8009931
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 20.0
Sr+2 + H+ + Tartarate-2 = SrH(Tartarate)+
log_k 5.8949
delta_h 0 kJ
-gamma 0 0
Id: 8009932

log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Ba+2 + Tartarate-2 = Ba(Tartarate)
log_k 2.54
delta_h 0 kJ
-gamma 0 0
Id: 1009931
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ba+2 + Tartarate-2 + H+ = BaH(Tartarate)+
log_k 5.77
delta_h 0 kJ
-gamma 0 0
Id: 1009932
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Na+ + Tartarate-2 = Na(Tartarate)-
log_k 0.9
delta_h -0.8368 kJ
-gamma 0 0
Id: 5009931
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Na+ + Tartarate-2 + H+ = NaH(Tartarate)
log_k 4.58
delta_h -2.8451 kJ
-gamma 0 0
Id: 5009932
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
K+ + Tartarate-2 = K(Tartarate)-
log_k 0.8
delta_h 0 kJ
-gamma 0 0
Id: 4109931
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
H+ + Glycine- = H(Glycine)
log_k 9.778
delta_h -44.3504 kJ
-gamma 0 0
Id: 3309941
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
2H+ + Glycine- = H2(Glycine)+
log_k 12.128
delta_h -48.4507 kJ

-gamma 0 0
Id: 3309942
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Pb+2 + Glycine- = Pb(Glycine)+
log_k 5.47
delta_h 0 kJ
-gamma 0 0
Id: 6009941
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Pb+2 + 2Glycine- = Pb(Glycine)2
log_k 8.86
delta_h 0 kJ
-gamma 0 0
Id: 6009942
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Tl+ + Glycine- = Tl(Glycine)
log_k 1.72
delta_h 0 kJ
-gamma 0 0
Id: 8709941
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Glycine- = Zn(Glycine)+
log_k 5.38
delta_h -11.7152 kJ
-gamma 0 0
Id: 9509941
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + 2Glycine- = Zn(Glycine)2
log_k 9.81
delta_h -24.2672 kJ
-gamma 0 0
Id: 9509942
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + 3Glycine- = Zn(Glycine)3-
log_k 12.3
delta_h -39.748 kJ
-gamma 0 0
Id: 9509943
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Glycine- = Cd(Glycine)+

log_k 4.69
delta_h -8.7864 kJ
-gamma 0 0
Id: 1609941
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + 2Glycine- = Cd(Glycine)2
log_k 8.4
delta_h -22.5936 kJ
-gamma 0 0
Id: 1609942
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + 3Glycine- = Cd(Glycine)3-
log_k 10.7
delta_h -35.9824 kJ
-gamma 0 0
Id: 1609943
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + Glycine- + 2H+ = Hg(Glycine)+ + 2H2O
log_k 17
delta_h 0 kJ
-gamma 0 0
Id: 3619941
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Hg(OH)2 + 2Glycine- + 2H+ = Hg(Glycine)2 + 2H2O
log_k 25.8
delta_h 0 kJ
-gamma 0 0
Id: 3619942
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cu+ + 2Glycine- = Cu(Glycine)2-
log_k 10.3
delta_h 0 kJ
-gamma 0 0
Id: 2309941
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Glycine- = Cu(Glycine)+
log_k 8.57
delta_h -25.104 kJ
-gamma 0 0
Id: 2319941
log K source: NIST46.2
Delta H source: NIST46.2

#T and ionic strength:
Cu+2 + 2Glycine- = Cu(Glycine)2
log_k 15.7
delta_h -54.8104 kJ
-gamma 0 0
Id: 2319942
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + Glycine- = Ag(Glycine)
log_k 3.51
delta_h -19.2464 kJ
-gamma 0 0
Id: 209941
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + 2Glycine- = Ag(Glycine)2-
log_k 6.89
delta_h -48.116 kJ
-gamma 0 0
Id: 209942
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Glycine- = Ni(Glycine)+
log_k 6.15
delta_h -18.828 kJ
-gamma 0 0
Id: 5409941
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + 2Glycine- = Ni(Glycine)2
log_k 11.12
delta_h -38.0744 kJ
-gamma 0 0
Id: 5409942
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + 3Glycine- = Ni(Glycine)3-
log_k 14.63
delta_h -62.3416 kJ
-gamma 0 0
Id: 5409943
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Co+2 + Glycine- = Co(Glycine)+
log_k 5.07
delta_h -12 kJ
-gamma 0 0
Id: 2009941

log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Co+2 + 2Glycine- = Co(Glycine)2
log_k 9.07
delta_h -26 kJ
-gamma 0 0
Id: 2009942
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Co+2 + 3Glycine- = Co(Glycine)3-
log_k 11.6
delta_h -41 kJ
-gamma 0 0
Id: 2009943
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Co+2 + Glycine- + H2O = CoOH(Glycine) + H+
log_k -5.02
delta_h 0 kJ
-gamma 0 0
Id: 2009944
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Fe+2 + Glycine- = Fe(Glycine)+
log_k 4.31
delta_h -15.0624 kJ
-gamma 0 0
Id: 2809941
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+2 + 2Glycine- = Fe(Glycine)2
log_k 8.29
delta_h 0 kJ
-gamma 0 0
Id: 2809942
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+3 + Glycine- = Fe(Glycine)+2
log_k 9.38
delta_h 0 kJ
-gamma 0 0
Id: 2819941
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+3 + Glycine- + H+ = FeH(Glycine)+3
log_k 11.55
delta_h 0 kJ

-gamma 0 0
Id: 2819942
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mn+2 + Glycine- = Mn(Glycine)+
log_k 3.19
delta_h -1.2552 kJ
-gamma 0 0
Id: 4709941
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mn+2 + 2Glycine- = Mn(Glycine)2
log_k 5.4
delta_h 0 kJ
-gamma 0 0
Id: 4709942
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cr(OH)2+ + Glycine- + 2H+ = Cr(Glycine)+2 + 2H2O
log_k 18.7
delta_h 0 kJ
-gamma 0 0
Id: 2119941
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cr(OH)2+ + 2Glycine- + 2H+ = Cr(Glycine)2+ + 2H2O
log_k 25.6
delta_h 0 kJ
-gamma 0 0
Id: 2119942
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cr(OH)2+ + 3Glycine- + 2H+ = Cr(Glycine)3 + 2H2O
log_k 31.6
delta_h 0 kJ
-gamma 0 0
Id: 2119943
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Mg+2 + Glycine- = Mg(Glycine)+
log_k 2.08
delta_h 4.184 kJ
-gamma 0 0
Id: 4609941
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Glycine- = Ca(Glycine)+

log_k 1.39
delta_h -4.184 kJ
-gamma 0 0
Id: 1509941
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Glycine- + H+ = CaH(Glycine)+2
log_k 10.1
delta_h -35.9824 kJ
-gamma 0 0
Id: 1509942
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Sr+2 + Glycine- = Sr(Glycine)+
log_k 0.91
delta_h 0 kJ
-gamma 0 0
Id: 8009941
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.00 25.0
Ba+2 + Glycine- = Ba(Glycine)+
log_k 0.77
delta_h 0 kJ
-gamma 0 0
Id: 1009941
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
H+ + Salicylate-2 = H(Salicylate)-
log_k 13.7
delta_h -35.7732 kJ
-gamma 0 0
Id: 3309951
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
2H+ + Salicylate-2 = H2(Salicylate)
log_k 16.8
delta_h -38.7857 kJ
-gamma 0 0
Id: 3309952
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Salicylate-2 = Zn(Salicylate)
log_k 7.71
delta_h 0 kJ
-gamma 0 0
Id: 9509951
log K source: SCD2.62
Delta H source: SCD2.62

#T and ionic strength:
Zn+2 + Salicylate-2 + H+ = ZnH(Salicylate)+
log_k 15.5
delta_h 0 kJ
-gamma 0 0
Id: 9509952
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Salicylate-2 = Cd(Salicylate)
log_k 6.2
delta_h 0 kJ
-gamma 0 0
Id: 1609951
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Salicylate-2 + H+ = CdH(Salicylate)+
log_k 16
delta_h 0 kJ
-gamma 0 0
Id: 1609952
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Salicylate-2 = Cu(Salicylate)
log_k 11.3
delta_h -17.9912 kJ
-gamma 0 0
Id: 2319951
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 2Salicylate-2 = Cu(Salicylate)2-2
log_k 19.3
delta_h 0 kJ
-gamma 0 0
Id: 2319952
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Salicylate-2 + H+ = CuH(Salicylate)+
log_k 14.8
delta_h 0 kJ
-gamma 0 0
Id: 2319953
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Salicylate-2 = Ni(Salicylate)
log_k 8.2
delta_h 0 kJ
-gamma 0 0
Id: 5409951

log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + 2Salicylate-2 = Ni(Salicylate)2-2
log_k 12.64
delta_h 0 kJ
-gamma 0 0
Id: 5409952
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Co+2 + Salicylate-2 = Co(Salicylate)
log_k 7.4289
delta_h 0 kJ
-gamma 0 0
Id: 2009951
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 20.0
Co+2 + 2Salicylate-2 = Co(Salicylate)2-2
log_k 11.8
delta_h 0 kJ
-gamma 0 0
Id: 2009952
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 20.0
Fe+2 + Salicylate-2 = Fe(Salicylate)
log_k 7.2
delta_h 0 kJ
-gamma 0 0
Id: 2809951
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+2 + 2Salicylate-2 = Fe(Salicylate)2-2
log_k 11.6
delta_h 0 kJ
-gamma 0 0
Id: 2809952
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+3 + Salicylate-2 = Fe(Salicylate)+
log_k 17.6
delta_h 0 kJ
-gamma 0 0
Id: 2819951
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Fe+3 + 2Salicylate-2 = Fe(Salicylate)2-
log_k 29.3
delta_h 0 kJ

-gamma 0 0
Id: 2819952
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mn+2 + Salicylate-2 = Mn(Salicylate)
log_k 6.5
delta_h 0 kJ
-gamma 0 0
Id: 4709951
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mn+2 + 2Salicylate-2 = Mn(Salicylate)2-2
log_k 10.1
delta_h 0 kJ
-gamma 0 0
Id: 4709952
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Be+2 + Salicylate-2 = Be(Salicylate)
log_k 13.3889
delta_h -31.7732 kJ
-gamma 0 0
Id: 1109951
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.10 25.0
Be+2 + 2Salicylate-2 = Be(Salicylate)2-2
log_k 23.25
delta_h 0 kJ
-gamma 0 0
Id: 1109952
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Mg+2 + Salicylate-2 = Mg(Salicylate)
log_k 5.76
delta_h 0 kJ
-gamma 0 0
Id: 4609951
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Mg+2 + Salicylate-2 + H+ = MgH(Salicylate)+
log_k 15.3
delta_h 0 kJ
-gamma 0 0
Id: 4609952
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Ca+2 + Salicylate-2 = Ca(Salicylate)

log_k 4.05
delta_h 0 kJ
-gamma 0 0
Id: 1509951
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Salicylate-2 + H+ = CaH(Salicylate)+
log_k 14.3
delta_h 0 kJ
-gamma 0 0
Id: 1509952
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ba+2 + Salicylate-2 + H+ = BaH(Salicylate)+
log_k 13.9
delta_h 0 kJ
-gamma 0 0
Id: 1009951
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
H+ + Glutamate-2 = H(Glutamate)-
log_k 9.96
delta_h -41.0032 kJ
-gamma 0 0
Id: 3309961
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
2H+ + Glutamate-2 = H2(Glutamate)
log_k 14.26
delta_h -43.5136 kJ
-gamma 0 0
Id: 3309962
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
3H+ + Glutamate-2 = H3(Glutamate)+
log_k 16.42
delta_h -46.8608 kJ
-gamma 0 0
Id: 3309963
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Pb+2 + Glutamate-2 = Pb(Glutamate)
log_k 6.43
delta_h 0 kJ
-gamma 0 0
Id: 6009961
log K source: SCD2.62
Delta H source: SCD2.62

#T and ionic strength:
Pb+2 + 2Glutamate-2 = Pb(Glutamate)2-2
log_k 8.61
delta_h 0 kJ
-gamma 0 0
Id: 6009962
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Pb+2 + Glutamate-2 + H+ = PbH(Glutamate)+
log_k 14.08
delta_h 0 kJ
-gamma 0 0
Id: 6009963
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Al+3 + Glutamate-2 + H+ = AlH(Glutamate)+2
log_k 13.07
delta_h 0 kJ
-gamma 0 0
Id: 309961
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Glutamate-2 = Zn(Glutamate)
log_k 6.2
delta_h 0 kJ
-gamma 0 0
Id: 9509961
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Zn+2 + 2Glutamate-2 = Zn(Glutamate)2-2
log_k 9.13
delta_h 0 kJ
-gamma 0 0
Id: 9509962
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Zn+2 + 3Glutamate-2 = Zn(Glutamate)3-4
log_k 9.8
delta_h 0 kJ
-gamma 0 0
Id: 9509963
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cd+2 + Glutamate-2 = Cd(Glutamate)
log_k 4.7
delta_h 0 kJ
-gamma 0 0
Id: 1609961

log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + 2Glutamate-2 = Cd(Glutamate)2-2
log_k 7.59
delta_h 0 kJ
-gamma 0 0
Id: 1609962
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Hg(OH)2 + Glutamate-2 + 2H+ = Hg(Glutamate) + 2H2O
log_k 19.8
delta_h 0 kJ
-gamma 0 0
Id: 3619961
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Hg(OH)2 + 2Glutamate-2 + 2H+ = Hg(Glutamate)2-2 + 2H2O
log_k 26.2
delta_h 0 kJ
-gamma 0 0
Id: 3619962
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cu+2 + Glutamate-2 = Cu(Glutamate)
log_k 9.17
delta_h -20.92 kJ
-gamma 0 0
Id: 2319961
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 2Glutamate-2 = Cu(Glutamate)2-2
log_k 15.78
delta_h -48.116 kJ
-gamma 0 0
Id: 2319962
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Glutamate-2 + H+ = CuH(Glutamate)+
log_k 13.3
delta_h -28.0328 kJ
-gamma 0 0
Id: 2319963
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + Glutamate-2 = Ag(Glutamate)-
log_k 4.22
delta_h 0 kJ

-gamma 0 0
Id: 209961
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ag+ + 2Glutamate-2 = Ag(Glutamate)2-3
log_k 7.36
delta_h 0 kJ
-gamma 0 0
Id: 209962
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
2Ag+ + Glutamate-2 = Ag2(Glutamate)
log_k 3.4
delta_h 0 kJ
-gamma 0 0
Id: 209963
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Glutamate-2 = Ni(Glutamate)
log_k 6.47
delta_h 0 kJ
-gamma 0 0
Id: 5409961
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + 2Glutamate-2 = Ni(Glutamate)2-2
log_k 10.7
delta_h -30.9616 kJ
-gamma 0 0
Id: 5409962
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Co+2 + Glutamate-2 = Co(Glutamate)
log_k 5.4178
delta_h 0 kJ
-gamma 0 0
Id: 2009961
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Co+2 + 2Glutamate-2 = Co(Glutamate)2-2
log_k 8.7178
delta_h 0 kJ
-gamma 0 0
Id: 2009962
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Mn+2 + Glutamate-2 = Mn(Glutamate)

log_k 4.95
delta_h 0 kJ
-gamma 0 0
Id: 4709961
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Mn+2 + 2Glutamate-2 = Mn(Glutamate)2-2
log_k 8.48
delta_h 0 kJ
-gamma 0 0
Id: 4709962
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cr(OH)2+ + Glutamate-2 + 2H+ = Cr(Glutamate)+ + 2H2O
log_k 22.6
delta_h 0 kJ
-gamma 0 0
Id: 2119961
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cr(OH)2+ + 2Glutamate-2 + 2H+ = Cr(Glutamate)2- + 2H2O
log_k 30.7
delta_h 0 kJ
-gamma 0 0
Id: 2119962
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cr(OH)2+ + Glutamate-2 + 3H+ = CrH(Glutamate)+2 + 2H2O
log_k 25.2
delta_h 0 kJ
-gamma 0 0
Id: 2119963
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Mg+2 + Glutamate-2 = Mg(Glutamate)
log_k 2.8
delta_h 0 kJ
-gamma 0 0
Id: 4609961
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Glutamate-2 = Ca(Glutamate)
log_k 2.06
delta_h 0 kJ
-gamma 0 0
Id: 1509961
log K source: NIST46.2
Delta H source: NIST46.2

#T and ionic strength:
Ca+2 + Glutamate-2 + H+ = CaH(Glutamate)+
log_k 11.13
delta_h 0 kJ
-gamma 0 0
Id: 1509962
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Sr+2 + Glutamate-2 = Sr(Glutamate)
log_k 2.2278
delta_h 0 kJ
-gamma 0 0
Id: 8009961
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Ba+2 + Glutamate-2 = Ba(Glutamate)
log_k 2.14
delta_h 0 kJ
-gamma 0 0
Id: 1009961
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
H+ + Phthalate-2 = H(Phthalate)-
log_k 5.408
delta_h 2.1757 kJ
-gamma 0 0
Id: 3309971
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
2H+ + Phthalate-2 = H2(Phthalate)
log_k 8.358
delta_h 4.8534 kJ
-gamma 0 0
Id: 3309972
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Pb+2 + Phthalate-2 = Pb(Phthalate)
log_k 4.26
delta_h 0 kJ
-gamma 0 0
Id: 6009971
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Pb+2 + 2Phthalate-2 = Pb(Phthalate)2-2
log_k 4.83
delta_h 0 kJ
-gamma 0 0
Id: 6009972

log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Pb+2 + Phthalate-2 + H+ = PbH(Phthalate)+
log_k 6.98
delta_h 0 kJ
-gamma 0 0
Id: 6009973
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Al+3 + Phthalate-2 = Al(Phthalate)+
log_k 4.56
delta_h 0 kJ
-gamma 0 0
Id: 309971
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Al+3 + 2Phthalate-2 = Al(Phthalate)2-
log_k 7.2
delta_h 0 kJ
-gamma 0 0
Id: 309972
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + Phthalate-2 = Zn(Phthalate)
log_k 2.91
delta_h 13.3888 kJ
-gamma 0 0
Id: 9509971
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Zn+2 + 2Phthalate-2 = Zn(Phthalate)2-2
log_k 4.2
delta_h 0 kJ
-gamma 0 0
Id: 9509972
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Phthalate-2 = Cd(Phthalate)
log_k 3.43
delta_h 0 kJ
-gamma 0 0
Id: 1609971
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + Phthalate-2 + H+ = CdH(Phthalate)+
log_k 6.3
delta_h 0 kJ

-gamma 0 0
Id: 1609973
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cd+2 + 2Phthalate-2 = Cd(Phthalate)2-2
log_k 3.7
delta_h 0 kJ
-gamma 0 0
Id: 1609972
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Phthalate-2 = Cu(Phthalate)
log_k 4.02
delta_h 8.368 kJ
-gamma 0 0
Id: 2319971
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + Phthalate-2 + H+ = CuH(Phthalate)+
log_k 7.1
delta_h 3.8493 kJ
-gamma 0 0
Id: 2319970
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cu+2 + 2Phthalate-2 = Cu(Phthalate)2-2
log_k 5.3
delta_h 15.8992 kJ
-gamma 0 0
Id: 2319972
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Phthalate-2 = Ni(Phthalate)
log_k 2.95
delta_h 7.5312 kJ
-gamma 0 0
Id: 5409971
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ni+2 + Phthalate-2 + H+ = NiH(Phthalate)+
log_k 6.6
delta_h 0 kJ
-gamma 0 0
Id: 5409972
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Co+2 + Phthalate-2 = Co(Phthalate)

log_k 2.83
delta_h 7.9 kJ
-gamma 0 0
Id: 2009971
log K source: NIST46.4
Delta H source: NIST46.4
#T and ionic strength: 0.00 25.0
Co+2 + H+ + Phthalate-2 = CoH(Phthalate)+
log_k 7.227
delta_h 0 kJ
-gamma 0 0
Id: 2009972
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.50 25.0
Mn+2 + Phthalate-2 = Mn(Phthalate)
log_k 2.74
delta_h 10.0416 kJ
-gamma 0 0
Id: 4709971
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Cr(OH)2+ + Phthalate-2 + 2H+ = Cr(Phthalate)+ + 2H2O
log_k 16.3
delta_h 0 kJ
-gamma 0 0
Id: 2119971
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cr(OH)2+ + 2Phthalate-2 + 2H+ = Cr(Phthalate)2- + 2H2O
log_k 21.2
delta_h 0 kJ
-gamma 0 0
Id: 2119972
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Cr(OH)2+ + 3Phthalate-2 + 2H+ = Cr(Phthalate)3-3 + 2H2O
log_k 23.3
delta_h 0 kJ
-gamma 0 0
Id: 2119973
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Be+2 + Phthalate-2 = Be(Phthalate)
log_k 4.8278
delta_h 0 kJ
-gamma 0 0
Id: 1109971
log K source: NIST46.4
Delta H source: NIST46.2

#T and ionic strength: 0.10 25.0
Be+2 + 2Phthalate-2 = Be(Phthalate)2-2
log_k 6.5478
delta_h 0 kJ
-gamma 0 0
Id: 1109972
log K source: NIST46.4
Delta H source: NIST46.2
#T and ionic strength: 0.10 25.0
Mg+2 + Phthalate-2 = Mg(Phthalate)
log_k 2.49
delta_h 0 kJ
-gamma 0 0
Id: 4609971
log K source: SCD2.62
Delta H source: SCD2.62
#T and ionic strength:
Ca+2 + Phthalate-2 = Ca(Phthalate)
log_k 2.45
delta_h 0 kJ
-gamma 0 0
Id: 1509970
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ca+2 + Phthalate-2 + H+ = CaH(Phthalate)+
log_k 6.43
delta_h 0 kJ
-gamma 0 0
Id: 1509971
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Ba+2 + Phthalate-2 = Ba(Phthalate)
log_k 2.33
delta_h 0 kJ
-gamma 0 0
Id: 1009971
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
Na+ + Phthalate-2 = Na(Phthalate)-
log_k 0.8
delta_h 4.184 kJ
-gamma 0 0
Id: 5009970
log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
K+ + Phthalate-2 = K(Phthalate)-
log_k 0.7
delta_h 3.7656 kJ
-gamma 0 0
Id: 4109971

log K source: NIST46.2
Delta H source: NIST46.2
#T and ionic strength:
PHASES
Sulfur
S + H+ + 2e- = HS-
log_k -2.1449
delta_h -16.3 kJ
Semetal(hex
Se + H+ + 2e- = HSe-
log_k -7.7084
delta_h 15.9 kJ
Semetal(am)
Se + H+ + 2e- = HSe-
log_k -7.1099
delta_h 10.8784 kJ
Sbmetal
Sb + 3H2O = Sb(OH)3 + 3H+ + 3e-
log_k -11.6889
delta_h 83.89 kJ
Snmetal(wht)
Sn + 2H2O = Sn(OH)2 + 2H+ + 2e-
log_k -2.3266
delta_h -0 kJ
Pbmetal
Pb = Pb+2 + 2e-
log_k 4.2462
delta_h 0.92 kJ
Tlmetal
Tl = Tl+ + e-
log_k 5.6762
delta_h 5.36 kJ
Znmetal
Zn = Zn+2 + 2e-
log_k 25.7886
delta_h -153.39 kJ
Cdmetal(alpha)
Cd = Cd+2 + 2e-
log_k 13.5147
delta_h -75.33 kJ
Cdmetal(gamma)
Cd = Cd+2 + 2e-
log_k 13.618
delta_h -75.92 kJ
Hgmetal(l)
Hg = 0.5Hg2+2 + e-
log_k -13.4517
delta_h 83.435 kJ
Cumetal
Cu = Cu+ + e-
log_k -8.756
delta_h 71.67 kJ
Agmetal
Ag = Ag+ + e-

log_k -13.5065
delta_h 105.79 kJ
Crmetal
Cr = Cr+2 + 2e-
log_k 30.4831
delta_h -172 kJ
Vmetal
V = V+3 + 3e-
log_k 44.0253
delta_h -259 kJ
Stibnite
Sb2S3 + 6H2O = 2Sb(OH)3 + 3H+ + 3HS-
log_k -50.46
delta_h 293.78 kJ
Orpiment
As2S3 + 6H2O = 2H3AsO3 + 3HS- + 3H+
log_k -61.0663
delta_h 350.68 kJ
Realgar
AsS + 3H2O = H3AsO3 + HS- + 2H+ + e-
log_k -19.747
delta_h 127.8 kJ
SnS
SnS + 2H2O = Sn(OH)2 + H+ + HS-
log_k -19.114
delta_h -0 kJ
SnS2
SnS2 + 6H2O = Sn(OH)6-2 + 4H+ + 2HS-
log_k -57.4538
delta_h -0 kJ
Galena
PbS + H+ = Pb+2 + HS-
log_k -13.97
delta_h 80 kJ
Tl2S
Tl2S + H+ = 2Tl+ + HS-
log_k -7.19
delta_h 91.52 kJ
ZnS(am)
ZnS + H+ = Zn+2 + HS-
log_k -9.052
delta_h 15.3553 kJ
Sphalerite
ZnS + H+ = Zn+2 + HS-
log_k -11.45
delta_h 30 kJ
Wurtzite
ZnS + H+ = Zn+2 + HS-
log_k -8.95
delta_h 21.171 kJ
Greenockite
CdS + H+ = Cd+2 + HS-
log_k -14.36
delta_h 55 kJ

Hg2S
Hg2S + H+ = Hg2+2 + HS-
log_k -11.6765
delta_h 69.7473 kJ
Cinnabar
HgS + 2H2O = Hg(OH)2 + H+ + HS-
log_k -45.694
delta_h 253.76 kJ
Metacinnabar
HgS + 2H2O = Hg(OH)2 + H+ + HS-
log_k -45.094
delta_h 253.72 kJ
Chalcocite
Cu2S + H+ = 2Cu+ + HS-
log_k -34.92
delta_h 168 kJ
Djurleite
Cu0.066Cu1.868S + H+ = 0.066Cu+2 + 1.868Cu+ + HS-
log_k -33.92
delta_h 200.334 kJ
Anilite
Cu0.25Cu1.5S + H+ = 0.25Cu+2 + 1.5Cu+ + HS-
log_k -31.878
delta_h 182.15 kJ
BlaubleiII
Cu0.6Cu0.8S + H+ = 0.6Cu+2 + 0.8Cu+ + HS-
log_k -27.279
delta_h -0 kJ
BlaubleiI
Cu0.9Cu0.2S + H+ = 0.9Cu+2 + 0.2Cu+ + HS-
log_k -24.162
delta_h -0 kJ
Covellite
CuS + H+ = Cu+2 + HS-
log_k -22.3
delta_h 97 kJ
Chalcopyrite
CuFeS2 + 2H+ = Cu+2 + Fe+2 + 2HS-
log_k -35.27
delta_h 148.448 kJ
Acanthite
Ag2S + H+ = 2Ag+ + HS-
log_k -36.22
delta_h 227 kJ
NiS(alpha)
NiS + H+ = Ni+2 + HS-
log_k -5.6
delta_h -0 kJ
NiS(beta)
NiS + H+ = Ni+2 + HS-
log_k -11.1
delta_h -0 kJ
NiS(gamma)
NiS + H+ = Ni+2 + HS-

log_k -12.8
delta_h -0 kJ
CoS(alpha)
CoS + H+ = Co+2 + HS-
log_k -7.44
delta_h -0 kJ
CoS(beta)
CoS + H+ = Co+2 + HS-
log_k -11.07
delta_h -0 kJ
FeS(ppt)
FeS + H+ = Fe+2 + HS-
log_k -2.95
delta_h -11 kJ
Greigite
Fe3S4 + 4H+ = 2Fe+3 + Fe+2 + 4HS-
log_k -45.035
delta_h -0 kJ
Mackinawite
FeS + H+ = Fe+2 + HS-
log_k -3.6
delta_h -0 kJ
Pyrite
FeS2 + 2H+ + 2e- = Fe+2 + 2HS-
log_k -18.5082
delta_h 49.844 kJ
MnS(grn)
MnS + H+ = Mn+2 + HS-
log_k 0.17
delta_h -32 kJ
MnS(pnk)
MnS + H+ = Mn+2 + HS-
log_k 3.34
delta_h -0 kJ
MoS2
MoS2 + 4H2O = MoO4-2 + 6H+ + 2HS- + 2e-
log_k -70.2596
delta_h 389.02 kJ
BeS
BeS + H+ = Be+2 + HS-
log_k 19.38
delta_h -0 kJ
BaS
BaS + H+ = Ba+2 + HS-
log_k 16.18
delta_h -0 kJ
Hg2(Cyanide)2
Hg2(Cyanide)2 = Hg2+2 + 2Cyanide-
log_k -39.3
delta_h -0 kJ
CuCyanide
CuCyanide = Cu+ + Cyanide-
log_k -19.5
delta_h -19 kJ

AgCyanide
AgCyanide = Ag+ + Cyanide-
log_k -15.74
delta_h 110.395 kJ
Ag2(Cyanide)2
Ag2(Cyanide)2 = 2Ag+ + 2Cyanide-
log_k -11.3289
delta_h -0 kJ
NaCyanide(cubic)
NaCyanide = Cyanide- + Na+
log_k 1.6012
delta_h 0.969 kJ
KCyanide(cubic)
KCyanide = Cyanide- + K+
log_k 1.4188
delta_h 11.93 kJ
Pb2Fe(Cyanide)6
Pb2Fe(Cyanide)6 = 2Pb+2 + Fe+2 + 6Cyanide-
log_k -53.42
delta_h -0 kJ
Zn2Fe(Cyanide)6
Zn2Fe(Cyanide)6 = 2Zn+2 + Fe+2 + 6Cyanide-
log_k -51.08
delta_h -0 kJ
Cd2Fe(Cyanide)6
Cd2Fe(Cyanide)6 = 2Cd+2 + Fe+2 + 6Cyanide-
log_k -52.78
delta_h -0 kJ
Ag4Fe(Cyanide)6
Ag4Fe(Cyanide)6 = 4Ag+ + Fe+2 + 6Cyanide-
log_k -79.47
delta_h -0 kJ
Ag3Fe(Cyanide)6
Ag3Fe(Cyanide)6 = 3Ag+ + Fe+3 + 6Cyanide-
log_k -72.7867
delta_h -0 kJ
Mn3(Fe(Cyanide)6)2
Mn3(Fe(Cyanide)6)2 = 3Mn+2 + 2Fe+3 + 12Cyanide-
log_k -105.4
delta_h -0 kJ
Sb2Se3
Sb2Se3 + 6H2O = 2Sb(OH)3 + 3HSe- + 3H+
log_k -67.7571
delta_h 343.046 kJ
SnSe
SnSe + 2H2O = Sn(OH)2 + H+ + HSe-
log_k -30.494
delta_h -0 kJ
SnSe2
SnSe2 + 6H2O = Sn(OH)6-2 + 4H+ + 2HSe-
log_k -65.1189
delta_h -0 kJ
Clausthalite
PbSe + H+ = Pb+2 + HSe-

log_k -27.1
delta_h 119.72 kJ
Tl2Se
Tl2Se + H+ = 2Tl+ + HSe-
log_k -18.1
delta_h 85.62 kJ
ZnSe
ZnSe + H+ = Zn+2 + HSe-
log_k -14.4
delta_h 25.51 kJ
CdSe
CdSe + H+ = Cd+2 + HSe-
log_k -20.2
delta_h 75.9814 kJ
HgSe
HgSe + 2H2O = Hg(OH)2 + H+ + HSe-
log_k -55.694
delta_h -0 kJ
Cu2Se(alpha)
Cu2Se + H+ = 2Cu+ + HSe-
log_k -45.8
delta_h 214.263 kJ
Cu3Se2
Cu3Se2 + 2H+ = 2HSe- + 2Cu+ + Cu+2
log_k -63.4911
delta_h 340.327 kJ
CuSe
CuSe + H+ = Cu+2 + HSe-
log_k -33.1
delta_h 121.127 kJ
CuSe2
CuSe2 + 2H+ + 2e- = 2HSe- + Cu+2
log_k -33.3655
delta_h 140.582 kJ
Ag2Se
Ag2Se + H+ = 2Ag+ + HSe-
log_k -48.7
delta_h 265.48 kJ
NiSe
NiSe + H+ = Ni+2 + HSe-
log_k -17.7
delta_h -0 kJ
CoSe
CoSe + H+ = Co+2 + HSe-
log_k -16.2
delta_h -0 kJ
FeSe
FeSe + H+ = Fe+2 + HSe-
log_k -11
delta_h 2.092 kJ
Ferroselite
FeSe2 + 2H+ + 2e- = 2HSe- + Fe+2
log_k -18.5959
delta_h 47.2792 kJ

MnSe
MnSe + H+ = Mn+2 + HSe-
log_k 3.5
delta_h -98.15 kJ
AlSb
AlSb + 3H2O = Sb(OH)3 + 6e- + Al+3 + 3H+
log_k 65.6241
delta_h -0 kJ
ZnSb
ZnSb + 3H2O = Sb(OH)3 + 5e- + Zn+2 + 3H+
log_k 11.0138
delta_h -54.8773 kJ
CdSb
CdSb + 3H2O = Sb(OH)3 + 5e- + 3H+ + Cd+2
log_k -0.3501
delta_h 22.36 kJ
Cu2Sb:3H2O
Cu2Sb:3H2O = Sb(OH)3 + 6e- + 3H+ + Cu+ + Cu+2
log_k -34.8827
delta_h 233.237 kJ
Cu3Sb
Cu3Sb + 3H2O = Sb(OH)3 + 6e- + 3H+ + 3Cu+
log_k -42.5937
delta_h 308.131 kJ
#Ag4Sb
Ag4Sb + 3H2O = Sb(OH)3 + 6e- + 3Ag+ + 3H+
log_k -56.1818
delta_h -0 kJ
Breithauptite
NiSb + 3H2O = Sb(OH)3 + 5e- + 3H+ + Ni+2
log_k -18.5225
delta_h 96.0019 kJ
MnSb
MnSb + 3H2O = Mn+3 + Sb(OH)3 + 6e- + 3H+
log_k -2.9099
delta_h 21.1083 kJ
Mn2Sb
Mn2Sb + 3H2O = 2Mn+2 + Sb(OH)3 + 7e- + 3H+
log_k 61.0796
delta_h -0 kJ
USb2
USb2 + 8H2O = UO2+2 + 2Sb(OH)3 + 12e- + 10H+
log_k 29.5771
delta_h -103.56 kJ
U3Sb4
U3Sb4 + 12H2O = 3U+4 + 4Sb(OH)3 + 24e- + 12H+
log_k 152.383
delta_h -986.04 kJ
Mg2Sb3
Mg2Sb3 + 9H2O = 2Mg+2 + 3Sb(OH)3 + 9H+ + 13e-
log_k 74.6838
delta_h -0 kJ
Ca3Sb2
Ca3Sb2 + 6H2O = 3Ca+2 + 2Sb(OH)3 + 6H+ + 12e-

log_k 142.974
delta_h -732.744 kJ
NaSb
NaSb + 3H2O = Na+ + Sb(OH)3 + 3H+ + 4e-
log_k 23.1658
delta_h -93.45 kJ
Na3Sb
Na3Sb + 3H2O = 3Na+ + Sb(OH)3 + 3H+ + 6e-
log_k 94.4517
delta_h -432.13 kJ
SeO2
SeO2 + H2O = HSeO3- + H+
log_k 0.1246
delta_h 1.4016 kJ
SeO3
SeO3 + H2O = SeO4-2 + 2H+
log_k 21.044
delta_h -146.377 kJ
Sb2O5
Sb2O5 + 7H2O = 2Sb(OH)6- + 2H+
log_k -9.6674
delta_h -0 kJ
SbO2
SbO2 + 4H2O = Sb(OH)6- + e- + 2H+
log_k -27.8241
delta_h -0 kJ
Sb2O4
Sb2O4 + 2H2O + 2H+ + 2e- = 2Sb(OH)3
log_k 3.4021
delta_h -68.04 kJ
Sb4O6(cubic)
Sb4O6 + 6H2O = 4Sb(OH)3
log_k -18.2612
delta_h 61.1801 kJ
Sb4O6(orth)
Sb4O6 + 6H2O = 4Sb(OH)3
log_k -17.9012
delta_h 37.6801 kJ
Sb(OH)3
Sb(OH)3 = Sb(OH)3
log_k -7.1099
delta_h 30.1248 kJ
Senarmontite
Sb2O3 + 3H2O = 2Sb(OH)3
log_k -12.3654
delta_h 30.6478 kJ
Valentinite
Sb2O3 + 3H2O = 2Sb(OH)3
log_k -8.4806
delta_h 19.0163 kJ
Chalcedony
SiO2 + 2H2O = H4SiO4
log_k -3.55
delta_h 19.7 kJ

Cristobalite
SiO2 + 2H2O = H4SiO4
log_k -3.35
delta_h 20.006 kJ
Quartz
SiO2 + 2H2O = H4SiO4
log_k -4
delta_h 22.36 kJ
SiO2(am-gel)
SiO2 + 2H2O = H4SiO4
log_k -2.71
delta_h 14 kJ
SiO2(am-ppt)
SiO2 + 2H2O = H4SiO4
log_k -2.74
delta_h 15.15 kJ
SnO
SnO + H2O = Sn(OH)2
log_k -4.9141
delta_h -0 kJ
SnO2
SnO2 + 4H2O = Sn(OH)6-2 + 2H+
log_k -28.9749
delta_h -0 kJ
Sn(OH)2
Sn(OH)2 = Sn(OH)2
log_k -5.4309
delta_h -0 kJ
Sn(OH)4
Sn(OH)4 + 2H2O = Sn(OH)6-2 + 2H+
log_k -22.2808
delta_h -0 kJ
H2Sn(OH)6
H2Sn(OH)6 = Sn(OH)6-2 + 2H+
log_k -23.5281
delta_h -0 kJ
Massicot
PbO + 2H+ = Pb+2 + H2O
log_k 12.894
delta_h -66.848 kJ
Litharge
PbO + 2H+ = Pb+2 + H2O
log_k 12.694
delta_h -65.501 kJ
PbO:0.3H2O
PbO:0.33H2O + 2H+ = Pb+2 + 1.33H2O
log_k 12.98
delta_h -0 kJ
Plattnerite
PbO2 + 4H+ + 2e- = Pb+2 + 2H2O
log_k 49.6001
delta_h -296.27 kJ
Pb(OH)2
Pb(OH)2 + 2H+ = Pb+2 + 2H2O

log_k 8.15
delta_h -58.5342 kJ
Pb2O(OH)2
Pb2O(OH)2 + 4H+ = 2Pb+2 + 3H2O
log_k 26.188
delta_h -0 kJ
Al(OH)3(am)
Al(OH)3 + 3H+ = Al+3 + 3H2O
log_k 10.8
delta_h -111 kJ
Boehmite
AlOOH + 3H+ = Al+3 + 2H2O
log_k 8.578
delta_h -117.696 kJ
Diaspore
AlOOH + 3H+ = Al+3 + 2H2O
log_k 6.873
delta_h -103.052 kJ
Gibbsite
Al(OH)3 + 3H+ = Al+3 + 3H2O
log_k 8.291
delta_h -95.3952 kJ
Tl2O
Tl2O + 2H+ = 2Tl+ + H2O
log_k 27.0915
delta_h -96.41 kJ
TlOH
TlOH + H+ = Tl+ + H2O
log_k 12.9186
delta_h -41.57 kJ
Avicennite
Tl2O3 + 3H2O = 2Tl(OH)3
log_k -13
delta_h -0 kJ
Tl(OH)3
Tl(OH)3 = Tl(OH)3
log_k -5.441
delta_h -0 kJ
Zn(OH)2(am)
Zn(OH)2 + 2H+ = Zn+2 + 2H2O
log_k 12.474
delta_h -80.62 kJ
Zn(OH)2
Zn(OH)2 + 2H+ = Zn+2 + 2H2O
log_k 12.2
delta_h -0 kJ
Zn(OH)2(beta)
Zn(OH)2 + 2H+ = Zn+2 + 2H2O
log_k 11.754
delta_h -83.14 kJ
Zn(OH)2(gamma)
Zn(OH)2 + 2H+ = Zn+2 + 2H2O
log_k 11.734
delta_h -0 kJ

Zn(OH)2(epsilon)
Zn(OH)2 + 2H+ = Zn+2 + 2H2O
log_k 11.534
delta_h -81.8 kJ
ZnO(active)
ZnO + 2H+ = Zn+2 + H2O
log_k 11.1884
delta_h -88.76 kJ
Zincite
ZnO + 2H+ = Zn+2 + H2O
log_k 11.334
delta_h -89.62 kJ
Cd(OH)2(am)
Cd(OH)2 + 2H+ = Cd+2 + 2H2O
log_k 13.73
delta_h -86.9017 kJ
Cd(OH)2
Cd(OH)2 + 2H+ = Cd+2 + 2H2O
log_k 13.644
delta_h -94.62 kJ
Monteponite
CdO + 2H+ = Cd+2 + H2O
log_k 15.1034
delta_h -103.4 kJ
Hg2(OH)2
Hg2(OH)2 + 2H+ = Hg2+2 + 2H2O
log_k 5.2603
delta_h -0 kJ
Montroydite
HgO + H2O = Hg(OH)2
log_k -3.64
delta_h -38.9 kJ
Hg(OH)2
Hg(OH)2 = Hg(OH)2
log_k -3.4963
delta_h -0 kJ
Cuprite
Cu2O + 2H+ = 2Cu+ + H2O
log_k -1.406
delta_h -124.02 kJ
Cu(OH)2
Cu(OH)2 + 2H+ = Cu+2 + 2H2O
log_k 8.674
delta_h -56.42 kJ
Tenorite
CuO + 2H+ = Cu+2 + H2O
log_k 7.644
delta_h -64.867 kJ
Ag2O
Ag2O + 2H+ = 2Ag+ + H2O
log_k 12.574
delta_h -45.62 kJ
Ni(OH)2
Ni(OH)2 + 2H+ = Ni+2 + 2H2O

log_k 12.794
delta_h -95.96 kJ
Bunsenite
NiO + 2H+ = Ni+2 + H2O
log_k 12.4456
delta_h -100.13 kJ
CoO
CoO + 2H+ = Co+2 + H2O
log_k 13.5864
delta_h -106.295 kJ
Co(OH)2
Co(OH)2 + 2H+ = Co+2 + 2H2O
log_k 13.094
delta_h -0 kJ
Co(OH)3
Co(OH)3 + 3H+ = Co+3 + 3H2O
log_k -2.309
delta_h -92.43 kJ
#Wustite-0.11
WUSTITE-0.11 + 2H+ = 0.947Fe+2 + H2O
log_k 11.6879
delta_h -103.938 kJ
Fe(OH)2
Fe(OH)2 + 2H+ = Fe+2 + 2H2O
log_k 13.564
delta_h -0 kJ
Ferrihydrite
Fe(OH)3 + 3H+ = Fe+3 + 3H2O
log_k 3.191
delta_h -73.374 kJ
Fe3(OH)8
Fe3(OH)8 + 8H+ = 2Fe+3 + Fe+2 + 8H2O
log_k 20.222
delta_h -0 kJ
Goethite
FeOOH + 3H+ = Fe+3 + 2H2O
log_k 0.491
delta_h -60.5843 kJ
Pyrolusite
MnO2 + 4H+ + 2e- = Mn+2 + 2H2O
log_k 41.38
delta_h -272 kJ
Birnessite
MnO2 + 4H+ + e- = Mn+3 + 2H2O
log_k 18.091
delta_h -0 kJ
Nsutite
MnO2 + 4H+ + e- = Mn+3 + 2H2O
log_k 17.504
delta_h -0 kJ
Pyrochroite
Mn(OH)2 + 2H+ = Mn+2 + 2H2O
log_k 15.194
delta_h -97.0099 kJ

Manganite
MnOOH + 3H+ + e- = Mn+2 + 2H2O
log_k 25.34
delta_h -0 kJ
Cr(OH)2
Cr(OH)2 + 2H+ = Cr+2 + 2H2O
log_k 10.8189
delta_h -35.6058 kJ
Cr(OH)3(am)
Cr(OH)3 + H+ = Cr(OH)2+ + H2O
log_k -0.75
delta_h -0 kJ
Cr(OH)3
Cr(OH)3 + H+ = Cr(OH)2+ + H2O
log_k 1.3355
delta_h -29.7692 kJ
CrO3
CrO3 + H2O = CrO4-2 + 2H+
log_k -3.2105
delta_h -5.2091 kJ
MoO3
MoO3 + H2O = MoO4-2 + 2H+
log_k -8
delta_h -0 kJ
VO
VO + 2H+ = V+3 + H2O + e-
log_k 14.7563
delta_h -113.041 kJ
V(OH)3
V(OH)3 + 3H+ = V+3 + 3H2O
log_k 7.591
delta_h -0 kJ
VO(OH)2
VO(OH)2 + 2H+ = VO+2 + 2H2O
log_k 5.1506
delta_h -0 kJ
Uraninite
UO2 + 4H+ = U+4 + 2H2O
log_k -4.6693
delta_h -77.86 kJ
UO2(am)
UO2 + 4H+ = U+4 + 2H2O
log_k 0.934
delta_h -109.746 kJ
UO3
UO3 + 2H+ = UO2+2 + H2O
log_k 7.7
delta_h -81.0299 kJ
Gummite
UO3 + 2H+ = UO2+2 + H2O
log_k 7.6718
delta_h -81.0299 kJ
UO2(OH)2(beta)
UO2(OH)2 + 2H+ = UO2+2 + 2H2O

log_k 5.6116
delta_h -56.7599 kJ
Schoepite
UO2(OH)2:H2O + 2H+ = UO2+2 + 3H2O
log_k 5.994
delta_h -49.79 kJ
Be(OH)2(am)
Be(OH)2 + 2H+ = Be+2 + 2H2O
log_k 7.194
delta_h -0 kJ
Be(OH)2(alpha)
Be(OH)2 + 2H+ = Be+2 + 2H2O
log_k 6.894
delta_h -0 kJ
Be(OH)2(beta)
Be(OH)2 + 2H+ = Be+2 + 2H2O
log_k 6.494
delta_h -0 kJ
Brucite
Mg(OH)2 + 2H+ = Mg+2 + 2H2O
log_k 16.844
delta_h -113.996 kJ
Periclase
MgO + 2H+ = Mg+2 + H2O
log_k 21.5841
delta_h -151.23 kJ
Mg(OH)2(active)
Mg(OH)2 + 2H+ = Mg+2 + 2H2O
log_k 18.794
delta_h -0 kJ
Lime
CaO + 2H+ = Ca+2 + H2O
log_k 32.6993
delta_h -193.91 kJ
Portlandite
Ca(OH)2 + 2H+ = Ca+2 + 2H2O
log_k 22.804
delta_h -128.62 kJ
Ba(OH)2:8H2O
Ba(OH)2:8H2O + 2H+ = Ba+2 + 10H2O
log_k 24.394
delta_h -54.32 kJ
Cu(SbO3)2
Cu(SbO3)2 + 6H+ + 4e- = 2Sb(OH)3 + Cu+2
log_k 45.2105
delta_h -0 kJ
Arsenolite
As4O6 + 6H2O = 4H3AsO3
log_k -2.76
delta_h 59.9567 kJ
Claudetite
As4O6 + 6H2O = 4H3AsO3
log_k -3.065
delta_h 55.6054 kJ

As2O5
As2O5 + 3H2O = 2H3AsO4
log_k 6.7061
delta_h -22.64 kJ
Pb2O3
Pb2O3 + 6H+ + 2e- = 2Pb+2 + 3H2O
log_k 61.04
delta_h -0 kJ
Minium
Pb3O4 + 8H+ + 2e- = 3Pb+2 + 4H2O
log_k 73.5219
delta_h -421.874 kJ
Al2O3
Al2O3 + 6H+ = 2Al+3 + 3H2O
log_k 19.6524
delta_h -258.59 kJ
Co3O4
Co3O4 + 8H+ = Co+2 + 2Co+3 + 4H2O
log_k -10.4956
delta_h -107.5 kJ
CoFe2O4
CoFe2O4 + 8H+ = Co+2 + 2Fe+3 + 4H2O
log_k -3.5281
delta_h -158.82 kJ
Magnetite
Fe3O4 + 8H+ = 2Fe+3 + Fe+2 + 4H2O
log_k 3.4028
delta_h -208.526 kJ
Hercynite
FeAl2O4 + 8H+ = Fe+2 + 2Al+3 + 4H2O
log_k 22.893
delta_h -313.92 kJ
Hematite
Fe2O3 + 6H+ = 2Fe+3 + 3H2O
log_k -1.418
delta_h -128.987 kJ
Maghemite
Fe2O3 + 6H+ = 2Fe+3 + 3H2O
log_k 6.386
delta_h -0 kJ
Lepidocrocite
FeOOH + 3H+ = Fe+3 + 2H2O
log_k 1.371
delta_h -0 kJ
Hausmannite
Mn3O4 + 8H+ + 2e- = 3Mn+2 + 4H2O
log_k 61.03
delta_h -421 kJ
Bixbyite
Mn2O3 + 6H+ = 2Mn+3 + 3H2O
log_k -0.6445
delta_h -124.49 kJ
Cr2O3
Cr2O3 + H2O + 2H+ = 2Cr(OH)2+

log_k -2.3576
delta_h -50.731 kJ
#V2O3
V2O3 + 3H+ = V+3 + 1.5H2O
log_k 4.9
delta_h -82.5085 kJ
V3O5
V3O5 + 4H+ = 3VO+2 + 2H2O + 2e-
log_k 1.8361
delta_h -98.46 kJ
#V2O4
V2O4 + 2H+ = VO+2 + H2O
log_k 4.27
delta_h -58.8689 kJ
V4O7
V4O7 + 6H+ = 4VO+2 + 3H2O + 2e-
log_k 7.1865
delta_h -163.89 kJ
V6O13
V6O13 + 2H+ = 6VO2+ + H2O + 4e-
log_k -60.86
delta_h 271.5 kJ
V2O5
V2O5 + 2H+ = 2VO2+ + H2O
log_k -1.36
delta_h 34 kJ
U4O9
U4O9 + 18H+ + 2e- = 4U+4 + 9H2O
log_k -3.0198
delta_h -426.87 kJ
U3O8
U3O8 + 16H+ + 4e- = 3U+4 + 8H2O
log_k 21.0834
delta_h -485.44 kJ
Spinel
MgAl2O4 + 8H+ = Mg+2 + 2Al+3 + 4H2O
log_k 36.8476
delta_h -388.012 kJ
Magnesioferrite
Fe2MgO4 + 8H+ = Mg+2 + 2Fe+3 + 4H2O
log_k 16.8597
delta_h -278.92 kJ
Natron
Na2CO3:10H2O = 2Na+ + CO3-2 + 10H2O
log_k -1.311
delta_h 65.8771 kJ
Cuprousferrite
CuFeO2 + 4H+ = Cu+ + Fe+3 + 2H2O
log_k -8.9171
delta_h -15.89 kJ
Cupricferrite
CuFe2O4 + 8H+ = Cu+2 + 2Fe+3 + 4H2O
log_k 5.9882
delta_h -210.21 kJ

FeCr2O4
FeCr2O4 + 4H+ = 2Cr(OH)2+ + Fe+2
log_k 7.2003
delta_h -140.4 kJ
MgCr2O4
MgCr2O4 + 4H+ = 2Cr(OH)2+ + Mg+2
log_k 16.2007
delta_h -179.4 kJ
SbF3
SbF3 + 3H2O = Sb(OH)3 + 3H+ + 3F-
log_k -10.2251
delta_h -6.7279 kJ
PbF2
PbF2 = Pb+2 + 2F-
log_k -7.44
delta_h 20 kJ
ZnF2
ZnF2 = Zn+2 + 2F-
log_k -0.5343
delta_h -59.69 kJ
CdF2
CdF2 = Cd+2 + 2F-
log_k -1.2124
delta_h -46.22 kJ
Hg2F2
Hg2F2 = Hg2+2 + 2F-
log_k -10.3623
delta_h -18.486 kJ
CuF
CuF = Cu+ + F-
log_k -4.9056
delta_h 16.648 kJ
CuF2
CuF2 = Cu+2 + 2F-
log_k 1.115
delta_h -66.901 kJ
CuF2:2H2O
CuF2:2H2O = Cu+2 + 2F- + 2H2O
log_k -4.55
delta_h -15.2716 kJ
AgF:4H2O
AgF:4H2O = Ag+ + F- + 4H2O
log_k 1.0491
delta_h 15.4202 kJ
CoF2
CoF2 = Co+2 + 2F-
log_k -1.5969
delta_h -57.368 kJ
CoF3
CoF3 = Co+3 + 3F-
log_k -1.4581
delta_h -123.692 kJ
CrF3
CrF3 + 2H2O = Cr(OH)2+ + 3F- + 2H+

log_k -11.3367
delta_h -23.3901 kJ
VF4
VF4 + H2O = VO+2 + 4F- + 2H+
log_k 14.93
delta_h -199.117 kJ
UF4
UF4 = U+4 + 4F-
log_k -29.5371
delta_h -79.0776 kJ
UF4:2.5H2O
UF4:2.5H2O = U+4 + 4F- + 2.5H2O
log_k -32.7179
delta_h 24.325 kJ
MgF2
MgF2 = Mg+2 + 2F-
log_k -8.13
delta_h -8 kJ
Fluorite
CaF2 = Ca+2 + 2F-
log_k -10.5
delta_h 8 kJ
SrF2
SrF2 = Sr+2 + 2F-
log_k -8.58
delta_h 4 kJ
BaF2
BaF2 = Ba+2 + 2F-
log_k -5.82
delta_h 4 kJ
Cryolite
Na3AlF6 = 3Na+ + Al+3 + 6F-
log_k -33.84
delta_h 38 kJ
SbCl3
SbCl3 + 3H2O = Sb(OH)3 + 3Cl- + 3H+
log_k 0.5719
delta_h -35.18 kJ
SnCl2
SnCl2 + 2H2O = Sn(OH)2 + 2H+ + 2Cl-
log_k -9.2752
delta_h -0 kJ
Cotunnite
PbCl2 = Pb+2 + 2Cl-
log_k -4.78
delta_h 26.166 kJ
Matlockite
PbClF = Pb+2 + Cl- + F-
log_k -8.9733
delta_h 33.19 kJ
Phosgenite
PbCl2:PbCO3 = 2Pb+2 + 2Cl- + CO3-2
log_k -19.81
delta_h -0 kJ

Laurionite
PbOHCl + H+ = Pb+2 + Cl- + H2O
log_k 0.623
delta_h -0 kJ
Pb2(OH)3Cl
Pb2(OH)3Cl + 3H+ = 2Pb+2 + 3H2O + Cl-
log_k 8.793
delta_h -0 kJ
TlCl
TlCl = Tl+ + Cl-
log_k -3.74
delta_h 41 kJ
ZnCl2
ZnCl2 = Zn+2 + 2Cl-
log_k 7.05
delta_h -72.5 kJ
Zn2(OH)3Cl
Zn2(OH)3Cl + 3H+ = 2Zn+2 + 3H2O + Cl-
log_k 15.191
delta_h -0 kJ
Zn5(OH)8Cl2
Zn5(OH)8Cl2 + 8H+ = 5Zn+2 + 8H2O + 2Cl-
log_k 38.5
delta_h -0 kJ
CdCl2
CdCl2 = Cd+2 + 2Cl-
log_k -0.6588
delta_h -18.58 kJ
CdCl2:1H2O
CdCl2:1H2O = Cd+2 + 2Cl- + H2O
log_k -1.6932
delta_h -7.47 kJ
CdCl2:2.5H2O
CdCl2:2.5H2O = Cd+2 + 2Cl- + 2.5H2O
log_k -1.913
delta_h 7.2849 kJ
CdOHCl
CdOHCl + H+ = Cd+2 + H2O + Cl-
log_k 3.5373
delta_h -30.93 kJ
Calomel
Hg2Cl2 = Hg2+2 + 2Cl-
log_k -17.91
delta_h 92 kJ
HgCl2
HgCl2 + 2H2O = Hg(OH)2 + 2Cl- + 2H+
log_k -21.2621
delta_h 107.82 kJ
Nantokite
CuCl = Cu+ + Cl-
log_k -6.73
delta_h 42.662 kJ
Melanothallite
CuCl2 = Cu+2 + 2Cl-

log_k 6.2572
delta_h -63.407 kJ
Atacamite
Cu2(OH)3Cl + 3H+ = 2Cu+2 + 3H2O + Cl-
log_k 7.391
delta_h -93.43 kJ
Cerargyrite
AgCl = Ag+ + Cl-
log_k -9.75
delta_h 65.2 kJ
CoCl2
CoCl2 = Co+2 + 2Cl-
log_k 8.2672
delta_h -79.815 kJ
CoCl2:6H2O
CoCl2:6H2O = Co+2 + 2Cl- + 6H2O
log_k 2.5365
delta_h 8.0598 kJ
(Co(NH3)6)Cl3
(Co(NH3)6)Cl3 + 6H+ = Co+3 + 6NH4+ + 3Cl-
log_k 20.0317
delta_h -33.1 kJ
(Co(NH3)5OH2)Cl3
(Co(NH3)5OH2)Cl3 + 5H+ = Co+3 + 5NH4+ + 3Cl- + H2O
log_k 11.7351
delta_h -25.37 kJ
(Co(NH3)5Cl)Cl2
(Co(NH3)5Cl)Cl2 + 5H+ = Co+3 + 5NH4+ + 3Cl-
log_k 4.5102
delta_h -10.74 kJ
Fe(OH)2.7Cl.3
Fe(OH)2.7Cl.3 + 2.7H+ = Fe+3 + 2.7H2O + 0.3Cl-
log_k -3.04
delta_h -0 kJ
MnCl2:4H2O
MnCl2:4H2O = Mn+2 + 2Cl- + 4H2O
log_k 2.7151
delta_h -10.83 kJ
CrCl2
CrCl2 = Cr+2 + 2Cl-
log_k 14.0917
delta_h -110.76 kJ
CrCl3
CrCl3 + 2H2O = Cr(OH)2+ + 3Cl- + 2H+
log_k 15.1145
delta_h -121.08 kJ
VCl2
VCl2 = V+3 + 2Cl- + e-
log_k 18.8744
delta_h -141.16 kJ
VCl3
VCl3 = V+3 + 3Cl-
log_k 23.4326
delta_h -179.54 kJ

VOCl
VOCl + 2H+ = V+3 + Cl- + H2O
log_k 11.1524
delta_h -104.91 kJ
VOCl2
VOCl2 = VO+2 + 2Cl-
log_k 12.7603
delta_h -117.76 kJ
VO2Cl
VO2Cl = VO2+ + Cl-
log_k 2.8413
delta_h -40.28 kJ
Halite
NaCl = Na+ + Cl-
log_k 1.6025
delta_h 3.7 kJ
SbBr3
SbBr3 + 3H2O = Sb(OH)3 + 3Br- + 3H+
log_k 0.9689
delta_h -20.94 kJ
SnBr2
SnBr2 + 2H2O = Sn(OH)2 + 2H+ + 2Br-
log_k -9.5443
delta_h -0 kJ
SnBr4
SnBr4 + 6H2O = Sn(OH)6-2 + 6H+ + 4Br-
log_k -28.8468
delta_h -0 kJ
PbBr2
PbBr2 = Pb+2 + 2Br-
log_k -5.3
delta_h 35.499 kJ
PbBrF
PbBrF = Pb+2 + Br- + F-
log_k -8.49
delta_h -0 kJ
TlBr
TlBr = Tl+ + Br-
log_k -5.44
delta_h 54 kJ
ZnBr2:2H2O
ZnBr2:2H2O = Zn+2 + 2Br- + 2H2O
log_k 5.2005
delta_h -30.67 kJ
CdBr2:4H2O
CdBr2:4H2O = Cd+2 + 2Br- + 4H2O
log_k -2.425
delta_h 30.5001 kJ
Hg2Br2
Hg2Br2 = Hg2+2 + 2Br-
log_k -22.25
delta_h 133 kJ
HgBr2
HgBr2 + 2H2O = Hg(OH)2 + 2Br- + 2H+

log_k -25.2734
delta_h 138.492 kJ
CuBr
CuBr = Cu+ + Br-
log_k -8.3
delta_h 54.86 kJ
Cu2(OH)3Br
Cu2(OH)3Br + 3H+ = 2Cu+2 + 3H2O + Br-
log_k 7.9085
delta_h -93.43 kJ
Bromyrite
AgBr = Ag+ + Br-
log_k -12.3
delta_h 84.5 kJ
(Co(NH3)6)Br3
(Co(NH3)6)Br3 + 6H+ = Co+3 + 6NH4+ + 3Br-
log_k 18.3142
delta_h -21.1899 kJ
(Co(NH3)5Cl)Br2
(Co(NH3)5Cl)Br2 + 5H+ = Co+3 + 5NH4+ + Cl- + 2Br-
log_k 5.0295
delta_h -6.4 kJ
CrBr3
CrBr3 + 2H2O = Cr(OH)2+ + 3Br- + 2H+
log_k 19.9086
delta_h -141.323 kJ
AsI3
AsI3 + 3H2O = H3AsO3 + 3I- + 3H+
log_k 4.2307
delta_h 3.15 kJ
SbI3
SbI3 + 3H2O = Sb(OH)3 + 3H+ + 3I-
log_k -0.538
delta_h 13.5896 kJ
PbI2
PbI2 = Pb+2 + 2I-
log_k -8.1
delta_h 62 kJ
TlI
TlI = Tl+ + I-
log_k -7.23
delta_h 75 kJ
ZnI2
ZnI2 = Zn+2 + 2I-
log_k 7.3055
delta_h -58.92 kJ
CdI2
CdI2 = Cd+2 + 2I-
log_k -3.5389
delta_h 13.82 kJ
Hg2I2
Hg2I2 = Hg2+2 + 2I-
log_k -28.34
delta_h 163 kJ

Coccinite
HgI2 + 2H2O = Hg(OH)2 + 2H+ + 2I-
log_k -34.9525
delta_h 210.72 kJ
HgI2:2NH3
HgI2:2NH3 + 2H2O = Hg(OH)2 + 2I- + 2NH4+
log_k -16.2293
delta_h 132.18 kJ
HgI2:6NH3
HgI2:6NH3 + 2H2O + 4H+ = Hg(OH)2 + 2I- + 6NH4+
log_k 33.7335
delta_h -90.3599 kJ
CuI
CuI = Cu+ + I-
log_k -12
delta_h 82.69 kJ
Iodyrite
AgI = Ag+ + I-
log_k -16.08
delta_h 110 kJ
(Co(NH3)6)I3
(Co(NH3)6)I3 + 6H+ = Co+3 + 6NH4+ + 3I-
log_k 16.5831
delta_h -9.6999 kJ
(Co(NH3)5Cl)I2
(Co(NH3)5Cl)I2 + 5H+ = Co+3 + 5NH4+ + Cl- + 2I-
log_k 5.5981
delta_h 0.66 kJ
CrI3
CrI3 + 2H2O = Cr(OH)2+ + 3I- + 2H+
log_k 20.4767
delta_h -134.419 kJ
Cerussite
PbCO3 = Pb+2 + CO3-2
log_k -13.13
delta_h 24.79 kJ
Pb2OCO3
Pb2OCO3 + 2H+ = 2Pb+2 + H2O + CO3-2
log_k -0.5578
delta_h -40.8199 kJ
Pb3O2CO3
Pb3O2CO3 + 4H+ = 3Pb+2 + CO3-2 + 2H2O
log_k 11.02
delta_h -110.583 kJ
Hydrocerussite
Pb3(OH)2(CO3)2 + 2H+ = 3Pb+2 + 2H2O + 2CO3-2
log_k -18.7705
delta_h -0 kJ
Pb10(OH)6O(CO3)6
Pb10(OH)6O(CO3)6 + 8H+ = 10Pb+2 + 6CO3-2 + 7H2O
log_k -8.76
delta_h -0 kJ
Tl2CO3
Tl2CO3 = 2Tl+ + CO3-2

log_k -3.8367
delta_h 35.49 kJ
Smithsonite
ZnCO3 = Zn+2 + CO3-2
log_k -10
delta_h -15.84 kJ
ZnCO3:1H2O
ZnCO3:1H2O = Zn+2 + CO3-2 + H2O
log_k -10.26
delta_h -0 kJ
Otavite
CdCO3 = Cd+2 + CO3-2
log_k -12
delta_h -0.55 kJ
Hg2CO3
Hg2CO3 = Hg2+2 + CO3-2
log_k -16.05
delta_h 45.14 kJ
Hg3O2CO3
Hg3O2CO3 + 4H2O = 3Hg(OH)2 + 2H+ + CO3-2
log_k -29.682
delta_h -0 kJ
CuCO3
CuCO3 = Cu+2 + CO3-2
log_k -11.5
delta_h -0 kJ
Malachite
Cu2(OH)2CO3 + 2H+ = 2Cu+2 + 2H2O + CO3-2
log_k -5.306
delta_h 76.38 kJ
Azurite
Cu3(OH)2(CO3)2 + 2H+ = 3Cu+2 + 2H2O + 2CO3-2
log_k -16.906
delta_h -95.22 kJ
Ag2CO3
Ag2CO3 = 2Ag+ + CO3-2
log_k -11.09
delta_h 42.15 kJ
NiCO3
NiCO3 = Ni+2 + CO3-2
log_k -6.87
delta_h -41.589 kJ
CoCO3
CoCO3 = Co+2 + CO3-2
log_k -9.98
delta_h -12.7612 kJ
Siderite
FeCO3 = Fe+2 + CO3-2
log_k -10.24
delta_h -16 kJ
Rhodochrosite
MnCO3 = Mn+2 + CO3-2
log_k -10.58
delta_h -1.88 kJ

Rutherfordine
UO2CO3 = UO2+2 + CO3-2
log_k -14.5
delta_h -3.03 kJ
Artinite
MgCO3:Mg(OH)2:3H2O + 2H+ = 2Mg+2 + CO3-2 + 5H2O
log_k 9.6
delta_h -120.257 kJ
Hydromagnesite
Mg5(CO3)4(OH)2:4H2O + 2H+ = 5Mg+2 + 4CO3-2 + 6H2O
log_k -8.766
delta_h -218.447 kJ
Magnesite
MgCO3 = Mg+2 + CO3-2
log_k -7.46
delta_h 20 kJ
Nesquehonite
MgCO3:3H2O = Mg+2 + CO3-2 + 3H2O
log_k -4.67
delta_h -24.2212 kJ
Aragonite
CaCO3 = Ca+2 + CO3-2
log_k -8.3
delta_h -12 kJ
Calcite
CaCO3 = Ca+2 + CO3-2
log_k -8.48
delta_h -8 kJ
Dolomite(ordered)
CaMg(CO3)2 = Ca+2 + Mg+2 + 2CO3-2
log_k -17.09
delta_h -39.5 kJ
Dolomite(disordered)
CaMg(CO3)2 = Ca+2 + Mg+2 + 2CO3-2
log_k -16.54
delta_h -46.4 kJ
Huntite
CaMg3(CO3)4 = 3Mg+2 + Ca+2 + 4CO3-2
log_k -29.968
delta_h -107.78 kJ
Strontianite
SrCO3 = Sr+2 + CO3-2
log_k -9.27
delta_h -0 kJ
Witherite
BaCO3 = Ba+2 + CO3-2
log_k -8.57
delta_h 4 kJ
Thermonatrite
Na2CO3:H2O = 2Na+ + CO3-2 + H2O
log_k 0.637
delta_h -10.4799 kJ
TlNO3
TlNO3 = Tl+ + NO3-

log_k -1.6127
delta_h 42.44 kJ
Zn(NO3)2:6H2O
Zn(NO3)2:6H2O = Zn+2 + 2NO3- + 6H2O
log_k 3.3153
delta_h 24.5698 kJ
Cu2(OH)3NO3
Cu2(OH)3NO3 + 3H+ = 2Cu+2 + 3H2O + NO3-
log_k 9.251
delta_h -72.5924 kJ
(Co(NH3)6)(NO3)3
(Co(NH3)6)(NO3)3 + 6H+ = Co+3 + 6NH4+ + 3NO3-
log_k 17.9343
delta_h 1.59 kJ
(Co(NH3)5Cl)(NO3)2
(Co(NH3)5Cl)(NO3)2 + 5H+ = Co+3 + 5NH4+ + Cl- + 2NO3-
log_k 6.2887
delta_h 6.4199 kJ
UO2(NO3)2
UO2(NO3)2 = UO2+2 + 2NO3-
log_k 12.1476
delta_h -83.3999 kJ
UO2(NO3)2:2H2O
UO2(NO3)2:2H2O = UO2+2 + 2NO3- + 2H2O
log_k 4.851
delta_h -25.355 kJ
UO2(NO3)2:3H2O
UO2(NO3)2:3H2O = UO2+2 + 2NO3- + 3H2O
log_k 3.39
delta_h -9.1599 kJ
UO2(NO3)2:6H2O
UO2(NO3)2:6H2O = UO2+2 + 2NO3- + 6H2O
log_k 2.0464
delta_h 20.8201 kJ
Pb(BO2)2
Pb(BO2)2 + 2H2O + 2H+ = Pb+2 + 2H3BO3
log_k 6.5192
delta_h -15.6119 kJ
Zn(BO2)2
Zn(BO2)2 + 2H2O + 2H+ = Zn+2 + 2H3BO3
log_k 8.29
delta_h -0 kJ
Cd(BO2)2
Cd(BO2)2 + 2H2O + 2H+ = Cd+2 + 2H3BO3
log_k 9.84
delta_h -0 kJ
Co(BO2)2
Co(BO2)2 + 2H2O + 2H+ = Co+2 + 2H3BO3
log_k 27.0703
delta_h -0 kJ
SnSO4
SnSO4 + 2H2O = Sn(OH)2 + 2H+ + SO4-2
log_k -56.9747
delta_h -0 kJ

Sn(SO4)2
Sn(SO4)2 + 6H2O = Sn(OH)6-2 + 6H+ + 2SO4-2
log_k -15.2123
delta_h -0 kJ
Larnakite
PbO:PbSO4 + 2H+ = 2Pb+2 + SO4-2 + H2O
log_k -0.4344
delta_h -21.83 kJ
Pb3O2SO4
Pb3O2SO4 + 4H+ = 3Pb+2 + SO4-2 + 2H2O
log_k 10.6864
delta_h -79.14 kJ
Pb4O3SO4
Pb4O3SO4 + 6H+ = 4Pb+2 + SO4-2 + 3H2O
log_k 21.8772
delta_h -136.45 kJ
Anglesite
PbSO4 = Pb+2 + SO4-2
log_k -7.79
delta_h 12 kJ
Pb4(OH)6SO4
Pb4(OH)6SO4 + 6H+ = 4Pb+2 + SO4-2 + 6H2O
log_k 21.1
delta_h -0 kJ
AlOHSO4
AlOHSO4 + H+ = Al+3 + SO4-2 + H2O
log_k -3.23
delta_h -0 kJ
Al4(OH)10SO4
Al4(OH)10SO4 + 10H+ = 4Al+3 + SO4-2 + 10H2O
log_k 22.7
delta_h -0 kJ
Tl2SO4
Tl2SO4 = 2Tl+ + SO4-2
log_k -3.7868
delta_h 33.1799 kJ
Zn2(OH)2SO4
Zn2(OH)2SO4 + 2H+ = 2Zn+2 + 2H2O + SO4-2
log_k 7.5
delta_h -0 kJ
Zn4(OH)6SO4
Zn4(OH)6SO4 + 6H+ = 4Zn+2 + 6H2O + SO4-2
log_k 28.4
delta_h -0 kJ
Zn3O(SO4)2
Zn3O(SO4)2 + 2H+ = 3Zn+2 + 2SO4-2 + H2O
log_k 18.9135
delta_h -258.08 kJ
Zincosite
ZnSO4 = Zn+2 + SO4-2
log_k 3.9297
delta_h -82.586 kJ
ZnSO4:1H2O
ZnSO4:1H2O = Zn+2 + SO4-2 + H2O

log_k -0.638
delta_h -44.0699 kJ
Bianchite
ZnSO4:6H2O = Zn+2 + SO4-2 + 6H2O
log_k -1.765
delta_h -0.6694 kJ
Goslarite
ZnSO4:7H2O = Zn+2 + SO4-2 + 7H2O
log_k -2.0112
delta_h 14.21 kJ
Cd3(OH)4SO4
Cd3(OH)4SO4 + 4H+ = 3Cd+2 + 4H2O + SO4-2
log_k 22.56
delta_h -0 kJ
Cd3(OH)2(SO4)2
Cd3(OH)2(SO4)2 + 2H+ = 3Cd+2 + 2H2O + 2SO4-2
log_k 6.71
delta_h -0 kJ
Cd4(OH)6SO4
Cd4(OH)6SO4 + 6H+ = 4Cd+2 + 6H2O + SO4-2
log_k 28.4
delta_h -0 kJ
CdSO4
CdSO4 = Cd+2 + SO4-2
log_k -0.1722
delta_h -51.98 kJ
CdSO4:1H2O
CdSO4:1H2O = Cd+2 + SO4-2 + H2O
log_k -1.7261
delta_h -31.5399 kJ
CdSO4:2.67H2O
CdSO4:2.67H2O = Cd+2 + SO4-2 + 2.67H2O
log_k -1.873
delta_h -17.9912 kJ
Hg2SO4
Hg2SO4 = Hg2+2 + SO4-2
log_k -6.13
delta_h 5.4 kJ
HgSO4
HgSO4 + 2H2O = Hg(OH)2 + SO4-2 + 2H+
log_k -9.4189
delta_h 14.6858 kJ
Cu2SO4
Cu2SO4 = 2Cu+ + SO4-2
log_k -1.95
delta_h -19.079 kJ
Antlerite
Cu3(OH)4SO4 + 4H+ = 3Cu+2 + 4H2O + SO4-2
log_k 8.788
delta_h -0 kJ
Brochantite
Cu4(OH)6SO4 + 6H+ = 4Cu+2 + 6H2O + SO4-2
log_k 15.222
delta_h -202.86 kJ

Langite
Cu4(OH)6SO4:H2O + 6H+ = 4Cu+2 + 7H2O + SO4-2
log_k 17.4886
delta_h -165.55 kJ
CuOCuSO4
CuOCuSO4 + 2H+ = 2Cu+2 + H2O + SO4-2
log_k 10.3032
delta_h -137.777 kJ
CuSO4
CuSO4 = Cu+2 + SO4-2
log_k 2.9395
delta_h -73.04 kJ
Chalcanthite
CuSO4:5H2O = Cu+2 + SO4-2 + 5H2O
log_k -2.64
delta_h 6.025 kJ
Ag2SO4
Ag2SO4 = 2Ag+ + SO4-2
log_k -4.82
delta_h 17 kJ
Ni4(OH)6SO4
Ni4(OH)6SO4 + 6H+ = 4Ni+2 + SO4-2 + 6H2O
log_k 32
delta_h -0 kJ
Retgersite
NiSO4:6H2O = Ni+2 + SO4-2 + 6H2O
log_k -2.04
delta_h 4.6024 kJ
Morenosite
NiSO4:7H2O = Ni+2 + SO4-2 + 7H2O
log_k -2.1449
delta_h 12.1802 kJ
CoSO4
CoSO4 = Co+2 + SO4-2
log_k 2.8024
delta_h -79.277 kJ
CoSO4:6H2O
CoSO4:6H2O = Co+2 + SO4-2 + 6H2O
log_k -2.4726
delta_h 1.0801 kJ
Melanterite
FeSO4:7H2O = Fe+2 + SO4-2 + 7H2O
log_k -2.209
delta_h 20.5 kJ
Fe2(SO4)3
Fe2(SO4)3 = 2Fe+3 + 3SO4-2
log_k -3.7343
delta_h -242.028 kJ
H-Jarosite
(H3O)Fe3(SO4)2(OH)6 + 5H+ = 3Fe+3 + 2SO4-2 + 7H2O
log_k -12.1
delta_h -230.748 kJ
Na-Jarosite
NaFe3(SO4)2(OH)6 + 6H+ = Na+ + 3Fe+3 + 2SO4-2 + 6H2O

log_k -11.2
delta_h -151.377 kJ
K-Jarosite
KFe3(SO4)2(OH)6 + 6H+ = K+ + 3Fe+3 + 2SO4-2 + 6H2O
log_k -14.8
delta_h -130.875 kJ
MnSO4
MnSO4 = Mn+2 + SO4-2
log_k 2.5831
delta_h -64.8401 kJ
Mn2(SO4)3
Mn2(SO4)3 = 2Mn+3 + 3SO4-2
log_k -5.711
delta_h -163.427 kJ
VOSO4
VOSO4 = VO+2 + SO4-2
log_k 3.6097
delta_h -86.7401 kJ
Epsomite
MgSO4:7H2O = Mg+2 + SO4-2 + 7H2O
log_k -2.1265
delta_h 11.5601 kJ
Anhydrite
CaSO4 = Ca+2 + SO4-2
log_k -4.36
delta_h -7.2 kJ
Gypsum
CaSO4:2H2O = Ca+2 + SO4-2 + 2H2O
log_k -4.61
delta_h 1 kJ
Celestite
SrSO4 = Sr+2 + SO4-2
log_k -6.62
delta_h 2 kJ
Barite
BaSO4 = Ba+2 + SO4-2
log_k -9.98
delta_h 23 kJ
Mirabilite
Na2SO4:10H2O = 2Na+ + SO4-2 + 10H2O
log_k -1.114
delta_h 79.4416 kJ
Thenardite
Na2SO4 = 2Na+ + SO4-2
log_k 0.3217
delta_h -9.121 kJ
K-Alum
KAl(SO4)2:12H2O = K+ + Al+3 + 2SO4-2 + 12H2O
log_k -5.17
delta_h 30.2085 kJ
Alunite
KAl3(SO4)2(OH)6 + 6H+ = K+ + 3Al+3 + 2SO4-2 + 6H2O
log_k -1.4
delta_h -210 kJ

(NH4)2CrO4
(NH4)2CrO4 = CrO4-2 + 2NH4+
log_k 0.4046
delta_h 9.163 kJ
PbCrO4
PbCrO4 = Pb+2 + CrO4-2
log_k -12.6
delta_h 44.18 kJ
Tl2CrO4
Tl2CrO4 = 2Tl+ + CrO4-2
log_k -12.01
delta_h 74.27 kJ
Hg2CrO4
Hg2CrO4 = Hg2+2 + CrO4-2
log_k -8.7
delta_h -0 kJ
CuCrO4
CuCrO4 = Cu+2 + CrO4-2
log_k -5.44
delta_h -0 kJ
Ag2CrO4
Ag2CrO4 = 2Ag+ + CrO4-2
log_k -11.59
delta_h 62 kJ
MgCrO4
MgCrO4 = CrO4-2 + Mg+2
log_k 5.3801
delta_h -88.9518 kJ
CaCrO4
CaCrO4 = Ca+2 + CrO4-2
log_k -2.2657
delta_h -26.945 kJ
SrCrO4
SrCrO4 = Sr+2 + CrO4-2
log_k -4.65
delta_h -10.1253 kJ
BaCrO4
BaCrO4 = Ba+2 + CrO4-2
log_k -9.67
delta_h 33 kJ
Li2CrO4
Li2CrO4 = CrO4-2 + 2Li+
log_k 4.8568
delta_h -45.2792 kJ
Na2CrO4
Na2CrO4 = CrO4-2 + 2Na+
log_k 2.9302
delta_h -19.6301 kJ
Na2Cr2O7
Na2Cr2O7 + H2O = 2CrO4-2 + 2Na+ + 2H+
log_k -9.8953
delta_h 22.1961 kJ
K2CrO4
K2CrO4 = CrO4-2 + 2K+

log_k -0.5134
delta_h 18.2699 kJ
K2Cr2O7
K2Cr2O7 + H2O = 2CrO4-2 + 2K+ + 2H+
log_k -17.2424
delta_h 80.7499 kJ
Hg2SeO3
Hg2SeO3 + H+ = Hg2+2 + HSeO3-
log_k -4.657
delta_h -0 kJ
HgSeO3
HgSeO3 + 2H2O = Hg(OH)2 + H+ + HSeO3-
log_k -12.43
delta_h -0 kJ
Ag2SeO3
Ag2SeO3 + H+ = 2Ag+ + HSeO3-
log_k -7.15
delta_h 39.68 kJ
CuSeO3:2H2O
CuSeO3:2H2O + H+ = Cu+2 + HSeO3- + 2H2O
log_k 0.5116
delta_h -36.861 kJ
NiSeO3:2H2O
NiSeO3:2H2O + H+ = HSeO3- + Ni+2 + 2H2O
log_k 2.8147
delta_h -31.0034 kJ
CoSeO3
CoSeO3 + H+ = Co+2 + HSeO3-
log_k 1.32
delta_h -0 kJ
Fe2(SeO3)3:2H2O
Fe2(SeO3)3:2H2O + 3H+ = 3HSeO3- + 2Fe+3 + 2H2O
log_k -20.6262
delta_h -0 kJ
Fe2(OH)4SeO3
Fe2(OH)4SeO3 + 5H+ = HSeO3- + 2Fe+3 + 4H2O
log_k 1.5539
delta_h -0 kJ
MnSeO3
MnSeO3 + H+ = Mn+2 + HSeO3-
log_k 1.13
delta_h -0 kJ
MnSeO3:2H2O
MnSeO3:2H2O + H+ = HSeO3- + Mn+2 + 2H2O
log_k 0.9822
delta_h 8.4935 kJ
MgSeO3:6H2O
MgSeO3:6H2O + H+ = Mg+2 + HSeO3- + 6H2O
log_k 3.0554
delta_h 5.23 kJ
CaSeO3:2H2O
CaSeO3:2H2O + H+ = HSeO3- + Ca+2 + 2H2O
log_k 2.8139
delta_h -19.4556 kJ

SrSeO3
SrSeO3 + H+ = Sr+2 + HSeO3-
log_k 2.3
delta_h -0 kJ
BaSeO3
BaSeO3 + H+ = Ba+2 + HSeO3-
log_k 1.83
delta_h 11.98 kJ
Na2SeO3:5H2O
Na2SeO3:5H2O + H+ = 2Na+ + HSeO3- + 5H2O
log_k 10.3
delta_h -0 kJ
PbSeO4
PbSeO4 = Pb+2 + SeO4-2
log_k -6.84
delta_h 15 kJ
Tl2SeO4
Tl2SeO4 = 2Tl+ + SeO4-2
log_k -4.1
delta_h 43 kJ
ZnSeO4:6H2O
ZnSeO4:6H2O = Zn+2 + SeO4-2 + 6H2O
log_k -1.52
delta_h -0 kJ
CdSeO4:2H2O
CdSeO4:2H2O = Cd+2 + SeO4-2 + 2H2O
log_k -1.85
delta_h -0 kJ
Ag2SeO4
Ag2SeO4 = 2Ag+ + SeO4-2
log_k -8.91
delta_h -43.5 kJ
CuSeO4:5H2O
CuSeO4:5H2O = Cu+2 + SeO4-2 + 5H2O
log_k -2.44
delta_h -0 kJ
NiSeO4:6H2O
NiSeO4:6H2O = Ni+2 + SeO4-2 + 6H2O
log_k -1.52
delta_h -0 kJ
CoSeO4:6H2O
CoSeO4:6H2O = Co+2 + SeO4-2 + 6H2O
log_k -1.53
delta_h -0 kJ
MnSeO4:5H2O
MnSeO4:5H2O = Mn+2 + SeO4-2 + 5H2O
log_k -2.05
delta_h -0 kJ
UO2SeO4:4H2O
UO2SeO4:4H2O = UO2+2 + SeO4-2 + 4H2O
log_k -2.25
delta_h -0 kJ
MgSeO4:6H2O
MgSeO4:6H2O = Mg+2 + SeO4-2 + 6H2O

log_k -1.2
delta_h -0 kJ
CaSeO4:2H2O
CaSeO4:2H2O = Ca+2 + SeO4-2 + 2H2O
log_k -3.02
delta_h -8.3 kJ
SrSeO4
SrSeO4 = Sr+2 + SeO4-2
log_k -4.4
delta_h 0.4 kJ
BaSeO4
BaSeO4 = Ba+2 + SeO4-2
log_k -7.46
delta_h 22 kJ
BeSeO4:4H2O
BeSeO4:4H2O = Be+2 + SeO4-2 + 4H2O
log_k -2.94
delta_h -0 kJ
Na2SeO4
Na2SeO4 = 2Na+ + SeO4-2
log_k 1.28
delta_h -0 kJ
K2SeO4
K2SeO4 = 2K+ + SeO4-2
log_k -0.73
delta_h -0 kJ
(NH4)2SeO4
(NH4)2SeO4 = 2NH4+ + SeO4-2
log_k 0.45
delta_h -0 kJ
H2MoO4
H2MoO4 = MoO4-2 + 2H+
log_k -12.8765
delta_h 49 kJ
PbMoO4
PbMoO4 = Pb+2 + MoO4-2
log_k -15.62
delta_h 53.93 kJ
Al2(MoO4)3
Al2(MoO4)3 = 3MoO4-2 + 2Al+3
log_k 2.3675
delta_h -260.8 kJ
Tl2MoO4
Tl2MoO4 = MoO4-2 + 2Tl+
log_k -7.9887
delta_h -0 kJ
ZnMoO4
ZnMoO4 = MoO4-2 + Zn+2
log_k -10.1254
delta_h -10.6901 kJ
CdMoO4
CdMoO4 = MoO4-2 + Cd+2
log_k -14.1497
delta_h 19.48 kJ

CuMoO4
CuMoO4 = MoO4-2 + Cu+2
log_k -13.0762
delta_h 12.2 kJ
Ag2MoO4
Ag2MoO4 = 2Ag+ + MoO4-2
log_k -11.55
delta_h 52.7 kJ
NiMoO4
NiMoO4 = MoO4-2 + Ni+2
log_k -11.1421
delta_h 1.3 kJ
CoMoO4
CoMoO4 = MoO4-2 + Co+2
log_k -7.7609
delta_h -23.3999 kJ
FeMoO4
FeMoO4 = MoO4-2 + Fe+2
log_k -10.091
delta_h -11.1 kJ
BeMoO4
BeMoO4 = MoO4-2 + Be+2
log_k -1.7817
delta_h -56.4 kJ
MgMoO4
MgMoO4 = Mg+2 + MoO4-2
log_k -1.85
delta_h -0 kJ
CaMoO4
CaMoO4 = Ca+2 + MoO4-2
log_k -7.95
delta_h -2 kJ
BaMoO4
BaMoO4 = MoO4-2 + Ba+2
log_k -6.9603
delta_h 10.96 kJ
Li2MoO4
Li2MoO4 = MoO4-2 + 2Li+
log_k 2.4416
delta_h -33.9399 kJ
Na2MoO4
Na2MoO4 = MoO4-2 + 2Na+
log_k 1.4901
delta_h -9.98 kJ
Na2MoO4:2H2O
Na2MoO4:2H2O = MoO4-2 + 2Na+ + 2H2O
log_k 1.224
delta_h -0 kJ
Na2Mo2O7
Na2Mo2O7 + H2O = 2MoO4-2 + 2Na+ + 2H+
log_k -16.5966
delta_h 56.2502 kJ
K2MoO4
K2MoO4 = MoO4-2 + 2K+

log_k 3.2619
delta_h -3.38 kJ
PbHPO4
PbHPO4 = Pb+2 + H+ + PO4-3
log_k -23.805
delta_h -0 kJ
Pb3(PO4)2
Pb3(PO4)2 = 3Pb+2 + 2PO4-3
log_k -43.53
delta_h -0 kJ
Pyromorphite
Pb5(PO4)3Cl = 5Pb+2 + 3PO4-3 + Cl-
log_k -84.43
delta_h -0 kJ
Hydroxylpyromorphite
Pb5(PO4)3OH + H+ = 5Pb+2 + 3PO4-3 + H2O
log_k -62.79
delta_h -0 kJ
Plumbgummite
PbAl3(PO4)2(OH)5:H2O + 5H+ = Pb+2 + 3Al+3 + 2PO4-3 + 6H2O
log_k -32.79
delta_h -0 kJ
Hinsdalite
PbAl3PO4SO4(OH)6 + 6H+ = Pb+2 + 3Al+3 + PO4-3 + SO4-2 + 6H2O
log_k -2.5
delta_h -0 kJ
Tsumebite
Pb2CuPO4(OH)3:3H2O + 3H+ = 2Pb+2 + Cu+2 + PO4-3 + 6H2O
log_k -9.79
delta_h -0 kJ
Zn3(PO4)2:4H2O
Zn3(PO4)2:4H2O = 3Zn+2 + 2PO4-3 + 4H2O
log_k -35.42
delta_h -0 kJ
Cd3(PO4)2
Cd3(PO4)2 = 3Cd+2 + 2PO4-3
log_k -32.6
delta_h -0 kJ
Hg2HPO4
Hg2HPO4 = Hg2+2 + H+ + PO4-3
log_k -24.775
delta_h -0 kJ
Cu3(PO4)2
Cu3(PO4)2 = 3Cu+2 + 2PO4-3
log_k -36.85
delta_h -0 kJ
Cu3(PO4)2:3H2O
Cu3(PO4)2:3H2O = 3Cu+2 + 2PO4-3 + 3H2O
log_k -35.12
delta_h -0 kJ
Ag3PO4
Ag3PO4 = 3Ag+ + PO4-3
log_k -17.59
delta_h -0 kJ

Ni3(PO4)2
Ni3(PO4)2 = 3Ni+2 + 2PO4-3
log_k -31.3
delta_h -0 kJ
CoHPO4
CoHPO4 = Co+2 + PO4-3 + H+
log_k -19.0607
delta_h -0 kJ
Co3(PO4)2
Co3(PO4)2 = 3Co+2 + 2PO4-3
log_k -34.6877
delta_h -0 kJ
Vivianite
Fe3(PO4)2:8H2O = 3Fe+2 + 2PO4-3 + 8H2O
log_k -36
delta_h -0 kJ
Strengite
FePO4:2H2O = Fe+3 + PO4-3 + 2H2O
log_k -26.4
delta_h -9.3601 kJ
Mn3(PO4)2
Mn3(PO4)2 = 3Mn+2 + 2PO4-3
log_k -23.827
delta_h 8.8701 kJ
MnHPO4
MnHPO4 = Mn+2 + PO4-3 + H+
log_k -25.4
delta_h -0 kJ
(VO)3(PO4)2
(VO)3(PO4)2 = 3VO+2 + 2PO4-3
log_k -25.1
delta_h -0 kJ
Mg3(PO4)2
Mg3(PO4)2 = 3Mg+2 + 2PO4-3
log_k -23.28
delta_h -0 kJ
MgHPO4:3H2O
MgHPO4:3H2O = Mg+2 + H+ + PO4-3 + 3H2O
log_k -18.175
delta_h -0 kJ
FCO3Apatite
Ca9.316Na0.36Mg0.144(PO4)4.8(CO3)1.2F2.48 = 9.316Ca+2 + 0.36Na+ + 0.144Mg+2 +
4.8PO4-3 + 1.2CO3-2 + 2.48F-
log_k -114.4
delta_h 164.808 kJ
Hydroxylapatite
Ca5(PO4)3OH + H+ = 5Ca+2 + 3PO4-3 + H2O
log_k -44.333
delta_h -0 kJ
CaHPO4:2H2O
CaHPO4:2H2O = Ca+2 + H+ + PO4-3 + 2H2O
log_k -18.995
delta_h 23 kJ
CaHPO4

CaHPO4 = Ca+2 + H+ + PO4-3
log_k -19.275
delta_h 31 kJ
Ca3(PO4)2(beta)
Ca3(PO4)2 = 3Ca+2 + 2PO4-3
log_k -28.92
delta_h 54 kJ
Ca4H(PO4)3:3H2O
Ca4H(PO4)3:3H2O = 4Ca+2 + H+ + 3PO4-3 + 3H2O
log_k -47.08
delta_h -0 kJ
SrHPO4
SrHPO4 = Sr+2 + H+ + PO4-3
log_k -19.295
delta_h -0 kJ
BaHPO4
BaHPO4 = Ba+2 + H+ + PO4-3
log_k -19.775
delta_h -0 kJ
U(HPO4)2:4H2O
U(HPO4)2:4H2O = U+4 + 2PO4-3 + 2H+ + 4H2O
log_k -51.584
delta_h 16.0666 kJ
(UO2)3(PO4)2
(UO2)3(PO4)2 = 3UO2+2 + 2PO4-3
log_k -49.4
delta_h 397.062 kJ
UO2HPO4
UO2HPO4 = UO2+2 + H+ + PO4-3
log_k -24.225
delta_h -0 kJ
Uramphite
(NH4)2(UO2)2(PO4)2 = 2UO2+2 + 2NH4+ + 2PO4-3
log_k -51.749
delta_h 40.5848 kJ
Przhevalskite
Pb(UO2)2(PO4)2 = 2UO2+2 + Pb+2 + 2PO4-3
log_k -44.365
delta_h -46.024 kJ
Torbernite
Cu(UO2)2(PO4)2 = 2UO2+2 + Cu+2 + 2PO4-3
log_k -45.279
delta_h -66.5256 kJ
Bassetite
Fe(UO2)2(PO4)2 = 2UO2+2 + Fe+2 + 2PO4-3
log_k -44.485
delta_h -83.2616 kJ
Saleeite
Mg(UO2)2(PO4)2 = 2UO2+2 + Mg+2 + 2PO4-3
log_k -43.646
delta_h -84.4331 kJ
Ningyoite
CaU(PO4)2:2H2O = U+4 + Ca+2 + 2PO4-3 + 2H2O
log_k -53.906

delta_h -9.4977 kJ
H-Autunite
H2(UO2)2(PO4)2 = 2UO2+2 + 2H+ + 2PO4-3
log_k -47.931
delta_h -15.0624 kJ
Autunite
Ca(UO2)2(PO4)2 = 2UO2+2 + Ca+2 + 2PO4-3
log_k -43.927
delta_h -59.9986 kJ
Sr-Autunite
Sr(UO2)2(PO4)2 = 2UO2+2 + Sr+2 + 2PO4-3
log_k -44.457
delta_h -54.6012 kJ
Na-Autunite
Na2(UO2)2(PO4)2 = 2UO2+2 + 2Na+ + 2PO4-3
log_k -47.409
delta_h -1.9246 kJ
K-Autunite
K2(UO2)2(PO4)2 = 2UO2+2 + 2K+ + 2PO4-3
log_k -48.244
delta_h 24.5182 kJ
Uranocircite
Ba(UO2)2(PO4)2 = 2UO2+2 + Ba+2 + 2PO4-3
log_k -44.631
delta_h -42.2584 kJ
Pb3(AsO4)2
Pb3(AsO4)2 + 6H+ = 3Pb+2 + 2H3AsO4
log_k 5.8
delta_h -0 kJ
AlAsO4:2H2O
AlAsO4:2H2O + 3H+ = Al+3 + H3AsO4 + 2H2O
log_k 4.8
delta_h -0 kJ
Zn3(AsO4)2:2.5H2O
Zn3(AsO4)2:2.5H2O + 6H+ = 3Zn+2 + 2H3AsO4 + 2.5H2O
log_k 13.65
delta_h -0 kJ
Cu3(AsO4)2:2H2O
Cu3(AsO4)2:2H2O + 6H+ = 3Cu+2 + 2H3AsO4 + 2H2O
log_k 6.1
delta_h -0 kJ
Ag3AsO3
Ag3AsO3 + 3H+ = 3Ag+ + H3AsO3
log_k 2.1573
delta_h -0 kJ
Ag3AsO4
Ag3AsO4 + 3H+ = 3Ag+ + H3AsO4
log_k -2.7867
delta_h -0 kJ
Ni3(AsO4)2:8H2O
Ni3(AsO4)2:8H2O + 6H+ = 3Ni+2 + 2H3AsO4 + 8H2O
log_k 15.7
delta_h -0 kJ
Co3(AsO4)2

Co3(AsO4)2 + 6H+ = 3Co+2 + 2H3AsO4
log_k 13.0341
delta_h -0 kJ
FeAsO4:2H2O
FeAsO4:2H2O + 3H+ = Fe+3 + H3AsO4 + 2H2O
log_k 0.4
delta_h -0 kJ
Mn3(AsO4)2:8H2O
Mn3(AsO4)2:8H2O + 6H+ = 3Mn+2 + 2H3AsO4 + 8H2O
log_k 12.5
delta_h -0 kJ
Ca3(AsO4)2:4H2O
Ca3(AsO4)2:4H2O + 6H+ = 3Ca+2 + 2H3AsO4 + 4H2O
log_k 22.3
delta_h -0 kJ
Ba3(AsO4)2
Ba3(AsO4)2 + 6H+ = 3Ba+2 + 2H3AsO4
log_k -8.91
delta_h 11.0458 kJ
#NH4VO3
NH4VO3 + 2H+ = 2VO2+ + H2O
log_k 3.8
delta_h 30 kJ
Pb3(VO4)2
Pb3(VO4)2 + 8H+ = 3Pb+2 + 2VO2+ + 4H2O
log_k 6.14
delta_h -72.6342 kJ
Pb2V2O7
Pb2V2O7 + 6H+ = 2Pb+2 + 2VO2+ + 3H2O
log_k -1.9
delta_h -26.945 kJ
AgVO3
AgVO3 + 2H+ = Ag+ + VO2+ + H2O
log_k 0.77
delta_h -0 kJ
Ag2HVO4
Ag2HVO4 + 3H+ = 2Ag+ + VO2+ + 2H2O
log_k 1.48
delta_h -0 kJ
Ag3H2VO5
Ag3H2VO5 + 4H+ = 3Ag+ + VO2+ + 3H2O
log_k 5.18
delta_h -0 kJ
Fe(VO3)2
Fe(VO3)2 + 4H+ = Fe+2 + 2VO2+ + 2H2O
log_k -3.72
delta_h -61.6722 kJ
Mn(VO3)2
Mn(VO3)2 + 4H+ = Mn+2 + 2VO2+ + 2H2O
log_k 4.9
delta_h -92.4664 kJ
Mg(VO3)2
Mg(VO3)2 + 4H+ = Mg+2 + 2VO2+ + 2H2O
log_k 11.28

delta_h -136.649 kJ
Mg2V2O7
Mg2V2O7 + 6H+ = 2Mg+2 + 2VO2+ + 3H2O
log_k 26.36
delta_h -255.224 kJ
Carnotite
KUO2VO4 + 4H+ = K+ + UO2+2 + VO2+ + 2H2O
log_k 0.23
delta_h -36.4008 kJ
Tyuyamunite
Ca(UO2)2(VO4)2 + 8H+ = Ca+2 + 2UO2+2 + 2VO2+ + 4H2O
log_k 4.08
delta_h -153.134 kJ
Ca(VO3)2
Ca(VO3)2 + 4H+ = Ca+2 + 2VO2+ + 2H2O
log_k 5.66
delta_h -84.7678 kJ
Ca3(VO4)2
Ca3(VO4)2 + 8H+ = 3Ca+2 + 2VO2+ + 4H2O
log_k 38.96
delta_h -293.466 kJ
Ca2V2O7
Ca2V2O7 + 6H+ = 2Ca+2 + 2VO2+ + 3H2O
log_k 17.5
delta_h -159.494 kJ
Ca3(VO4)2:4H2O
Ca3(VO4)2:4H2O + 8H+ = 3Ca+2 + 2VO2+ + 8H2O
log_k 39.86
delta_h -0 kJ
Ca2V2O7:2H2O
Ca2V2O7:2H2O + 6H+ = 2Ca+2 + 2VO2+ + 5H2O
log_k 21.552
delta_h -0 kJ
Ba3(VO4)2:4H2O
Ba3(VO4)2:4H2O + 8H+ = 3Ba+2 + 2VO2+ + 8H2O
log_k 32.94
delta_h -0 kJ
Ba2V2O7:2H2O
Ba2V2O7:2H2O + 6H+ = 2Ba+2 + 2VO2+ + 5H2O
log_k 15.872
delta_h -0 kJ
NaVO3
NaVO3 + 2H+ = Na+ + VO2+ + H2O
log_k 3.8582
delta_h -30.1799 kJ
Na3VO4
Na3VO4 + 4H+ = 3Na+ + VO2+ + 2H2O
log_k 36.6812
delta_h -184.61 kJ
Na4V2O7
Na4V2O7 + 6H+ = 4Na+ + 2VO2+ + 3H2O
log_k 37.4
delta_h -201.083 kJ
Halloysite

Al2Si2O5(OH)4 + 6H+ = 2Al+3 + 2H4SiO4 + H2O
log_k 9.5749
delta_h -181.43 kJ
Kaolinite
Al2Si2O5(OH)4 + 6H+ = 2Al+3 + 2H4SiO4 + H2O
log_k 7.435
delta_h -148 kJ
Greenalite
Fe3Si2O5(OH)4 + 6H+ = 3Fe+2 + 2H4SiO4 + H2O
log_k 20.81
delta_h -0 kJ
Chrysotile
Mg3Si2O5(OH)4 + 6H+ = 3Mg+2 + 2H4SiO4 + H2O
log_k 32.2
delta_h -196 kJ
Sepiolite
Mg2Si3O7.5OH:3H2O + 4H+ + 0.5H2O = 2Mg+2 + 3H4SiO4
log_k 15.76
delta_h -114.089 kJ
Sepiolite(A)
Mg2Si3O7.5OH:3H2O + 0.5H2O + 4H+ = 2Mg+2 + 3H4SiO4
log_k 18.78
delta_h -0 kJ
PHASES
O2(g)
O2 + 4H+ + 4e- = 2H2O
log_k 83.0894
delta_h -571.66 kJ
CH4(g)
CH4 + 3H2O = CO3-2 + 8e- + 10H+
log_k -41.0452
delta_h 257.133 kJ
CO2(g)
CO2 + H2O = 2H+ + CO3-2
log_k -18.147
delta_h 4.06 kJ
H2S(g)
H2S = H+ + HS-
log_k -8.01
delta_h -0 kJ
H2Se(g)
H2Se = HSe- + H+
log_k -4.96
delta_h -15.3 kJ
Hg(g)
Hg = 0.5Hg2+2 + e-
log_k -7.8733
delta_h 22.055 kJ
Hg2(g)
Hg2 = Hg2+2 + 2e-
log_k -14.9554
delta_h 58.07 kJ
Hg(CH3)2(g)
Hg(CH3)2 + 8H2O = Hg(OH)2 + 2CO3-2 + 16e- + 20H+

log_k -73.7066
delta_h 481.99 kJ
HgF(g)
HgF = 0.5Hg2+2 + F-
log_k 32.6756
delta_h -254.844 kJ
HgF2(g)
HgF2 + 2H2O = Hg(OH)2 + 2F- + 2H+
log_k 12.5652
delta_h -165.186 kJ
HgCl(g)
HgCl = 0.5Hg2+2 + Cl-
log_k 19.4966
delta_h -162.095 kJ
HgBr(g)
HgBr = 0.5Hg2+2 + Br-
log_k 16.7566
delta_h -142.157 kJ
HgBr2(g)
HgBr2 + 2H2O = Hg(OH)2 + 2Br- + 2H+
log_k -18.3881
delta_h 54.494 kJ
HgI(g)
HgI = 0.5Hg2+2 + I-
log_k 11.3322
delta_h -106.815 kJ
HgI2(g)
HgI2 + 2H2O = Hg(OH)2 + 2I- + 2H+
log_k -27.2259
delta_h 114.429 kJ
SURFACE_MASTER_SPECIES
Hfo_s Hfo_sOH
Hfo_w Hfo_wOH
Hao_ Hao_OH #hydrous aluminum oxides - gibbsite
SURFACE_SPECIES
Hfo_wOH = Hfo_wOH
log_k 0.0
Hfo_sOH = Hfo_sOH
log_k 0.0
Hao_OH = Hao_OH
log_k 0.0

Hfo_sOH + H+ = Hfo_sOH2+
log_k 7.29
delta_h 0 kJ
Id: 8113302
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH = Hfo_sO- + H+
log_k -8.93
delta_h 0 kJ
Id: 8113301
log K source:

Delta H source:
#T and ionic strength:
Hfo_wOH + H+ = Hfo_wOH2+
log_k 7.29
delta_h 0 kJ
Id: 8123302
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH = Hfo_wO- + H+
log_k -8.93
delta_h 0 kJ
Id: 8123301
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Ba+2 = Hfo_sOHBa+2
log_k 5.46
delta_h 0 kJ
Id: 8111000
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Ba+2 = Hfo_wOBa+ + H+
log_k -7.2
delta_h 0 kJ
Id: 8121000
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Ca+2 = Hfo_sOHCa+2
log_k 4.97
delta_h 0 kJ
Id: 8111500
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Ca+2 = Hfo_wOCa+ + H+
log_k -5.85
delta_h 0 kJ
Id: 8121500
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Mg+2 = Hfo_wOMg+ + H+
log_k -4.6
delta_h 0 kJ
Id: 8124600
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Ag+ = Hfo_sOAg + H+
log_k -1.72
delta_h 0 kJ

Id: 8110200
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Ag+ = Hfo_wOAg + H+
log_k -5.3
delta_h 0 kJ
Id: 8120200
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Ni+2 = Hfo_sONi+ + H+
log_k 0.37
delta_h 0 kJ
Id: 8115400
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Ni+2 = Hfo_wONi+ + H+
log_k -2.5
delta_h 0 kJ
Id: 8125400
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Cd+2 = Hfo_sOCd+ + H+
log_k 0.47
delta_h 0 kJ
Id: 8111600
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Cd+2 = Hfo_wOCd+ + H+
log_k -2.9
delta_h 0 kJ
Id: 8121600
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Co+2 = Hfo_sOCo+ + H+
log_k -0.46
delta_h 0 kJ
Id: 8112000
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Co+2 = Hfo_wOCo+ + H+
log_k -3.01
delta_h 0 kJ
Id: 8122000
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Zn+2 = Hfo_sOZn+ + H+

log_k 0.99
delta_h 0 kJ
Id: 8119500
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Zn+2 = Hfo_wOZn+ + H+
log_k -1.99
delta_h 0 kJ
Id: 8129500
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Cu+2 = Hfo_sOCu+ + H+
log_k 2.89
delta_h 0 kJ
Id: 8112310
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Cu+2 = Hfo_wOCu+ + H+
log_k 0.6
delta_h 0 kJ
Id: 8123100
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Pb+2 = Hfo_sOPb+ + H+
log_k 4.65
delta_h 0 kJ
Id: 8116000
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Pb+2 = Hfo_wOPb+ + H+
log_k 0.3
delta_h 0 kJ
Id: 8126000
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Be+2 = Hfo_sOBe+ + H+
log_k 5.7
delta_h 0 kJ
Id: 8111100
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Be+2 = Hfo_wOBe+ + H+
log_k 3.3
delta_h 0 kJ
Id: 8121100
log K source:
Delta H source:

#T and ionic strength:
Hfo_sOH + Hg(OH)2 + H+ = Hfo_sOHg+ + 2H2O
log_k 13.95
delta_h 0 kJ
Id: 8113610
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Hg(OH)2 + H+ = Hfo_wOHg+ + 2H2O
log_k 12.64
delta_h 0 kJ
Id: 8123610
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Sn(OH)2 + H+ = Hfo_sOSn+ + 2H2O
log_k 15.1
delta_h 0 kJ
Id: 8117900
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Sn(OH)2 + H+ = Hfo_wOSn+ + 2H2O
log_k 13
delta_h 0 kJ
Id: 8127900
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Cr(OH)2+ = Hfo_sOCrOH+ + H2O
log_k 11.63
delta_h 0 kJ
Id: 8112110
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + H3AsO3 = Hfo_sH2AsO3 + H2O
log_k 5.41
delta_h 0 kJ
Id: 8110600
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + H3AsO3 = Hfo_wH2AsO3 + H2O
log_k 5.41
delta_h 0 kJ
Id: 8120600
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + H3BO3 = Hfo_sH2BO3 + H2O
log_k 0.62
delta_h 0 kJ
Id: 8110900

log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + H3BO3 = Hfo_wH2BO3 + H2O
log_k 0.62
delta_h 0 kJ
Id: 8120900
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + PO4-3 + 3H+ = Hfo_sH2PO4 + H2O
log_k 31.29
delta_h 0 kJ
Id: 8115800
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + PO4-3 + 3H+ = Hfo_wH2PO4 + H2O
log_k 31.29
delta_h 0 kJ
Id: 8125800
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + PO4-3 + 2H+ = Hfo_sHPO4- + H2O
log_k 25.39
delta_h 0 kJ
Id: 8115801
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + PO4-3 + 2H+ = Hfo_wHPO4- + H2O
log_k 25.39
delta_h 0 kJ
Id: 8125801
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + PO4-3 + H+ = Hfo_sPO4-2 + H2O
log_k 17.72
delta_h 0 kJ
Id: 8115802
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + PO4-3 + H+ = Hfo_wPO4-2 + H2O
log_k 17.72
delta_h 0 kJ
Id: 8125802
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + H3AsO4 = Hfo_sH2AsO4 + H2O
log_k 8.61

delta_h 0 kJ
Id: 8110610
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + H3AsO4 = Hfo_wH2AsO4 + H2O
log_k 8.61
delta_h 0 kJ
Id: 8120610
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + H3AsO4 = Hfo_sHAsO4- + H2O + H+
log_k 2.81
delta_h 0 kJ
Id: 8110611
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + H3AsO4 = Hfo_wHAsO4- + H2O + H+
log_k 2.81
delta_h 0 kJ
Id: 8120611
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + H3AsO4 = Hfo_sOHAsO4-3 + 3H+
log_k -10.12
delta_h 0 kJ
Id: 8110613
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + H3AsO4 = Hfo_wOHAsO4-3 + 3H+
log_k -10.12
delta_h 0 kJ
Id: 8120613
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + VO2+ + 2H2O = Hfo_sOHVO4-3 + 4H+
log_k -16.63
delta_h 0 kJ
Id: 8119031
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + VO2+ + 2H2O = Hfo_wOHVO4-3 + 4H+
log_k -16.63
delta_h 0 kJ
Id: 8129031
log K source:
Delta H source:
#T and ionic strength:

Hfo_sOH + SO4-2 + H+ = Hfo_sSO4- + H2O
log_k 7.78
delta_h 0 kJ
Id: 8117320
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + SO4-2 + H+ = Hfo_wSO4- + H2O
log_k 7.78
delta_h 0 kJ
Id: 8127320
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + SO4-2 = Hfo_sOHSO4-2
log_k 0.79
delta_h 0 kJ
Id: 8117321
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + SO4-2 = Hfo_wOHSO4-2
log_k 0.79
delta_h 0 kJ
Id: 8127321
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + HSeO3- = Hfo_sSeO3- + H2O
log_k 4.29
delta_h 0 kJ
Id: 8117610
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + HSeO3- = Hfo_wSeO3- + H2O
log_k 4.29
delta_h 0 kJ
Id: 8127610
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + HSeO3- = Hfo_sOHSeO3-2 + H+
log_k -3.23
delta_h 0 kJ
Id: 8117611
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + HSeO3- = Hfo_wOHSeO3-2 + H+
log_k -3.23
delta_h 0 kJ
Id: 8127611
log K source:

Delta H source:
#T and ionic strength:
Hfo_sOH + SeO4-2 + H+ = Hfo_sSeO4- + H2O
log_k 7.73
delta_h 0 kJ
Id: 8117620
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + SeO4-2 + H+ = Hfo_wSeO4- + H2O
log_k 7.73
delta_h 0 kJ
Id: 8127620
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + SeO4-2 = Hfo_sOHSeO4-2
log_k 0.8
delta_h 0 kJ
Id: 8117621
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + SeO4-2 = Hfo_wOHSeO4-2
log_k 0.8
delta_h 0 kJ
Id: 8127621
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + CrO4-2 + H+ = Hfo_sCrO4- + H2O
log_k 10.85
delta_h 0 kJ
Id: 8112120
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + CrO4-2 + H+ = Hfo_wCrO4- + H2O
log_k 10.85
delta_h 0 kJ
Id: 8122120
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + CrO4-2 = Hfo_sOHCrO4-2
log_k 3.9
delta_h 0 kJ
Id: 8112121
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + CrO4-2 = Hfo_wOHCrO4-2
log_k 3.9
delta_h 0 kJ

Id: 8122121
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + MoO4-2 + H+ = Hfo_sMoO4- + H2O
log_k 9.5
delta_h 0 kJ
Id: 8114800
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + MoO4-2 + H+ = Hfo_wMoO4- + H2O
log_k 9.5
delta_h 0 kJ
Id: 8124800
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + MoO4-2 = Hfo_sOHMoO4-2
log_k 2.4
delta_h 0 kJ
Id: 8114801
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + MoO4-2 = Hfo_wOHMoO4-2
log_k 2.4
delta_h 0 kJ
Id: 8124801
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Sb(OH)6- + H+ = Hfo_sSbO(OH)4 + 2H2O
log_k 8.4
delta_h 0 kJ
Id: 8117410
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Sb(OH)6- + H+ = Hfo_wSbO(OH)4 + 2H2O
log_k 8.4
delta_h 0 kJ
Id: 8127410
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Sb(OH)6- = Hfo_sOHSbO(OH)4- + H2O
log_k 1.3
delta_h 0 kJ
Id: 8117411
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Sb(OH)6- = Hfo_wOHSbO(OH)4- + H2O

log_k 1.3
delta_h 0 kJ
Id: 8127411
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Cyanide- + H+ = Hfo_sCyanide + H2O
log_k 13
delta_h 0 kJ
Id: 8111430
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Cyanide- + H+ = Hfo_wCyanide + H2O
log_k 13
delta_h 0 kJ
Id: 8121430
log K source:
Delta H source:
#T and ionic strength:
Hfo_sOH + Cyanide- = Hfo_sOHCyanide-
log_k 5.7
delta_h 0 kJ
Id: 8111431
log K source:
Delta H source:
#T and ionic strength:
Hfo_wOH + Cyanide- = Hfo_wOHCyanide-
log_k 5.7
delta_h 0 kJ
Id: 8121431
log K source:
Delta H source:
#T and ionic strength:
#Additions from GWB Minteq
Hfo_wOH + H4SiO4 = Hfo_wOSi(OH)3 + H2O
log_k 4.28
delta_h 0 kJ
Hfo_wOH + H4SiO4 = Hfo_wOSiO(OH)2- + H+ + H2O
log_k -3.22
delta_h 0 kJ
Hfo_sOH + H4SiO4 = Hfo_sOSi(OH)3 + H2O
log_k 4.28
delta_h 0
Hfo_sOH + H4SiO4 = Hfo_sOSiO(OH)2- + H+ + H2O
log_k -3.22
delta_h 0
Hfo_wOH + CO3-2 + H+ = Hfo_wCO3- + H2O
log_k 12.56
delta_h 0
Hfo_wOH + CO3-2 + 2H+= Hfo_wHCO3 + H2O
log_k 20.62
delta_h 0
Hfo_sOH + CO3-2 + H+ = Hfo_sCO3- + H2O

log_k 12.56
delta_h 0
Hfo_sOH + CO3-2 + 2H+= Hfo_sHCO3 + H2O
log_k 20.62
delta_h 0

#Karamalidis and Dzombak sorption to gibbsite (hao) as compiled in Cravotta 2021 (https://doi.org/10.1016/j.apgeochem.2020.104845) Table S4 unless otherwise noted
Hao_OH + Cu+2 = Hao_OCu+ + H+
log_k 0.25
Hao_OH + Pb+2 = Hao_OPb+ + H+
log_k 0.37
Hao_OH + Co+2 = Hao_OCo+ + H+
log_k -2.52
Hao_OH + Cd+2 = Hao_OCd+ + H+
log_k -2.73
Hao_OH + Mn+2 = Hao_OMn+ + H+
log_k -5.49
Hao_OH + Fe+2 = Hao_OFe+ + H+
log_k -3.77
Hao_OH + Ca+2 = Hao_OCa+ + H+
log_k -10.49
Hao_OH + Mg+2 = Hao_OMg+ + H+
log_k -5.93
Hao_OH + Ba+2 = Hao_OBa+ + H+
log_k -8.5
Hao_OH + Sr+2 = Hao_OSr+ + H+
log_k -8.26
Hao_OH + Zn+2 = Hao_OZn+ + H+
log_k -0.96
Hao_OH + PO4-3 + 3 H+ = Hao_H2PO4 + H2O
log_k 26.89
Hao_OH + PO4-3 + 2H+ = Hao_HPO4- + H2O
log_k 19.37
Hao_OH + PO4-3 + H+ = Hao_PO4-2 + H2O
log_k 13.57
#Hao_OH + SO4-2 + H+ = Hao_SO4- + H2O
log_k -0.45
#Hao_OH + SO4-2 = Hao_OHSO4-2
log_k 1.19
Hao_OH + F- + H+ = Hao_F + H2O
log_k 8.78
Hao_OH + F- = Hao_OHF-
log_k 2.88
Hao_OH + 2 F- + H+ = Hao_F2- + H2O
log_k 11.94
Hao_OH + H4SiO4 = Hao_OH4SiO4- + H+
log_k -4.16

#Modified value from Goldberg and Glaubig (1985)
Hao_OH + H3BO3 = Hao_H2BO3 + H2O
Log_k 4.83
Hao_OH + H3BO3 = Hao_H3BO4- + H+
Log_k -7.40

#Modified value from Kitadai et al. (2018)

```
Hao_OH + SO4-2 + H+ = Hao_SO4- + H2O
log_k 2.4
#Modified value from Kitadai et al. (2018)
Hao_OH + SO4-2 = Hao_OHSO4-2
log_k 7.5

END
```

ATTACHMENT C
Modeling methodology

Attachment C. Details of Geochemical Model Parameterization

Introduction

This appendix to the Groundwater Polishing Report for the Newton Primary Ash Pond (NEW PAP) provides detailed information regarding geochemical model parameterization. The information provided includes sources of thermodynamic data, sources of data used in model parameterization, summarized values, and calculation methods. All solid-phase data is fully documented in the Nature and Extent Report.[1] All aqueous data have been posted to the facility's operating record in accordance with 35 I.A.C. § 845.800(d)(15).

Solid Phase Inputs

The solid phase inputs to the model included iron (hydr)oxides and aluminum (hydr)oxides. These phases tend to have relatively rapid precipitation kinetics and form an outer layer on the surfaces of aquifer solids, creating surface area for sorption and attenuation of lithium and sulfate. Input concentrations for iron and aluminum (hydr)oxides were derived using sequential extraction procedure (SEP) data. SEP methods are described in the Geochemical Conceptual Site Model (GCSM)[2] and employ chemical extractants to dissolve metals from specific solid-associated phases. SEP methods use progressively stronger reagents to solubilize metals from increasingly recalcitrant phases. Although these procedures do not identify the discrete solid phases in a soil/aquifer matrix, they provide a means to evaluate and characterize the metal binding mechanisms and relative stability of metals in each phase, and to estimate the available mass of the respective attenuating phase(s) (*i.e.*, aluminum and iron [hydr]oxide). As described in the GCSM, the SEP used for these samples included a more reactive non-crystalline metal oxide fraction and a less reactive metal hydroxide fraction.[3]

Sorption of inorganic constituents to iron (hydr)oxides in the MINTEQ v4 database[4] is represented by the hydrous ferric oxide (HFO) thermodynamic dataset presented in Dzombak and Morel (1990). HFO is a non-crystalline iron hydroxide phase with high surface area. Therefore, the mass of iron extracted in the non-crystalline SEP fraction is used in the HFO model input.

Sorption of inorganic constituents to aluminum (hydr)oxides is represented by the hydrous aluminum oxide (HAO) thermodynamic data presented in Karamalidis and Dzombak (2010), Goldberg and Glaubig

[1] The Nature and Extent Report was previously submitted to IEPA on April 3, 2024, and provided with relevant updates as Appendix D of the CAAA to which this report is attached.

[2] Ibid.; the GCSM is an appendix of the Nature and Extent Report.

[3] See Table 3-3 of the GCSM (Appendix C of the Nature and Extent report) for raw data and Attachment 2 of the GCSM for the lab report.

[4] The default MINTEQ v4 database for PHREEQC does not include sorption data for carbonate and silicate to HFO. Thermodynamic constants for sorption of carbonate and silicate to HFO were added from the MINTEQ database associated with the Geochemist's Workbench software program.

(1985) (boron), and Kitadai et al. (2018) (sulfate). These sorption data are based on gibbsite, a nearly ubiquitous crystalline aluminum hydroxide mineral (Karamalidis and Dzombak 2010).

SEP data were available from five samples from the Upper Drift/Potential Migration Pathway (UD/PMP) and three samples from the Uppermost Aquifer (UA). In thermodynamic modeling, the amount of sorbing phase present is one of the the dominant controls on the concentration of constituents sorbed. Therefore, different amounts of metal (hydr)oxides were used to test the sensitivity of the model to the amount of sorbing phase present. The amount of metal (hydr)oxides used were derived from the 25th percentile, median (*i.e.*, 50th percentile), and 75th percentile of the SEP results for the relevant iron and aluminum phases.

The quantities of HFO and HAO in the model are represented by ferrihydrite ($Fe(OH)_3$) and gibbsite ($Al(OH)_3$), respectively. Ferrihydrite is the most similar naturally occurring iron oxide to HFO (Dzombak and Morel, 1990), and sorption data for HAO was determined using gibbsite (Karamalidis and Dzombak 2010). SEP results were used to calculate the quantities of HFO and HAO because there are often environmentally relevant masses of iron and aluminum (hydr)oxides within solids that are not sufficiently crystalline to be characterized by other methods (*e.g.*, X-ray diffraction [XRD]). Additionally, the SEP analysis can detect a much lower constituent concentration than is typically attainable by XRD. SEP metal concentrations are presented in milligrams per kilogram of dry weight (mg/kg dw), whereas ferrihydrite and gibbsite inputs to the model represent moles of solid phase associated with one liter (L) of aqueous phase. The concentrations of iron and aluminum reported in SEP results (**Table C-1**) were converted to moles of ferrihydrite and gibbsite (respectively) according to the following:

The mass in kilograms (kg) of solid in the model (i.e., per 1 L of water) was calculated by:

$$Solid\ Mass\ In\ Model\ (kg) = \frac{(1-\phi)}{\phi} \times \frac{1000\ cm^3\ water}{L\ water} \times 1\ L\ water\ \times \rho\ (\frac{g}{cm^3}) \times \frac{1\ kg\ solid}{1000\ g\ solid}$$

Where:

ϕ = porosity (water volume in cubic centimeters (cm^3) / total volume in cm^3)

ρ = Density of the solid (grams (g)/cm^3)

Porosity and density (**Table C-1**) represent the median of measurements from each hydrostratigraphic unit as reported in the Hydrogeologic Characterization Report (Attachment H of Burns and McDonnell, 2021).

Moles of ferrihydrite and gibbsite were determined using the SEP concentration as described above, the molar mass of iron or aluminum, and the mass of solid phase in the model:

$$Moles\ of\ Metal\ Oxide = \frac{mg\ Fe\ or\ Al}{kg\ solid} \times \frac{g}{1000\ mg} \times \frac{moles\ Fe\ or\ Al}{g\ Fe\ or\ Al} \times kg\ Solid\ Mass\ in\ Model$$

The moles of ferrihydrite and gibbsite are represented by moles of Fe or Al (respectively) in a 1:1 ratio based on the mineral formula. Ferrihydrite and gibbsite were allowed to precipitate or dissolve in the reaction phase of the model to evaluate the impact of closure on sorbing phase availability.

Calcite and dolomite were included as mineral phases in the model because carbonate mineral formation and dissolution is often a major control on groundwater pH. Calcite and dolomite are common carbonate minerals and were detected at levels of greater than 1% by weight in X-ray diffraction (XRD) analysis and are therefore considered to be present in excess within the aquifer. Therefore, the mass fractions

reported in the XRD are used as a model inputs.[5] Calcite and dolomite are allowed to precipitate or dissolve in the reaction phase of the model.

Barite and gypsum are common sulfate minerals that have the potential to form under ambient environmental conditions. Neither mineral was detected in XRD results for the site. Therefore, barite and gypsum did not have initial concentrations in the model but were allowed to precipitate or dissolve during reaction.

An additional lithium sorbing phase was added to the model based on the results of laboratory batch testing.[6] The batch test data for both the UD/PMP (represented by sample "N-SB-04 (12.0'-18.0')") and UA (represented by sample "N-SB-05 (60.0'-67.1')") were well-fitted by Langmuir isotherms. The Langmuir model of sorption is expressed as:

$$q_e = \frac{q_m \times K_L \times C_e}{1 + K_L \times C_e}$$

Where:

q_e = the concentration of the analyte in the solid phase (grams [g]/kg)

C_e = the concentration of the analyte in the aqueous phase in (g/L)

K_L = linearized Langmuir sorption coefficient (L/kg)

q_m = the maximum concentration possible to be sorbed to the solid phase (g/kg)

The results from the laboratory batch test were used in the PHREEQC code to parameterize a sorbing phase.[7] The The K_L values for the UD/PMP and UA samples were 1.19×10^9 L/kg and 4.23×10^8 L/kg, respectively. The mean of these two K_L values was used in the model for lithium sorption as a log K of 8.9. The q_m values for the UD/PMP and UA samples were 0.033 and 0.0088 g/kg, respectively. The mean of these two q_m values was used to calculate the maximum number of moles of lithium that could sorb in the model:

$$Maximum\ Moles\ Li = q_m \left(\frac{g\ Li}{kg\ solid\ mass}\right) \times Solid\ Mass\ in\ Model\ (kg) \times \frac{moles}{6.9\ g\ Li}$$

The maximum moles of sorbed lithium is equivalent to the total moles of sorbing phase available in the model.

Aqueous Inputs

In addition to the COCs lithium and sulfate, the following parameters are included in the model and are anticipated to capture the expected attenuation and mobilization mechanisms for reasons detailed below:

- Temperature, pH and pe: pH and pe (a measure of redox potential) are major controls on chemical attenuation and mobility.

[5] See Table 3-4 of the GCSM (Appendix C of the Nature and Extent report) for raw data and Attachment 4 of the GCSM for the lab reports.

[6] See Attachment 10 of the Nature and Extent Report previously submitted to IEPA on April 3, 2024, and provided with relevant updates as Appendix D of the CAAA to which this report is attached.

[7] Approach consistent with PHREEQC Frequently Asked Question #144. Note that in this response, the K_L is not assumed to be previously linearized (*i.e.*, not already in units of L/kg; see Appelo and Postma 2005, Section 7.2 for details on the distinction between a K_L and a linear K_L). https://water.usgs.gov/water-resources/software/PHREEQC/Frequently%20Asked%20Questions%20for%20PHREEQC%20and%20PhreeqcI.pdf

- Chloride, potassium, and sodium: Major ions in groundwater typically required for the model to reach charge balance.
- Carbonate, calcium, and magnesium: Major ions in groundwater that may also form common minerals, including carbonates. Carbonate mineral formation and dissolution is often a major control on groundwater pH. Bicarbonate and carbonate ions, a major component of groundwater alkalinity, may also compete with sulfate/boron for sorbing sites.
- Silicon and phosphate: Silicate (silicon oxide) and phosphate are oxyanions that compete with sulfate/boron for sorbing sites.
- Aluminum, iron, and manganese: As discussed above, iron and aluminum form reactive metal (hydr)oxide minerals which have high capacities for sorbing other ions on their surfaces. Although sorption to manganese oxides was not considered in this model, manganese behaves similarly to iron and is included for completeness.
- Remaining constituents regulated under 35 IAC § 845.600[8]: Although these parameters are not subject to corrective action at NEW PAP, they are included in the model for completeness to assess reactions such as competition for available adsorption sites.

Values for pe (derived from oxidation reduction potential [ORP]) and carbonate concentrations were derived from values previously reported in the analytical data according to the following methods.

Groundwater ORP is used to calculate pe, a non-dimension scale of redox potential. First, the field-measured ORP was converted to Eh (*i.e.*, the redox potential normalized to the standard hydrogen electrode). The following equation provided in the Horiba water quality meter instruction manual[9] was used:

$$Eh = ORP + 206 - 0.7*(T - 25)$$

Where both Eh and ORP are in volts (V) and T is temperature in degrees Celsius. Eh is then converted to pe:

$$pe = (Eh * F) / (2.303 * R * T)$$

Where:

F = Faraday constant (96,500 Joules (J) / V-equivalent)

R = Molar gas constant (8.31 J / Kelvin (K)-mole)

T = temperature in Kelvin

Data reported for groundwater at the site include carbonate and bicarbonate alkalinity in units of mg of calcium carbonate per liter (mg $CaCO_3$/L). For use in modeling, it is convenient to convert these values to a single carbonate (CO_3^{2-}) ion concentration. Because carbonate and bicarbonate alkalinity are reported in the same units (*i.e.*, standardized to mg $CaCO_3$) and represent different protonation states of the same inorganic carbon oxyanion, they were summed to represent total alkalinity due to

[8] Mercury, thallium, total dissolved solids, and radium were not included in the model. Mercury reactions within the environment are highly complex and would require a separate modeling effort. Thallium forms a non-reactive monovalent cation and is rarely detected in the groundwater and is therefore not expected to contribute to model outcomes. Total dissolved solids are not a chemical parameter, but rather the result of other chemical abundances taken together. Radium is not included in most thermodynamic databases.

[9] https://static.horiba.com/fileadmin/Horiba/Products/Process_and_Environmental/Water_Pollution/Instruction_Manuals/U-50/U-50_Manual.pdf

carbonate. This summed alkalinity was converted to concentration of carbonate ion according to the following equation:

$$\frac{mg\ CO_3^{2-}}{L} = \frac{mg\ CaCO_3}{L} \times \frac{mole\ CaCO_3}{100.1\ mg\ CaCO_3} \times \frac{1\ mole\ CO_3^{2-}}{1\ mole\ CaCO_3} \times \frac{60\ mg\ CO_3^{2-}}{mole\ CO_3^{2-}}$$

The full suite of geochemical parameters for this model was measured in Quarter 2 and Quarter 3, 2023. The median values of these results were used in the model to represent average groundwater interacting with the solid phase. For downgradient wells the median for each parameter was calculated for each location individually. For background wells, a single median for each parameter was calculated using data from both background locations.

The charge imbalance of the initial solution was less than 18% for all samples. The results presented in the Groundwater Polishing Report represent the model results using charge balancing on chloride.

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Table C-1. Summary of Solid Phase Parameters

Appendix C. Details of Geochemical Model Parameterization

Newton Primary Ash Pond

Newton Power Plant

Newton, IL

Hydrostratigraphic Unit	Porosity	Dry Density (g/cm3)	Solid Mass In Model (kg)	Metal Summary Statistic	Iron		Aluminum	
					mg/kg	moles	mg/kg	moles
UD[1]	0.32	1.79	3.8	25th Percentile	275	0.019	440	0.062
				Median	310	0.021	510	0.072
				75th Percentile	320	0.022	555	0.078
UA[2]	0.31	1.83	4.07	25th Percentile	1700	0.124	79	0.012
				Median	2500	0.182	120	0.018
				75th Percentile	3100	0.226	300	0.045

Notes:

1. Table 2-1 in 2021 HCR; includes samples from APW11, APW12, APW13, APW15

2. Table 2-1 in 2021 HCR; includes samples from APW13, APW15, APW17, SB300

g/cm^3 = grams per cubic centimeter

kg = kilograms

mg/kg = milligrams per kilogram dry weight

ATTACHMENT D
PHEEQC model output

Attachment D. PHREEQC modeling output
Groundwater Polishing Report
Primary Ash Pond
Newton Power Plant
Newton, IL

Location	Location Description	Model	Charge Balance	Solids Summary	pH	pe	charge	pct_err	S(6)	B	Li
APW10	C - UA	Initial Soln	TRUE	25p	7.21	5.28	-3.54e-16	-1.14e-12	0.00433	7.84e-06	2.85e-06
APW02	C - UD	Initial Soln	TRUE	25p	6.71	5.20	4.60e-14	4.28e-11	0.0312	1.44e-05	2.08e-05
APW04	C - UD	Initial Soln	TRUE	25p	6.76	6.03	-7.84e-18	-1.68e-14	0.00859	2.97e-06	2.92e-06
APW05S	C - UD	Initial Soln	TRUE	25p	6.74	4.81	4.47e-13	5.54e-10	0.0203	1.22e-05	4.91e-06
APW10	C - UA	Speciation Model	TRUE	25p	7.21	5.28	-3.54e-16	-1.14e-12	0.00433	7.84e-06	2.85e-06
APW02	C - UD	Speciation Model	TRUE	25p	6.71	5.20	4.61e-14	4.29e-11	0.0312	1.44e-05	2.08e-05
APW04	C - UD	Speciation Model	TRUE	25p	6.76	6.03	-8.97e-19	-1.93e-15	0.00859	2.97e-06	2.92e-06
APW05S	C - UD	Speciation Model	TRUE	25p	6.74	4.81	4.47e-13	5.54e-10	0.0203	1.22e-05	4.91e-06
APW10	C - UA	First Reaction	TRUE	25p	7.41	0.873	0.000210	0.955	0.000191	4.66e-06	3.79e-06
APW10	C - UA	Second Reaction	TRUE	25p	7.45	0.430	2.41e-05	0.114	9.84e-05	4.94e-06	3.31e-06
APW02	C - UD	First Reaction	TRUE	25p	7.39	1.60	-1.09e-04	-4.82e-01	0.000421	5.32e-06	4.40e-05
APW02	C - UD	Second Reaction	TRUE	25p	7.49	1.07	9.82e-06	0.0470	0.000136	4.46e-06	2.46e-05
APW04	C - UD	First Reaction	TRUE	25p	7.41	1.60	-4.47e-05	-2.02e-01	0.000277	1.85e-06	5.97e-06
APW04	C - UD	Second Reaction	TRUE	25p	7.49	1.07	-5.66e-06	-2.72e-02	0.000123	1.84e-06	5.24e-06
APW05S	C - UD	First Reaction	TRUE	25p	7.40	1.51	-1.18e-04	-5.28e-01	0.000346	5.26e-06	1.34e-05
APW05S	C - UD	Second Reaction	TRUE	25p	7.49	1.02	-4.41e-06	-2.11e-02	0.000129	4.58e-06	1.01e-05
APW10	C - UA	Initial Soln	TRUE	75p	7.21	5.28	-3.54e-16	-1.14e-12	0.00433	7.84e-06	2.85e-06
APW02	C - UD	Initial Soln	TRUE	75p	6.71	5.20	4.60e-14	4.28e-11	0.0312	1.44e-05	2.08e-05
APW04	C - UD	Initial Soln	TRUE	75p	6.76	6.03	-7.84e-18	-1.68e-14	0.00859	2.97e-06	2.92e-06
APW05S	C - UD	Initial Soln	TRUE	75p	6.74	4.81	4.47e-13	5.54e-10	0.0203	1.22e-05	4.91e-06
APW10	C - UA	Speciation Model	TRUE	75p	7.21	5.28	-3.54e-16	-1.14e-12	0.00433	7.84e-06	2.85e-06
APW02	C - UD	Speciation Model	TRUE	75p	6.71	5.20	4.61e-14	4.29e-11	0.0312	1.44e-05	2.08e-05
APW04	C - UD	Speciation Model	TRUE	75p	6.76	6.03	-8.97e-19	-1.93e-15	0.00859	2.97e-06	2.92e-06
APW05S	C - UD	Speciation Model	TRUE	75p	6.74	4.81	4.47e-13	5.54e-10	0.0203	1.22e-05	4.91e-06
APW10	C - UA	First Reaction	TRUE	75p	7.38	1.50	0.000338	1.50	0.000309	4.43e-06	3.68e-06
APW10	C - UA	Second Reaction	TRUE	75p	7.42	1.08	4.65e-05	0.214	0.000126	3.87e-06	3.27e-06
APW02	C - UD	First Reaction	TRUE	75p	7.38	1.71	-1.64e-04	-7.16e-01	0.000486	5.43e-06	4.37e-05
APW02	C - UD	Second Reaction	TRUE	75p	7.48	1.18	3.55e-06	0.0169	0.000150	4.47e-06	2.47e-05
APW04	C - UD	First Reaction	TRUE	75p	7.39	1.73	-6.70e-05	-3.00e-01	0.000314	1.84e-06	5.91e-06
APW04	C - UD	Second Reaction	TRUE	75p	7.48	1.19	-1.02e-05	-4.90e-02	0.000133	1.77e-06	5.22e-06
APW05S	C - UD	First Reaction	TRUE	75p	7.39	1.61	-1.63e-04	-7.20e-01	0.000398	5.37e-06	1.32e-05
APW05S	C - UD	Second Reaction	TRUE	75p	7.48	1.12	-1.03e-05	-4.91e-02	0.000141	4.57e-06	1.01e-05
APW10	C - UA	Initial Soln	TRUE	median	7.21	5.28	-3.54e-16	-1.14e-12	0.00433	7.84e-06	2.85e-06
APW02	C - UD	Initial Soln	TRUE	median	6.71	5.20	4.60e-14	4.28e-11	0.0312	1.44e-05	2.08e-05
APW04	C - UD	Initial Soln	TRUE	median	6.76	6.03	-7.84e-18	-1.68e-14	0.00859	2.97e-06	2.92e-06
APW05S	C - UD	Initial Soln	TRUE	median	6.74	4.81	4.47e-13	5.54e-10	0.0203	1.22e-05	4.91e-06
APW10	C - UA	Speciation Model	TRUE	median	7.21	5.28	-3.54e-16	-1.14e-12	0.00433	7.84e-06	2.85e-06
APW02	C - UD	Speciation Model	TRUE	median	6.71	5.20	4.61e-14	4.29e-11	0.0312	1.44e-05	2.08e-05
APW04	C - UD	Speciation Model	TRUE	median	6.76	6.03	-8.97e-19	-1.93e-15	0.00859	2.97e-06	2.92e-06
APW05S	C - UD	Speciation Model	TRUE	median	6.74	4.81	4.47e-13	5.54e-10	0.0203	1.22e-05	4.91e-06
APW10	C - UA	First Reaction	TRUE	median	7.39	1.09	0.000299	1.34	0.000238	4.55e-06	3.73e-06
APW10	C - UA	Second Reaction	TRUE	median	7.43	0.659	3.83e-05	0.178	0.000105	4.41e-06	3.28e-06
APW02	C - UD	First Reaction	TRUE	median	7.38	1.67	-1.43e-04	-6.24e-01	0.000463	5.39e-06	4.38e-05
APW02	C - UD	Second Reaction	TRUE	median	7.48	1.14	5.99e-06	0.0285	0.000145	4.46e-06	2.47e-05
APW04	C - UD	First Reaction	TRUE	median	7.40	1.69	-5.80e-05	-2.60e-01	0.000301	1.84e-06	5.93e-06
APW04	C - UD	Second Reaction	TRUE	median	7.48	1.15	-8.48e-06	-4.06e-02	0.000129	1.79e-06	5.23e-06
APW05S	C - UD	First Reaction	TRUE	median	7.39	1.57	-1.45e-04	-6.44e-01	0.000379	5.33e-06	1.33e-05
APW05S	C - UD	Second Reaction	TRUE	median	7.48	1.09	-8.04e-06	-3.84e-02	0.000137	4.57e-06	1.01e-05
APW10	C - UA	Initial Soln	FALSE	25p	7.21	5.28	0.00400	14.9	0.00433	7.84e-06	2.85e-06
APW02	C - UD	Initial Soln	FALSE	25p	6.71	5.20	0.00561	5.53	0.0312	1.44e-05	2.08e-05
APW04	C - UD	Initial Soln	FALSE	25p	6.76	6.03	0.00700	17.8	0.00859	2.97e-06	2.92e-06
APW05S	C - UD	Initial Soln	FALSE	25p	6.74	4.81	0.00483	6.40	0.0203	1.22e-05	4.91e-06
APW10	C - UA	Speciation Model	FALSE	25p	7.21	5.28	0.00400	14.9	0.00433	7.84e-06	2.85e-06
APW02	C - UD	Speciation Model	FALSE	25p	6.71	5.20	0.00561	5.53	0.0312	1.44e-05	2.08e-05
APW04	C - UD	Speciation Model	FALSE	25p	6.76	6.03	0.00700	17.8	0.00859	2.97e-06	2.92e-06

Attachment D. PHREEQC modeling output
Groundwater Polishing Report
Primary Ash Pond
Newton Power Plant
Newton, IL

Location	Location Description	Model	Charge Balance	Solids Summary	pH	pe	charge	pct_err	S(6)	B	Li
APW05S	C - UD	Speciation Model	FALSE	25p	6.74	4.81	0.00483	6.40	0.0203	1.22e-05	4.91e-06
APW10	C - UA	First Reaction	FALSE	25p	7.41	0.872	0.000196	0.890	0.000192	4.62e-06	3.53e-06
APW10	C - UA	Second Reaction	FALSE	25p	7.45	0.430	2.34e-05	0.110	9.84e-05	4.90e-06	3.12e-06
APW02	C - UD	First Reaction	FALSE	25p	7.39	1.60	-1.06e-04	-4.71e-01	0.000420	5.29e-06	4.31e-05
APW02	C - UD	Second Reaction	FALSE	25p	7.49	1.07	9.51e-06	0.0455	0.000136	4.44e-06	2.43e-05
APW04	C - UD	First Reaction	FALSE	25p	7.41	1.60	-3.93e-05	-1.77e-01	0.000276	1.83e-06	5.51e-06
APW04	C - UD	Second Reaction	FALSE	25p	7.49	1.06	-5.89e-06	-2.83e-02	0.000122	1.82e-06	4.90e-06
APW05S	C - UD	First Reaction	FALSE	25p	7.40	1.50	-1.14e-04	-5.11e-01	0.000345	5.23e-06	1.30e-05
APW05S	C - UD	Second Reaction	FALSE	25p	7.49	1.02	-4.57e-06	-2.19e-02	0.000129	4.55e-06	9.91e-06
APW10	C - UA	Initial Soln	FALSE	75p	7.21	5.28	0.00400	14.9	0.00433	7.84e-06	2.85e-06
APW02	C - UD	Initial Soln	FALSE	75p	6.71	5.20	0.00561	5.53	0.0312	1.44e-05	2.08e-05
APW04	C - UD	Initial Soln	FALSE	75p	6.76	6.03	0.00700	17.8	0.00859	2.97e-06	2.92e-06
APW05S	C - UD	Initial Soln	FALSE	75p	6.74	4.81	0.00483	6.40	0.0203	1.22e-05	4.91e-06
APW10	C - UA	Speciation Model	FALSE	75p	7.21	5.28	0.00400	14.9	0.00433	7.84e-06	2.85e-06
APW02	C - UD	Speciation Model	FALSE	75p	6.71	5.20	0.00561	5.53	0.0312	1.44e-05	2.08e-05
APW04	C - UD	Speciation Model	FALSE	75p	6.76	6.03	0.00700	17.8	0.00859	2.97e-06	2.92e-06
APW05S	C - UD	Speciation Model	FALSE	75p	6.74	4.81	0.00483	6.40	0.0203	1.22e-05	4.91e-06
APW10	C - UA	First Reaction	FALSE	75p	7.38	1.50	0.000314	1.39	0.000309	4.38e-06	3.43e-06
APW10	C - UA	Second Reaction	FALSE	75p	7.42	1.08	4.48e-05	0.207	0.000126	3.83e-06	3.09e-06
APW02	C - UD	First Reaction	FALSE	75p	7.38	1.71	-1.60e-04	-6.99e-01	0.000485	5.40e-06	4.28e-05
APW02	C - UD	Second Reaction	FALSE	75p	7.48	1.18	3.27e-06	0.0155	0.000150	4.45e-06	2.43e-05
APW04	C - UD	First Reaction	FALSE	75p	7.39	1.73	-5.94e-05	-2.66e-01	0.000312	1.82e-06	5.45e-06
APW04	C - UD	Second Reaction	FALSE	75p	7.48	1.19	-1.04e-05	-4.98e-02	0.000132	1.75e-06	4.88e-06
APW05S	C - UD	First Reaction	FALSE	75p	7.39	1.61	-1.58e-04	-6.98e-01	0.000396	5.33e-06	1.29e-05
APW05S	C - UD	Second Reaction	FALSE	75p	7.48	1.12	-1.04e-05	-4.97e-02	0.000141	4.55e-06	9.90e-06
APW10	C - UA	Initial Soln	FALSE	median	7.21	5.28	0.00400	14.9	0.00433	7.84e-06	2.85e-06
APW02	C - UD	Initial Soln	FALSE	median	6.71	5.20	0.00561	5.53	0.0312	1.44e-05	2.08e-05
APW04	C - UD	Initial Soln	FALSE	median	6.76	6.03	0.00700	17.8	0.00859	2.97e-06	2.92e-06
APW05S	C - UD	Initial Soln	FALSE	median	6.74	4.81	0.00483	6.40	0.0203	1.22e-05	4.91e-06
APW10	C - UA	Speciation Model	FALSE	median	7.21	5.28	0.00400	14.9	0.00433	7.84e-06	2.85e-06
APW02	C - UD	Speciation Model	FALSE	median	6.71	5.20	0.00561	5.53	0.0312	1.44e-05	2.08e-05
APW04	C - UD	Speciation Model	FALSE	median	6.76	6.03	0.00700	17.8	0.00859	2.97e-06	2.92e-06
APW05S	C - UD	Speciation Model	FALSE	median	6.74	4.81	0.00483	6.40	0.0203	1.22e-05	4.91e-06
APW10	C - UA	First Reaction	FALSE	median	7.39	1.09	0.000278	1.25	0.000238	4.51e-06	3.48e-06
APW10	C - UA	Second Reaction	FALSE	median	7.43	0.658	3.71e-05	0.173	0.000105	4.38e-06	3.10e-06
APW02	C - UD	First Reaction	FALSE	median	7.39	1.67	-1.39e-04	-6.09e-01	0.000461	5.36e-06	4.29e-05
APW02	C - UD	Second Reaction	FALSE	median	7.48	1.14	5.69e-06	0.0271	0.000145	4.44e-06	2.43e-05
APW04	C - UD	First Reaction	FALSE	median	7.40	1.68	-5.13e-05	-2.30e-01	0.000299	1.82e-06	5.47e-06
APW04	C - UD	Second Reaction	FALSE	median	7.48	1.14	-8.68e-06	-4.16e-02	0.000129	1.77e-06	4.89e-06
APW05S	C - UD	First Reaction	FALSE	median	7.39	1.57	-1.41e-04	-6.25e-01	0.000377	5.29e-06	1.29e-05
APW05S	C - UD	Second Reaction	FALSE	median	7.48	1.09	-8.18e-06	-3.90e-02	0.000137	4.55e-06	9.90e-06

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Location	Location Description	Model	Charge Balance	Solids Summary	As	C(4)	Cl	F	Ca	Mg	Na
APW10	C - UA	Initial Soln	TRUE	25p	1.15e-07	0.00418	0.00528	1.41e-05	0.00350	0.00279	0.00505
APW02	C - UD	Initial Soln	TRUE	25p	1.54e-08	0.00630	0.00861	1.01e-05	0.0117	0.0178	0.0165
APW04	C - UD	Initial Soln	TRUE	25p	1.20e-08	0.00476	0.00798	6.09e-06	0.00526	0.00709	0.00393
APW05S	C - UD	Initial Soln	TRUE	25p	1.23e-08	0.00532	0.00940	2.05e-05	0.00933	0.0120	0.0113
APW10	C - UA	Speciation Model	TRUE	25p	1.15e-07	0.00418	0.00528	1.41e-05	0.00350	0.00279	0.00505
APW02	C - UD	Speciation Model	TRUE	25p	1.54e-08	0.00630	0.00861	1.01e-05	0.0117	0.0178	0.0165
APW04	C - UD	Speciation Model	TRUE	25p	1.20e-08	0.00476	0.00798	6.09e-06	0.00526	0.00709	0.00393
APW05S	C - UD	Speciation Model	TRUE	25p	1.23e-08	0.00532	0.00940	2.05e-05	0.00933	0.0120	0.0113
APW10	C - UA	First Reaction	TRUE	25p	1.29e-07	0.00550	0.00561	2.59e-05	0.00146	0.00147	0.00540
APW10	C - UA	Second Reaction	TRUE	25p	1.19e-07	0.00529	0.00561	2.60e-05	0.00132	0.00134	0.00540
APW02	C - UD	First Reaction	TRUE	25p	2.15e-09	0.00563	0.00561	2.58e-05	0.00151	0.00152	0.00540
APW02	C - UD	Second Reaction	TRUE	25p	1.88e-09	0.00503	0.00561	2.59e-05	0.00128	0.00130	0.00540
APW04	C - UD	First Reaction	TRUE	25p	6.23e-09	0.00558	0.00561	2.57e-05	0.00145	0.00147	0.00540
APW04	C - UD	Second Reaction	TRUE	25p	5.39e-09	0.00502	0.00561	2.59e-05	0.00127	0.00129	0.00540
APW05S	C - UD	First Reaction	TRUE	25p	3.43e-09	0.00563	0.00561	2.59e-05	0.00148	0.00149	0.00540
APW05S	C - UD	Second Reaction	TRUE	25p	2.94e-09	0.00503	0.00561	2.59e-05	0.00128	0.00129	0.00540
APW10	C - UA	Initial Soln	TRUE	75p	1.15e-07	0.00418	0.00528	1.41e-05	0.00350	0.00279	0.00505
APW02	C - UD	Initial Soln	TRUE	75p	1.54e-08	0.00630	0.00861	1.01e-05	0.0117	0.0178	0.0165
APW04	C - UD	Initial Soln	TRUE	75p	1.20e-08	0.00476	0.00798	6.09e-06	0.00526	0.00709	0.00393
APW05S	C - UD	Initial Soln	TRUE	75p	1.23e-08	0.00532	0.00940	2.05e-05	0.00933	0.0120	0.0113
APW10	C - UA	Speciation Model	TRUE	75p	1.15e-07	0.00418	0.00528	1.41e-05	0.00350	0.00279	0.00505
APW02	C - UD	Speciation Model	TRUE	75p	1.54e-08	0.00630	0.00861	1.01e-05	0.0117	0.0178	0.0165
APW04	C - UD	Speciation Model	TRUE	75p	1.20e-08	0.00476	0.00798	6.09e-06	0.00526	0.00709	0.00393
APW05S	C - UD	Speciation Model	TRUE	75p	1.23e-08	0.00532	0.00940	2.05e-05	0.00933	0.0120	0.0113
APW10	C - UA	First Reaction	TRUE	75p	1.34e-07	0.00561	0.00561	2.58e-05	0.00156	0.00158	0.00540
APW10	C - UA	Second Reaction	TRUE	75p	1.28e-07	0.00551	0.00561	2.59e-05	0.00139	0.00140	0.00540
APW02	C - UD	First Reaction	TRUE	75p	2.19e-09	0.00572	0.00561	2.57e-05	0.00155	0.00156	0.00540
APW02	C - UD	Second Reaction	TRUE	75p	1.84e-09	0.00508	0.00561	2.59e-05	0.00130	0.00131	0.00540
APW04	C - UD	First Reaction	TRUE	75p	6.36e-09	0.00566	0.00561	2.57e-05	0.00148	0.00150	0.00540
APW04	C - UD	Second Reaction	TRUE	75p	5.32e-09	0.00506	0.00561	2.59e-05	0.00129	0.00130	0.00540
APW05S	C - UD	First Reaction	TRUE	75p	3.51e-09	0.00572	0.00561	2.59e-05	0.00151	0.00153	0.00540
APW05S	C - UD	Second Reaction	TRUE	75p	2.89e-09	0.00508	0.00561	2.59e-05	0.00129	0.00131	0.00540
APW10	C - UA	Initial Soln	TRUE	median	1.15e-07	0.00418	0.00528	1.41e-05	0.00350	0.00279	0.00505
APW02	C - UD	Initial Soln	TRUE	median	1.54e-08	0.00630	0.00861	1.01e-05	0.0117	0.0178	0.0165
APW04	C - UD	Initial Soln	TRUE	median	1.20e-08	0.00476	0.00798	6.09e-06	0.00526	0.00709	0.00393
APW05S	C - UD	Initial Soln	TRUE	median	1.23e-08	0.00532	0.00940	2.05e-05	0.00933	0.0120	0.0113
APW10	C - UA	Speciation Model	TRUE	median	1.15e-07	0.00418	0.00528	1.41e-05	0.00350	0.00279	0.00505
APW02	C - UD	Speciation Model	TRUE	median	1.54e-08	0.00630	0.00861	1.01e-05	0.0117	0.0178	0.0165
APW04	C - UD	Speciation Model	TRUE	median	1.20e-08	0.00476	0.00798	6.09e-06	0.00526	0.00709	0.00393
APW05S	C - UD	Speciation Model	TRUE	median	1.23e-08	0.00532	0.00940	2.05e-05	0.00933	0.0120	0.0113
APW10	C - UA	First Reaction	TRUE	median	1.33e-07	0.00558	0.00561	2.59e-05	0.00152	0.00153	0.00540
APW10	C - UA	Second Reaction	TRUE	median	1.25e-07	0.00544	0.00561	2.60e-05	0.00136	0.00138	0.00540
APW02	C - UD	First Reaction	TRUE	median	2.18e-09	0.00569	0.00561	2.57e-05	0.00153	0.00155	0.00540
APW02	C - UD	Second Reaction	TRUE	median	1.85e-09	0.00506	0.00561	2.59e-05	0.00129	0.00131	0.00540
APW04	C - UD	First Reaction	TRUE	median	6.32e-09	0.00563	0.00561	2.57e-05	0.00147	0.00149	0.00540
APW04	C - UD	Second Reaction	TRUE	median	5.33e-09	0.00505	0.00561	2.59e-05	0.00128	0.00130	0.00540
APW05S	C - UD	First Reaction	TRUE	median	3.48e-09	0.00569	0.00561	2.59e-05	0.00150	0.00152	0.00540
APW05S	C - UD	Second Reaction	TRUE	median	2.91e-09	0.00506	0.00561	2.59e-05	0.00129	0.00130	0.00540
APW10	C - UA	Initial Soln	FALSE	25p	1.15e-07	0.00418	0.00128	1.41e-05	0.00350	0.00279	0.00505
APW02	C - UD	Initial Soln	FALSE	25p	1.54e-08	0.00630	0.00300	1.01e-05	0.0117	0.0178	0.0165
APW04	C - UD	Initial Soln	FALSE	25p	1.20e-08	0.00476	0.000989	6.09e-06	0.00526	0.00709	0.00393
APW05S	C - UD	Initial Soln	FALSE	25p	1.23e-08	0.00532	0.00457	2.05e-05	0.00933	0.0120	0.0113
APW10	C - UA	Speciation Model	FALSE	25p	1.15e-07	0.00418	0.00128	1.41e-05	0.00350	0.00279	0.00505
APW02	C - UD	Speciation Model	FALSE	25p	1.54e-08	0.00630	0.00300	1.01e-05	0.0117	0.0178	0.0165
APW04	C - UD	Speciation Model	FALSE	25p	1.20e-08	0.00476	0.000989	6.09e-06	0.00526	0.00709	0.00393

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Location	Location Description	Model	Charge Balance	Solids Summary	As	C(4)	Cl	F	Ca	Mg	Na
APW05S	C - UD	Speciation Model	FALSE	25p	1.23e-08	0.00532	0.00457	2.05e-05	0.00933	0.0120	0.0113
APW10	C - UA	First Reaction	FALSE	25p	1.33e-07	0.00550	0.00561	2.59e-05	0.00145	0.00147	0.00540
APW10	C - UA	Second Reaction	FALSE	25p	1.23e-07	0.00528	0.00561	2.60e-05	0.00132	0.00134	0.00540
APW02	C - UD	First Reaction	FALSE	25p	2.20e-09	0.00563	0.00561	2.58e-05	0.00151	0.00152	0.00540
APW02	C - UD	Second Reaction	FALSE	25p	1.93e-09	0.00503	0.00561	2.59e-05	0.00128	0.00130	0.00540
APW04	C - UD	First Reaction	FALSE	25p	6.49e-09	0.00557	0.00561	2.57e-05	0.00145	0.00147	0.00540
APW04	C - UD	Second Reaction	FALSE	25p	5.61e-09	0.00501	0.00561	2.59e-05	0.00127	0.00129	0.00540
APW05S	C - UD	First Reaction	FALSE	25p	3.50e-09	0.00563	0.00561	2.59e-05	0.00148	0.00149	0.00540
APW05S	C - UD	Second Reaction	FALSE	25p	3.00e-09	0.00503	0.00561	2.59e-05	0.00128	0.00129	0.00540
APW10	C - UA	Initial Soln	FALSE	75p	1.15e-07	0.00418	0.00128	1.41e-05	0.00350	0.00279	0.00505
APW02	C - UD	Initial Soln	FALSE	75p	1.54e-08	0.00630	0.00300	1.01e-05	0.0117	0.0178	0.0165
APW04	C - UD	Initial Soln	FALSE	75p	1.20e-08	0.00476	0.000989	6.09e-06	0.00526	0.00709	0.00393
APW05S	C - UD	Initial Soln	FALSE	75p	1.23e-08	0.00532	0.00457	2.05e-05	0.00933	0.0120	0.0113
APW10	C - UA	Speciation Model	FALSE	75p	1.15e-07	0.00418	0.00128	1.41e-05	0.00350	0.00279	0.00505
APW02	C - UD	Speciation Model	FALSE	75p	1.54e-08	0.00630	0.00300	1.01e-05	0.0117	0.0178	0.0165
APW04	C - UD	Speciation Model	FALSE	75p	1.20e-08	0.00476	0.000989	6.09e-06	0.00526	0.00709	0.00393
APW05S	C - UD	Speciation Model	FALSE	75p	1.23e-08	0.00532	0.00457	2.05e-05	0.00933	0.0120	0.0113
APW10	C - UA	First Reaction	FALSE	75p	1.39e-07	0.00561	0.00561	2.58e-05	0.00156	0.00158	0.00540
APW10	C - UA	Second Reaction	FALSE	75p	1.32e-07	0.00551	0.00561	2.59e-05	0.00139	0.00140	0.00540
APW02	C - UD	First Reaction	FALSE	75p	2.24e-09	0.00572	0.00561	2.57e-05	0.00155	0.00156	0.00540
APW02	C - UD	Second Reaction	FALSE	75p	1.88e-09	0.00508	0.00561	2.59e-05	0.00130	0.00131	0.00540
APW04	C - UD	First Reaction	FALSE	75p	6.62e-09	0.00566	0.00561	2.57e-05	0.00148	0.00150	0.00540
APW04	C - UD	Second Reaction	FALSE	75p	5.54e-09	0.00506	0.00561	2.59e-05	0.00128	0.00130	0.00540
APW05S	C - UD	First Reaction	FALSE	75p	3.58e-09	0.00572	0.00561	2.59e-05	0.00151	0.00153	0.00540
APW05S	C - UD	Second Reaction	FALSE	75p	2.95e-09	0.00508	0.00561	2.59e-05	0.00129	0.00131	0.00540
APW10	C - UA	Initial Soln	FALSE	median	1.15e-07	0.00418	0.00128	1.41e-05	0.00350	0.00279	0.00505
APW02	C - UD	Initial Soln	FALSE	median	1.54e-08	0.00630	0.00300	1.01e-05	0.0117	0.0178	0.0165
APW04	C - UD	Initial Soln	FALSE	median	1.20e-08	0.00476	0.000989	6.09e-06	0.00526	0.00709	0.00393
APW05S	C - UD	Initial Soln	FALSE	median	1.23e-08	0.00532	0.00457	2.05e-05	0.00933	0.0120	0.0113
APW10	C - UA	Speciation Model	FALSE	median	1.15e-07	0.00418	0.00128	1.41e-05	0.00350	0.00279	0.00505
APW02	C - UD	Speciation Model	FALSE	median	1.54e-08	0.00630	0.00300	1.01e-05	0.0117	0.0178	0.0165
APW04	C - UD	Speciation Model	FALSE	median	1.20e-08	0.00476	0.000989	6.09e-06	0.00526	0.00709	0.00393
APW05S	C - UD	Speciation Model	FALSE	median	1.23e-08	0.00532	0.00457	2.05e-05	0.00933	0.0120	0.0113
APW10	C - UA	First Reaction	FALSE	median	1.37e-07	0.00558	0.00561	2.59e-05	0.00151	0.00153	0.00540
APW10	C - UA	Second Reaction	FALSE	median	1.29e-07	0.00543	0.00561	2.60e-05	0.00136	0.00138	0.00540
APW02	C - UD	First Reaction	FALSE	median	2.23e-09	0.00569	0.00561	2.57e-05	0.00153	0.00155	0.00540
APW02	C - UD	Second Reaction	FALSE	median	1.90e-09	0.00506	0.00561	2.59e-05	0.00129	0.00131	0.00540
APW04	C - UD	First Reaction	FALSE	median	6.58e-09	0.00563	0.00561	2.57e-05	0.00147	0.00149	0.00540
APW04	C - UD	Second Reaction	FALSE	median	5.56e-09	0.00505	0.00561	2.59e-05	0.00128	0.00130	0.00540
APW05S	C - UD	First Reaction	FALSE	median	3.55e-09	0.00569	0.00561	2.59e-05	0.00150	0.00152	0.00540
APW05S	C - UD	Second Reaction	FALSE	median	2.97e-09	0.00506	0.00561	2.59e-05	0.00129	0.00130	0.00540

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Location	Location Description	Model	Charge Balance	Solids Summary	K	Ba	Si	P	Mn	Fe	Al
APW10	C - UA	Initial Soln	TRUE	25p	3.84e-05	2.14e-07	0.000143	1.04e-07	5.83e-06	1.55e-06	5.18e-07
APW02	C - UD	Initial Soln	TRUE	25p	0.000157	1.16e-07	0.000134	1.05e-07	7.04e-06	1.45e-06	2.47e-07
APW04	C - UD	Initial Soln	TRUE	25p	3.87e-05	1.70e-07	0.000138	1.45e-07	7.92e-06	3.36e-07	2.11e-07
APW05S	C - UD	Initial Soln	TRUE	25p	5.09e-05	2.48e-07	0.000178	1.77e-07	8.20e-06	1.49e-06	4.65e-07
APW10	C - UA	Speciation Model	TRUE	25p	3.84e-05	2.14e-07	0.000143	1.04e-07	5.83e-06	1.55e-06	5.18e-07
APW02	C - UD	Speciation Model	TRUE	25p	0.000157	1.16e-07	0.000134	1.05e-07	7.04e-06	1.45e-06	2.47e-07
APW04	C - UD	Speciation Model	TRUE	25p	3.87e-05	1.70e-07	0.000138	1.45e-07	7.92e-06	3.36e-07	2.11e-07
APW05S	C - UD	Speciation Model	TRUE	25p	5.09e-05	2.48e-07	0.000178	1.77e-07	8.20e-06	1.49e-06	4.65e-07
APW10	C - UA	First Reaction	TRUE	25p	3.74e-05	1.27e-06	0.000124	1.47e-07	1.32e-06	1.23e-06	5.36e-08
APW10	C - UA	Second Reaction	TRUE	25p	3.74e-05	2.37e-06	0.000111	1.51e-07	8.42e-07	2.40e-06	5.76e-08
APW02	C - UD	First Reaction	TRUE	25p	3.74e-05	5.86e-07	3.66e-05	8.09e-08	6.15e-07	2.65e-07	5.25e-08
APW02	C - UD	Second Reaction	TRUE	25p	3.74e-05	1.70e-06	3.24e-05	9.25e-08	6.31e-07	4.44e-07	6.07e-08
APW04	C - UD	First Reaction	TRUE	25p	3.74e-05	8.76e-07	5.29e-05	2.24e-07	1.31e-06	2.38e-07	5.35e-08
APW04	C - UD	Second Reaction	TRUE	25p	3.74e-05	1.89e-06	4.65e-05	2.40e-07	1.02e-06	4.37e-07	6.10e-08
APW05S	C - UD	First Reaction	TRUE	25p	3.74e-05	7.08e-07	5.80e-05	1.98e-07	8.74e-07	3.13e-07	5.29e-08
APW05S	C - UD	Second Reaction	TRUE	25p	3.74e-05	1.80e-06	4.97e-05	2.13e-07	7.79e-07	4.94e-07	6.08e-08
APW10	C - UA	Initial Soln	TRUE	75p	3.84e-05	2.14e-07	0.000143	1.04e-07	5.83e-06	1.55e-06	5.18e-07
APW02	C - UD	Initial Soln	TRUE	75p	0.000157	1.16e-07	0.000134	1.05e-07	7.04e-06	1.45e-06	2.47e-07
APW04	C - UD	Initial Soln	TRUE	75p	3.87e-05	1.70e-07	0.000138	1.45e-07	7.92e-06	3.36e-07	2.11e-07
APW05S	C - UD	Initial Soln	TRUE	75p	5.09e-05	2.48e-07	0.000178	1.77e-07	8.20e-06	1.49e-06	4.65e-07
APW10	C - UA	Speciation Model	TRUE	75p	3.84e-05	2.14e-07	0.000143	1.04e-07	5.83e-06	1.55e-06	5.18e-07
APW02	C - UD	Speciation Model	TRUE	75p	0.000157	1.16e-07	0.000134	1.05e-07	7.04e-06	1.45e-06	2.47e-07
APW04	C - UD	Speciation Model	TRUE	75p	3.87e-05	1.70e-07	0.000138	1.45e-07	7.92e-06	3.36e-07	2.11e-07
APW05S	C - UD	Speciation Model	TRUE	75p	5.09e-05	2.48e-07	0.000178	1.77e-07	8.20e-06	1.49e-06	4.65e-07
APW10	C - UA	First Reaction	TRUE	75p	3.74e-05	8.05e-07	0.000133	1.44e-07	2.18e-06	3.64e-07	5.13e-08
APW10	C - UA	Second Reaction	TRUE	75p	3.74e-05	1.90e-06	0.000121	1.48e-07	1.40e-06	6.74e-07	5.48e-08
APW02	C - UD	First Reaction	TRUE	75p	3.74e-05	5.12e-07	3.72e-05	7.94e-08	6.10e-07	2.24e-07	5.16e-08
APW02	C - UD	Second Reaction	TRUE	75p	3.74e-05	1.55e-06	3.18e-05	8.79e-08	6.15e-07	3.63e-07	5.99e-08
APW04	C - UD	First Reaction	TRUE	75p	3.74e-05	7.80e-07	5.39e-05	2.22e-07	1.37e-06	1.93e-07	5.26e-08
APW04	C - UD	Second Reaction	TRUE	75p	3.74e-05	1.76e-06	4.61e-05	2.32e-07	1.08e-06	3.49e-07	6.03e-08
APW05S	C - UD	First Reaction	TRUE	75p	3.74e-05	6.21e-07	5.93e-05	1.97e-07	8.94e-07	2.72e-07	5.19e-08
APW05S	C - UD	Second Reaction	TRUE	75p	3.74e-05	1.65e-06	4.95e-05	2.06e-07	7.91e-07	4.12e-07	6.00e-08
APW10	C - UA	Initial Soln	TRUE	median	3.84e-05	2.14e-07	0.000143	1.04e-07	5.83e-06	1.55e-06	5.18e-07
APW02	C - UD	Initial Soln	TRUE	median	0.000157	1.16e-07	0.000134	1.05e-07	7.04e-06	1.45e-06	2.47e-07
APW04	C - UD	Initial Soln	TRUE	median	3.87e-05	1.70e-07	0.000138	1.45e-07	7.92e-06	3.36e-07	2.11e-07
APW05S	C - UD	Initial Soln	TRUE	median	5.09e-05	2.48e-07	0.000178	1.77e-07	8.20e-06	1.49e-06	4.65e-07
APW10	C - UA	Speciation Model	TRUE	median	3.84e-05	2.14e-07	0.000143	1.04e-07	5.83e-06	1.55e-06	5.18e-07
APW02	C - UD	Speciation Model	TRUE	median	0.000157	1.16e-07	0.000134	1.05e-07	7.04e-06	1.45e-06	2.47e-07
APW04	C - UD	Speciation Model	TRUE	median	3.87e-05	1.70e-07	0.000138	1.45e-07	7.92e-06	3.36e-07	2.11e-07
APW05S	C - UD	Speciation Model	TRUE	median	5.09e-05	2.48e-07	0.000178	1.77e-07	8.20e-06	1.49e-06	4.65e-07
APW10	C - UA	First Reaction	TRUE	median	3.74e-05	1.03e-06	0.000130	1.45e-07	1.55e-06	8.48e-07	5.21e-08
APW10	C - UA	Second Reaction	TRUE	median	3.74e-05	2.26e-06	0.000118	1.49e-07	9.42e-07	1.64e-06	5.58e-08
APW02	C - UD	First Reaction	TRUE	median	3.74e-05	5.36e-07	3.70e-05	7.98e-08	6.12e-07	2.38e-07	5.19e-08
APW02	C - UD	Second Reaction	TRUE	median	3.74e-05	1.61e-06	3.20e-05	8.93e-08	6.21e-07	3.89e-07	6.02e-08
APW04	C - UD	First Reaction	TRUE	median	3.74e-05	8.12e-07	5.36e-05	2.23e-07	1.35e-06	2.08e-07	5.28e-08
APW04	C - UD	Second Reaction	TRUE	median	3.74e-05	1.80e-06	4.62e-05	2.34e-07	1.06e-06	3.78e-07	6.05e-08
APW05S	C - UD	First Reaction	TRUE	median	3.74e-05	6.50e-07	5.89e-05	1.97e-07	8.87e-07	2.86e-07	5.22e-08
APW05S	C - UD	Second Reaction	TRUE	median	3.74e-05	1.70e-06	4.96e-05	2.08e-07	7.87e-07	4.38e-07	6.03e-08
APW10	C - UA	Initial Soln	FALSE	25p	3.84e-05	2.14e-07	0.000143	1.04e-07	5.83e-06	1.55e-06	5.18e-07
APW02	C - UD	Initial Soln	FALSE	25p	0.000157	1.16e-07	0.000134	1.05e-07	7.04e-06	1.45e-06	2.47e-07
APW04	C - UD	Initial Soln	FALSE	25p	3.87e-05	1.70e-07	0.000138	1.45e-07	7.92e-06	3.36e-07	2.11e-07
APW05S	C - UD	Initial Soln	FALSE	25p	5.09e-05	2.48e-07	0.000178	1.77e-07	8.20e-06	1.49e-06	4.65e-07
APW10	C - UA	Speciation Model	FALSE	25p	3.84e-05	2.14e-07	0.000143	1.04e-07	5.83e-06	1.55e-06	5.18e-07
APW02	C - UD	Speciation Model	FALSE	25p	0.000157	1.16e-07	0.000134	1.05e-07	7.04e-06	1.45e-06	2.47e-07
APW04	C - UD	Speciation Model	FALSE	25p	3.87e-05	1.70e-07	0.000138	1.45e-07	7.92e-06	3.36e-07	2.11e-07

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Location	Location Description	Model	Charge Balance	Solids Summary	K	Ba	Si	P	Mn	Fe	Al
APW05S	C - UD	Speciation Model	FALSE	25p	5.09e-05	2.48e-07	0.000178	1.77e-07	8.20e-06	1.49e-06	4.65e-07
APW10	C - UA	First Reaction	FALSE	25p	3.74e-05	1.26e-06	0.000124	1.48e-07	1.34e-06	1.22e-06	5.36e-08
APW10	C - UA	Second Reaction	FALSE	25p	3.74e-05	2.37e-06	0.000111	1.52e-07	8.45e-07	2.39e-06	5.76e-08
APW02	C - UD	First Reaction	FALSE	25p	3.74e-05	5.88e-07	3.65e-05	8.11e-08	6.21e-07	2.66e-07	5.25e-08
APW02	C - UD	Second Reaction	FALSE	25p	3.74e-05	1.71e-06	3.24e-05	9.28e-08	6.34e-07	4.45e-07	6.07e-08
APW04	C - UD	First Reaction	FALSE	25p	3.74e-05	8.82e-07	5.27e-05	2.25e-07	1.33e-06	2.39e-07	5.35e-08
APW04	C - UD	Second Reaction	FALSE	25p	3.74e-05	1.89e-06	4.64e-05	2.41e-07	1.03e-06	4.38e-07	6.10e-08
APW05S	C - UD	First Reaction	FALSE	25p	3.74e-05	7.10e-07	5.79e-05	1.99e-07	8.83e-07	3.14e-07	5.29e-08
APW05S	C - UD	Second Reaction	FALSE	25p	3.74e-05	1.80e-06	4.97e-05	2.13e-07	7.84e-07	4.95e-07	6.08e-08
APW10	C - UA	Initial Soln	FALSE	75p	3.84e-05	2.14e-07	0.000143	1.04e-07	5.83e-06	1.55e-06	5.18e-07
APW02	C - UD	Initial Soln	FALSE	75p	0.000157	1.16e-07	0.000134	1.05e-07	7.04e-06	1.45e-06	2.47e-07
APW04	C - UD	Initial Soln	FALSE	75p	3.87e-05	1.70e-07	0.000138	1.45e-07	7.92e-06	3.36e-07	2.11e-07
APW05S	C - UD	Initial Soln	FALSE	75p	5.09e-05	2.48e-07	0.000178	1.77e-07	8.20e-06	1.49e-06	4.65e-07
APW10	C - UA	Speciation Model	FALSE	75p	3.84e-05	2.14e-07	0.000143	1.04e-07	5.83e-06	1.55e-06	5.18e-07
APW02	C - UD	Speciation Model	FALSE	75p	0.000157	1.16e-07	0.000134	1.05e-07	7.04e-06	1.45e-06	2.47e-07
APW04	C - UD	Speciation Model	FALSE	75p	3.87e-05	1.70e-07	0.000138	1.45e-07	7.92e-06	3.36e-07	2.11e-07
APW05S	C - UD	Speciation Model	FALSE	75p	5.09e-05	2.48e-07	0.000178	1.77e-07	8.20e-06	1.49e-06	4.65e-07
APW10	C - UA	First Reaction	FALSE	75p	3.74e-05	8.04e-07	0.000132	1.45e-07	2.21e-06	3.62e-07	5.14e-08
APW10	C - UA	Second Reaction	FALSE	75p	3.74e-05	1.90e-06	0.000121	1.49e-07	1.42e-06	6.73e-07	5.48e-08
APW02	C - UD	First Reaction	FALSE	75p	3.74e-05	5.14e-07	3.71e-05	7.96e-08	6.16e-07	2.25e-07	5.16e-08
APW02	C - UD	Second Reaction	FALSE	75p	3.74e-05	1.56e-06	3.18e-05	8.81e-08	6.18e-07	3.63e-07	5.99e-08
APW04	C - UD	First Reaction	FALSE	75p	3.74e-05	7.86e-07	5.37e-05	2.23e-07	1.40e-06	1.94e-07	5.26e-08
APW04	C - UD	Second Reaction	FALSE	75p	3.74e-05	1.76e-06	4.60e-05	2.34e-07	1.09e-06	3.50e-07	6.03e-08
APW05S	C - UD	First Reaction	FALSE	75p	3.74e-05	6.23e-07	5.92e-05	1.97e-07	9.04e-07	2.73e-07	5.19e-08
APW05S	C - UD	Second Reaction	FALSE	75p	3.74e-05	1.65e-06	4.94e-05	2.06e-07	7.97e-07	4.12e-07	6.00e-08
APW10	C - UA	Initial Soln	FALSE	median	3.84e-05	2.14e-07	0.000143	1.04e-07	5.83e-06	1.55e-06	5.18e-07
APW02	C - UD	Initial Soln	FALSE	median	0.000157	1.16e-07	0.000134	1.05e-07	7.04e-06	1.45e-06	2.47e-07
APW04	C - UD	Initial Soln	FALSE	median	3.87e-05	1.70e-07	0.000138	1.45e-07	7.92e-06	3.36e-07	2.11e-07
APW05S	C - UD	Initial Soln	FALSE	median	5.09e-05	2.48e-07	0.000178	1.77e-07	8.20e-06	1.49e-06	4.65e-07
APW10	C - UA	Speciation Model	FALSE	median	3.84e-05	2.14e-07	0.000143	1.04e-07	5.83e-06	1.55e-06	5.18e-07
APW02	C - UD	Speciation Model	FALSE	median	0.000157	1.16e-07	0.000134	1.05e-07	7.04e-06	1.45e-06	2.47e-07
APW04	C - UD	Speciation Model	FALSE	median	3.87e-05	1.70e-07	0.000138	1.45e-07	7.92e-06	3.36e-07	2.11e-07
APW05S	C - UD	Speciation Model	FALSE	median	5.09e-05	2.48e-07	0.000178	1.77e-07	8.20e-06	1.49e-06	4.65e-07
APW10	C - UA	First Reaction	FALSE	median	3.74e-05	1.03e-06	0.000129	1.46e-07	1.56e-06	8.45e-07	5.22e-08
APW10	C - UA	Second Reaction	FALSE	median	3.74e-05	2.26e-06	0.000117	1.50e-07	9.48e-07	1.64e-06	5.58e-08
APW02	C - UD	First Reaction	FALSE	median	3.74e-05	5.38e-07	3.69e-05	8.00e-08	6.18e-07	2.38e-07	5.19e-08
APW02	C - UD	Second Reaction	FALSE	median	3.74e-05	1.61e-06	3.19e-05	8.95e-08	6.24e-07	3.90e-07	6.02e-08
APW04	C - UD	First Reaction	FALSE	median	3.74e-05	8.18e-07	5.34e-05	2.24e-07	1.38e-06	2.08e-07	5.29e-08
APW04	C - UD	Second Reaction	FALSE	median	3.74e-05	1.81e-06	4.61e-05	2.36e-07	1.07e-06	3.79e-07	6.05e-08
APW05S	C - UD	First Reaction	FALSE	median	3.74e-05	6.52e-07	5.87e-05	1.98e-07	8.97e-07	2.86e-07	5.22e-08
APW05S	C - UD	Second Reaction	FALSE	median	3.74e-05	1.70e-06	4.95e-05	2.09e-07	7.92e-07	4.39e-07	6.03e-08

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Location	Location Description	Model	Charge Balance	Solids Summary	Sb	Be	Cd	Cr	Co	Pb	Mo
APW10	C - UA	Initial Soln	TRUE	25p	1.71e-09	2.19e-08	2.09e-09	2.41e-08	2.46e-09	9.90e-10	7.72e-08
APW02	C - UD	Initial Soln	TRUE	25p	1.71e-09	3.87e-08	2.10e-09	5.99e-08	2.39e-08	1.67e-09	1.62e-08
APW04	C - UD	Initial Soln	TRUE	25p	2.94e-09	2.20e-08	2.09e-09	5.40e-07	7.31e-09	2.25e-09	1.67e-08
APW05S	C - UD	Initial Soln	TRUE	25p	1.71e-09	2.20e-08	2.10e-09	4.05e-08	2.41e-08	1.26e-09	1.36e-08
APW10	C - UA	Speciation Model	TRUE	25p	1.71e-09	2.19e-08	2.09e-09	2.41e-08	2.46e-09	9.90e-10	7.72e-08
APW02	C - UD	Speciation Model	TRUE	25p	1.71e-09	3.87e-08	2.10e-09	5.99e-08	2.39e-08	1.67e-09	1.62e-08
APW04	C - UD	Speciation Model	TRUE	25p	2.94e-09	2.20e-08	2.09e-09	5.40e-07	7.31e-09	2.25e-09	1.67e-08
APW05S	C - UD	Speciation Model	TRUE	25p	1.71e-09	2.20e-08	2.10e-09	4.05e-08	2.41e-08	1.26e-09	1.36e-08
APW10	C - UA	First Reaction	TRUE	25p	1.71e-09	1.63e-08	1.40e-09	1.60e-08	1.70e-09	1.17e-09	1.00e-07
APW10	C - UA	Second Reaction	TRUE	25p	1.71e-09	1.45e-08	1.42e-09	1.42e-08	1.75e-09	1.19e-09	9.34e-08
APW02	C - UD	First Reaction	TRUE	25p	1.71e-09	8.08e-09	1.83e-10	6.21e-09	1.98e-09	5.36e-10	7.14e-08
APW02	C - UD	Second Reaction	TRUE	25p	1.71e-09	6.51e-09	1.76e-10	5.03e-09	1.85e-09	5.57e-10	8.46e-08
APW04	C - UD	First Reaction	TRUE	25p	1.71e-09	5.33e-09	4.89e-10	9.40e-08	1.74e-09	1.91e-09	7.96e-08
APW04	C - UD	Second Reaction	TRUE	25p	1.71e-09	4.43e-09	4.71e-10	8.18e-08	1.64e-09	1.98e-09	8.67e-08
APW05S	C - UD	First Reaction	TRUE	25p	1.71e-09	4.60e-09	2.75e-10	5.78e-09	3.13e-09	6.15e-10	7.76e-08
APW05S	C - UD	Second Reaction	TRUE	25p	1.71e-09	3.80e-09	2.65e-10	4.91e-09	2.93e-09	6.35e-10	8.63e-08
APW10	C - UA	Initial Soln	TRUE	75p	1.71e-09	2.19e-08	2.09e-09	2.41e-08	2.46e-09	9.90e-10	7.72e-08
APW02	C - UD	Initial Soln	TRUE	75p	1.71e-09	3.87e-08	2.10e-09	5.99e-08	2.39e-08	1.67e-09	1.62e-08
APW04	C - UD	Initial Soln	TRUE	75p	2.94e-09	2.20e-08	2.09e-09	5.40e-07	7.31e-09	2.25e-09	1.67e-08
APW05S	C - UD	Initial Soln	TRUE	75p	1.71e-09	2.20e-08	2.10e-09	4.05e-08	2.41e-08	1.26e-09	1.36e-08
APW10	C - UA	Speciation Model	TRUE	75p	1.71e-09	2.19e-08	2.09e-09	2.41e-08	2.46e-09	9.90e-10	7.72e-08
APW02	C - UD	Speciation Model	TRUE	75p	1.71e-09	3.87e-08	2.10e-09	5.99e-08	2.39e-08	1.67e-09	1.62e-08
APW04	C - UD	Speciation Model	TRUE	75p	2.94e-09	2.20e-08	2.09e-09	5.40e-07	7.31e-09	2.25e-09	1.67e-08
APW05S	C - UD	Speciation Model	TRUE	75p	1.71e-09	2.20e-08	2.10e-09	4.05e-08	2.41e-08	1.26e-09	1.36e-08
APW10	C - UA	First Reaction	TRUE	75p	1.71e-09	1.75e-08	1.41e-09	1.72e-08	1.67e-09	1.20e-09	1.04e-07
APW10	C - UA	Second Reaction	TRUE	75p	1.71e-09	1.57e-08	1.39e-09	1.54e-08	1.65e-09	1.24e-09	9.92e-08
APW02	C - UD	First Reaction	TRUE	75p	1.71e-09	8.35e-09	1.84e-10	6.41e-09	2.01e-09	5.35e-10	6.94e-08
APW02	C - UD	Second Reaction	TRUE	75p	1.71e-09	6.63e-09	1.74e-10	5.11e-09	1.84e-09	5.53e-10	8.33e-08
APW04	C - UD	First Reaction	TRUE	75p	1.71e-09	5.48e-09	4.91e-10	9.62e-08	1.76e-09	1.90e-09	7.85e-08
APW04	C - UD	Second Reaction	TRUE	75p	1.71e-09	4.51e-09	4.68e-10	8.28e-08	1.64e-09	1.96e-09	8.61e-08
APW05S	C - UD	First Reaction	TRUE	75p	1.71e-09	4.74e-09	2.77e-10	5.94e-09	3.16e-09	6.14e-10	7.63e-08
APW05S	C - UD	Second Reaction	TRUE	75p	1.71e-09	3.86e-09	2.63e-10	4.97e-09	2.92e-09	6.31e-10	8.57e-08
APW10	C - UA	Initial Soln	TRUE	median	1.71e-09	2.19e-08	2.09e-09	2.41e-08	2.46e-09	9.90e-10	7.72e-08
APW02	C - UD	Initial Soln	TRUE	median	1.71e-09	3.87e-08	2.10e-09	5.99e-08	2.39e-08	1.67e-09	1.62e-08
APW04	C - UD	Initial Soln	TRUE	median	2.94e-09	2.20e-08	2.09e-09	5.40e-07	7.31e-09	2.25e-09	1.67e-08
APW05S	C - UD	Initial Soln	TRUE	median	1.71e-09	2.20e-08	2.10e-09	4.05e-08	2.41e-08	1.26e-09	1.36e-08
APW10	C - UA	Speciation Model	TRUE	median	1.71e-09	2.19e-08	2.09e-09	2.41e-08	2.46e-09	9.90e-10	7.72e-08
APW02	C - UD	Speciation Model	TRUE	median	1.71e-09	3.87e-08	2.10e-09	5.99e-08	2.39e-08	1.67e-09	1.62e-08
APW04	C - UD	Speciation Model	TRUE	median	2.94e-09	2.20e-08	2.09e-09	5.40e-07	7.31e-09	2.25e-09	1.67e-08
APW05S	C - UD	Speciation Model	TRUE	median	1.71e-09	2.20e-08	2.10e-09	4.05e-08	2.41e-08	1.26e-09	1.36e-08
APW10	C - UA	First Reaction	TRUE	median	1.71e-09	1.70e-08	1.41e-09	1.68e-08	1.69e-09	1.17e-09	1.03e-07
APW10	C - UA	Second Reaction	TRUE	median	1.71e-09	1.53e-08	1.40e-09	1.49e-08	1.72e-09	1.19e-09	9.68e-08
APW02	C - UD	First Reaction	TRUE	median	1.71e-09	8.26e-09	1.84e-10	6.34e-09	2.00e-09	5.36e-10	7.01e-08
APW02	C - UD	Second Reaction	TRUE	median	1.71e-09	6.59e-09	1.75e-10	5.09e-09	1.84e-09	5.55e-10	8.38e-08
APW04	C - UD	First Reaction	TRUE	median	1.71e-09	5.43e-09	4.90e-10	9.55e-08	1.75e-09	1.90e-09	7.89e-08
APW04	C - UD	Second Reaction	TRUE	median	1.71e-09	4.48e-09	4.69e-10	8.25e-08	1.64e-09	1.97e-09	8.63e-08
APW05S	C - UD	First Reaction	TRUE	median	1.71e-09	4.69e-09	2.76e-10	5.89e-09	3.15e-09	6.15e-10	7.67e-08
APW05S	C - UD	Second Reaction	TRUE	median	1.71e-09	3.84e-09	2.64e-10	4.95e-09	2.92e-09	6.32e-10	8.59e-08
APW10	C - UA	Initial Soln	FALSE	25p	1.71e-09	2.19e-08	2.09e-09	2.41e-08	2.46e-09	9.90e-10	7.72e-08
APW02	C - UD	Initial Soln	FALSE	25p	1.71e-09	3.87e-08	2.10e-09	5.99e-08	2.39e-08	1.67e-09	1.62e-08
APW04	C - UD	Initial Soln	FALSE	25p	2.94e-09	2.20e-08	2.09e-09	5.40e-07	7.31e-09	2.25e-09	1.67e-08
APW05S	C - UD	Initial Soln	FALSE	25p	1.71e-09	2.20e-08	2.10e-09	4.05e-08	2.41e-08	1.26e-09	1.36e-08
APW10	C - UA	Speciation Model	FALSE	25p	1.71e-09	2.19e-08	2.09e-09	2.41e-08	2.46e-09	9.90e-10	7.72e-08
APW02	C - UD	Speciation Model	FALSE	25p	1.71e-09	3.87e-08	2.10e-09	5.99e-08	2.39e-08	1.67e-09	1.62e-08
APW04	C - UD	Speciation Model	FALSE	25p	2.94e-09	2.20e-08	2.09e-09	5.40e-07	7.31e-09	2.25e-09	1.67e-08

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Location	Location Description	Model	Charge Balance	Solids Summary	Sb	Be	Cd	Cr	Co	Pb	Mo
APW05S	C - UD	Speciation Model	FALSE	25p	1.71e-09	2.20e-08	2.10e-09	4.05e-08	2.41e-08	1.26e-09	1.36e-08
APW10	C - UA	First Reaction	FALSE	25p	1.71e-09	1.62e-08	1.63e-09	1.60e-08	1.72e-09	1.17e-09	1.01e-07
APW10	C - UA	Second Reaction	FALSE	25p	1.71e-09	1.44e-08	1.65e-09	1.43e-08	1.78e-09	1.19e-09	9.38e-08
APW02	C - UD	First Reaction	FALSE	25p	1.71e-09	8.07e-09	2.04e-10	6.27e-09	2.02e-09	5.45e-10	7.15e-08
APW02	C - UD	Second Reaction	FALSE	25p	1.71e-09	6.50e-09	1.96e-10	5.09e-09	1.88e-09	5.67e-10	8.46e-08
APW04	C - UD	First Reaction	FALSE	25p	1.71e-09	5.31e-09	6.14e-10	9.57e-08	1.79e-09	1.96e-09	7.98e-08
APW04	C - UD	Second Reaction	FALSE	25p	1.71e-09	4.42e-09	5.91e-10	8.34e-08	1.69e-09	2.03e-09	8.67e-08
APW05S	C - UD	First Reaction	FALSE	25p	1.71e-09	4.60e-09	3.08e-10	5.84e-09	3.18e-09	6.25e-10	7.76e-08
APW05S	C - UD	Second Reaction	FALSE	25p	1.71e-09	3.79e-09	2.96e-10	4.96e-09	2.97e-09	6.46e-10	8.63e-08
APW10	C - UA	Initial Soln	FALSE	75p	1.71e-09	2.19e-08	2.09e-09	2.41e-08	2.46e-09	9.90e-10	7.72e-08
APW02	C - UD	Initial Soln	FALSE	75p	1.71e-09	3.87e-08	2.10e-09	5.99e-08	2.39e-08	1.67e-09	1.62e-08
APW04	C - UD	Initial Soln	FALSE	75p	2.94e-09	2.20e-08	2.09e-09	5.40e-07	7.31e-09	2.25e-09	1.67e-08
APW05S	C - UD	Initial Soln	FALSE	75p	1.71e-09	2.20e-08	2.10e-09	4.05e-08	2.41e-08	1.26e-09	1.36e-08
APW10	C - UA	Speciation Model	FALSE	75p	1.71e-09	2.19e-08	2.09e-09	2.41e-08	2.46e-09	9.90e-10	7.72e-08
APW02	C - UD	Speciation Model	FALSE	75p	1.71e-09	3.87e-08	2.10e-09	5.99e-08	2.39e-08	1.67e-09	1.62e-08
APW04	C - UD	Speciation Model	FALSE	75p	2.94e-09	2.20e-08	2.09e-09	5.40e-07	7.31e-09	2.25e-09	1.67e-08
APW05S	C - UD	Speciation Model	FALSE	75p	1.71e-09	2.20e-08	2.10e-09	4.05e-08	2.41e-08	1.26e-09	1.36e-08
APW10	C - UA	First Reaction	FALSE	75p	1.71e-09	1.74e-08	1.65e-09	1.73e-08	1.70e-09	1.20e-09	1.06e-07
APW10	C - UA	Second Reaction	FALSE	75p	1.71e-09	1.57e-08	1.62e-09	1.55e-08	1.68e-09	1.25e-09	1.00e-07
APW02	C - UD	First Reaction	FALSE	75p	1.71e-09	8.33e-09	2.05e-10	6.47e-09	2.04e-09	5.44e-10	6.95e-08
APW02	C - UD	Second Reaction	FALSE	75p	1.71e-09	6.62e-09	1.94e-10	5.17e-09	1.87e-09	5.63e-10	8.34e-08
APW04	C - UD	First Reaction	FALSE	75p	1.71e-09	5.46e-09	6.17e-10	9.79e-08	1.81e-09	1.95e-09	7.88e-08
APW04	C - UD	Second Reaction	FALSE	75p	1.71e-09	4.49e-09	5.88e-10	8.44e-08	1.69e-09	2.01e-09	8.62e-08
APW05S	C - UD	First Reaction	FALSE	75p	1.71e-09	4.73e-09	3.10e-10	5.99e-09	3.21e-09	6.24e-10	7.63e-08
APW05S	C - UD	Second Reaction	FALSE	75p	1.71e-09	3.86e-09	2.94e-10	5.02e-09	2.97e-09	6.41e-10	8.57e-08
APW10	C - UA	Initial Soln	FALSE	median	1.71e-09	2.19e-08	2.09e-09	2.41e-08	2.46e-09	9.90e-10	7.72e-08
APW02	C - UD	Initial Soln	FALSE	median	1.71e-09	3.87e-08	2.10e-09	5.99e-08	2.39e-08	1.67e-09	1.62e-08
APW04	C - UD	Initial Soln	FALSE	median	2.94e-09	2.20e-08	2.09e-09	5.40e-07	7.31e-09	2.25e-09	1.67e-08
APW05S	C - UD	Initial Soln	FALSE	median	1.71e-09	2.20e-08	2.10e-09	4.05e-08	2.41e-08	1.26e-09	1.36e-08
APW10	C - UA	Speciation Model	FALSE	median	1.71e-09	2.19e-08	2.09e-09	2.41e-08	2.46e-09	9.90e-10	7.72e-08
APW02	C - UD	Speciation Model	FALSE	median	1.71e-09	3.87e-08	2.10e-09	5.99e-08	2.39e-08	1.67e-09	1.62e-08
APW04	C - UD	Speciation Model	FALSE	median	2.94e-09	2.20e-08	2.09e-09	5.40e-07	7.31e-09	2.25e-09	1.67e-08
APW05S	C - UD	Speciation Model	FALSE	median	1.71e-09	2.20e-08	2.10e-09	4.05e-08	2.41e-08	1.26e-09	1.36e-08
APW10	C - UA	First Reaction	FALSE	median	1.71e-09	1.70e-08	1.64e-09	1.68e-08	1.72e-09	1.17e-09	1.05e-07
APW10	C - UA	Second Reaction	FALSE	median	1.71e-09	1.52e-08	1.64e-09	1.50e-08	1.75e-09	1.19e-09	9.75e-08
APW02	C - UD	First Reaction	FALSE	median	1.71e-09	8.25e-09	2.05e-10	6.41e-09	2.03e-09	5.45e-10	7.01e-08
APW02	C - UD	Second Reaction	FALSE	median	1.71e-09	6.58e-09	1.95e-10	5.14e-09	1.88e-09	5.64e-10	8.38e-08
APW04	C - UD	First Reaction	FALSE	median	1.71e-09	5.41e-09	6.17e-10	9.72e-08	1.80e-09	1.95e-09	7.91e-08
APW04	C - UD	Second Reaction	FALSE	median	1.71e-09	4.47e-09	5.89e-10	8.41e-08	1.69e-09	2.02e-09	8.63e-08
APW05S	C - UD	First Reaction	FALSE	median	1.71e-09	4.69e-09	3.09e-10	5.94e-09	3.20e-09	6.25e-10	7.67e-08
APW05S	C - UD	Second Reaction	FALSE	median	1.71e-09	3.84e-09	2.95e-10	5.00e-09	2.97e-09	6.43e-10	8.59e-08

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Location	Location Description	Model	Charge Balance	Solids Summary	Se	Hfo_s	Hfo_w	Hao_	m_Hfo_wOH	m_Hfo_wOH2+	m_Hfo_wOHSO4-2
APW10	C - UA	Initial Soln	TRUE	25p	4.25e-09	0	0	0	0	0	0
APW02	C - UD	Initial Soln	TRUE	25p	4.26e-09	0	0	0	0	0	0
APW04	C - UD	Initial Soln	TRUE	25p	4.25e-09	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	TRUE	25p	4.26e-09	0	0	0	0	0	0
APW10	C - UA	Speciation Model	TRUE	25p	4.25e-09	0.000600	0.0240	0.000396	0.00149	0.000936	5.99e-05
APW02	C - UD	Speciation Model	TRUE	25p	4.26e-09	9.50e-05	0.00380	0.00205	0.000162	0.000192	7.84e-05
APW04	C - UD	Speciation Model	TRUE	25p	4.25e-09	9.50e-05	0.00380	0.00205	0.000207	0.000225	3.62e-05
APW05S	C - UD	Speciation Model	TRUE	25p	4.26e-09	9.50e-05	0.00380	0.00205	0.000180	0.000238	4.52e-05
APW10	C - UA	First Reaction	TRUE	25p	4.86e-09	0.000600	0.0240	0.000396	0.00157	0.000840	1.93e-06
APW10	C - UA	Second Reaction	TRUE	25p	4.60e-09	0.000600	0.0240	0.000396	0.00170	0.000850	1.00e-06
APW02	C - UD	First Reaction	TRUE	25p	1.63e-09	9.50e-05	0.00380	0.00205	0.000416	0.000175	1.93e-06
APW02	C - UD	Second Reaction	TRUE	25p	1.53e-09	9.50e-05	0.00380	0.00205	0.000479	0.000177	6.31e-07
APW04	C - UD	First Reaction	TRUE	25p	3.28e-09	9.50e-05	0.00380	0.00205	0.000411	0.000212	7.90e-07
APW04	C - UD	Second Reaction	TRUE	25p	3.01e-09	9.50e-05	0.00380	0.00205	0.000466	0.000213	3.56e-07
APW05S	C - UD	First Reaction	TRUE	25p	2.39e-09	9.50e-05	0.00380	0.00205	0.000408	0.000225	8.89e-07
APW05S	C - UD	Second Reaction	TRUE	25p	2.21e-09	9.50e-05	0.00380	0.00205	0.000468	0.000224	3.44e-07
APW10	C - UA	Initial Soln	TRUE	75p	4.25e-09	0	0	0	0	0	0
APW02	C - UD	Initial Soln	TRUE	75p	4.26e-09	0	0	0	0	0	0
APW04	C - UD	Initial Soln	TRUE	75p	4.25e-09	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	TRUE	75p	4.26e-09	0	0	0	0	0	0
APW10	C - UA	Speciation Model	TRUE	75p	4.25e-09	0.00115	0.0460	0.00148	0.00285	0.00179	0.000115
APW02	C - UD	Speciation Model	TRUE	75p	4.26e-09	0.000110	0.00440	0.00257	0.000188	0.000222	9.08e-05
APW04	C - UD	Speciation Model	TRUE	75p	4.25e-09	0.000110	0.00440	0.00257	0.000239	0.000261	4.19e-05
APW05S	C - UD	Speciation Model	TRUE	75p	4.26e-09	0.000110	0.00440	0.00257	0.000208	0.000275	5.24e-05
APW10	C - UA	First Reaction	TRUE	75p	5.00e-09	0.00115	0.0460	0.00148	0.00288	0.00159	5.98e-06
APW10	C - UA	Second Reaction	TRUE	75p	4.84e-09	0.00115	0.0460	0.00148	0.00306	0.00161	2.41e-06
APW02	C - UD	First Reaction	TRUE	75p	1.64e-09	0.000110	0.00440	0.00257	0.000471	0.000201	2.57e-06
APW02	C - UD	Second Reaction	TRUE	75p	1.50e-09	0.000110	0.00440	0.00257	0.000552	0.000204	8.20e-07
APW04	C - UD	First Reaction	TRUE	75p	3.33e-09	0.000110	0.00440	0.00257	0.000467	0.000245	1.03e-06
APW04	C - UD	Second Reaction	TRUE	75p	2.98e-09	0.000110	0.00440	0.00257	0.000537	0.000246	4.52e-07
APW05S	C - UD	First Reaction	TRUE	75p	2.42e-09	0.000110	0.00440	0.00257	0.000463	0.000260	1.18e-06
APW05S	C - UD	Second Reaction	TRUE	75p	2.18e-09	0.000110	0.00440	0.00257	0.000538	0.000260	4.42e-07
APW10	C - UA	Initial Soln	TRUE	median	4.25e-09	0	0	0	0	0	0
APW02	C - UD	Initial Soln	TRUE	median	4.26e-09	0	0	0	0	0	0
APW04	C - UD	Initial Soln	TRUE	median	4.25e-09	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	TRUE	median	4.26e-09	0	0	0	0	0	0
APW10	C - UA	Speciation Model	TRUE	median	4.25e-09	0.000900	0.0360	0.000594	0.00223	0.00140	8.98e-05
APW02	C - UD	Speciation Model	TRUE	median	4.26e-09	0.000105	0.00420	0.00238	0.000179	0.000212	8.67e-05
APW04	C - UD	Speciation Model	TRUE	median	4.25e-09	0.000105	0.00420	0.00238	0.000228	0.000249	4.00e-05
APW05S	C - UD	Speciation Model	TRUE	median	4.26e-09	0.000105	0.00420	0.00238	0.000199	0.000263	5.00e-05
APW10	C - UA	First Reaction	TRUE	median	4.96e-09	0.000900	0.0360	0.000594	0.00229	0.00125	3.60e-06
APW10	C - UA	Second Reaction	TRUE	median	4.75e-09	0.000900	0.0360	0.000594	0.00245	0.00127	1.58e-06
APW02	C - UD	First Reaction	TRUE	median	1.63e-09	0.000105	0.00420	0.00238	0.000453	0.000192	2.34e-06
APW02	C - UD	Second Reaction	TRUE	median	1.51e-09	0.000105	0.00420	0.00238	0.000528	0.000195	7.51e-07
APW04	C - UD	First Reaction	TRUE	median	3.31e-09	0.000105	0.00420	0.00238	0.000449	0.000234	9.45e-07
APW04	C - UD	Second Reaction	TRUE	median	2.98e-09	0.000105	0.00420	0.00238	0.000513	0.000235	4.18e-07
APW05S	C - UD	First Reaction	TRUE	median	2.41e-09	0.000105	0.00420	0.00238	0.000445	0.000248	1.07e-06
APW05S	C - UD	Second Reaction	TRUE	median	2.19e-09	0.000105	0.00420	0.00238	0.000515	0.000248	4.07e-07
APW10	C - UA	Initial Soln	FALSE	25p	4.25e-09	0	0	0	0	0	0
APW02	C - UD	Initial Soln	FALSE	25p	4.26e-09	0	0	0	0	0	0
APW04	C - UD	Initial Soln	FALSE	25p	4.25e-09	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	FALSE	25p	4.26e-09	0	0	0	0	0	0
APW10	C - UA	Speciation Model	FALSE	25p	4.25e-09	0.000600	0.0240	0.000396	0.00148	0.000934	6.04e-05
APW02	C - UD	Speciation Model	FALSE	25p	4.26e-09	9.50e-05	0.00380	0.00205	0.000162	0.000191	7.91e-05
APW04	C - UD	Speciation Model	FALSE	25p	4.25e-09	9.50e-05	0.00380	0.00205	0.000206	0.000223	3.69e-05

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Location	Location Description	Model	Charge Balance	Solids Summary	Se	Hfo_s	Hfo_w	Hao_	m_Hfo_wOH	m_Hfo_wOH2+	m_Hfo_wOHSO4-2
APW05S	C - UD	Speciation Model	FALSE	25p	4.26e-09	9.50e-05	0.00380	0.00205	0.000180	0.000237	4.56e-05
APW10	C - UA	First Reaction	FALSE	25p	4.91e-09	0.000600	0.0240	0.000396	0.00157	0.000843	1.92e-06
APW10	C - UA	Second Reaction	FALSE	25p	4.65e-09	0.000600	0.0240	0.000396	0.00170	0.000853	9.97e-07
APW02	C - UD	First Reaction	FALSE	25p	1.64e-09	9.50e-05	0.00380	0.00205	0.000416	0.000175	1.92e-06
APW02	C - UD	Second Reaction	FALSE	25p	1.54e-09	9.50e-05	0.00380	0.00205	0.000479	0.000177	6.30e-07
APW04	C - UD	First Reaction	FALSE	25p	3.33e-09	9.50e-05	0.00380	0.00205	0.000412	0.000213	7.84e-07
APW04	C - UD	Second Reaction	FALSE	25p	3.05e-09	9.50e-05	0.00380	0.00205	0.000466	0.000213	3.55e-07
APW05S	C - UD	First Reaction	FALSE	25p	2.41e-09	9.50e-05	0.00380	0.00205	0.000408	0.000225	8.86e-07
APW05S	C - UD	Second Reaction	FALSE	25p	2.23e-09	9.50e-05	0.00380	0.00205	0.000468	0.000224	3.44e-07
APW10	C - UA	Initial Soln	FALSE	75p	4.25e-09	0	0	0	0	0	0
APW02	C - UD	Initial Soln	FALSE	75p	4.26e-09	0	0	0	0	0	0
APW04	C - UD	Initial Soln	FALSE	75p	4.25e-09	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	FALSE	75p	4.26e-09	0	0	0	0	0	0
APW10	C - UA	Speciation Model	FALSE	75p	4.25e-09	0.00115	0.0460	0.00148	0.00284	0.00179	0.000116
APW02	C - UD	Speciation Model	FALSE	75p	4.26e-09	0.000110	0.00440	0.00257	0.000187	0.000221	9.15e-05
APW04	C - UD	Speciation Model	FALSE	75p	4.25e-09	0.000110	0.00440	0.00257	0.000239	0.000259	4.28e-05
APW05S	C - UD	Speciation Model	FALSE	75p	4.26e-09	0.000110	0.00440	0.00257	0.000208	0.000274	5.28e-05
APW10	C - UA	First Reaction	FALSE	75p	5.06e-09	0.00115	0.0460	0.00148	0.00288	0.00160	5.93e-06
APW10	C - UA	Second Reaction	FALSE	75p	4.89e-09	0.00115	0.0460	0.00148	0.00307	0.00162	2.39e-06
APW02	C - UD	First Reaction	FALSE	75p	1.65e-09	0.000110	0.00440	0.00257	0.000472	0.000202	2.57e-06
APW02	C - UD	Second Reaction	FALSE	75p	1.51e-09	0.000110	0.00440	0.00257	0.000552	0.000204	8.19e-07
APW04	C - UD	First Reaction	FALSE	75p	3.37e-09	0.000110	0.00440	0.00257	0.000468	0.000246	1.02e-06
APW04	C - UD	Second Reaction	FALSE	75p	3.02e-09	0.000110	0.00440	0.00257	0.000537	0.000247	4.51e-07
APW05S	C - UD	First Reaction	FALSE	75p	2.44e-09	0.000110	0.00440	0.00257	0.000463	0.000260	1.17e-06
APW05S	C - UD	Second Reaction	FALSE	75p	2.19e-09	0.000110	0.00440	0.00257	0.000539	0.000260	4.41e-07
APW10	C - UA	Initial Soln	FALSE	median	4.25e-09	0	0	0	0	0	0
APW02	C - UD	Initial Soln	FALSE	median	4.26e-09	0	0	0	0	0	0
APW04	C - UD	Initial Soln	FALSE	median	4.25e-09	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	FALSE	median	4.26e-09	0	0	0	0	0	0
APW10	C - UA	Speciation Model	FALSE	median	4.25e-09	0.000900	0.0360	0.000594	0.00223	0.00140	9.05e-05
APW02	C - UD	Speciation Model	FALSE	median	4.26e-09	0.000105	0.00420	0.00238	0.000179	0.000211	8.74e-05
APW04	C - UD	Speciation Model	FALSE	median	4.25e-09	0.000105	0.00420	0.00238	0.000228	0.000247	4.08e-05
APW05S	C - UD	Speciation Model	FALSE	median	4.26e-09	0.000105	0.00420	0.00238	0.000199	0.000262	5.04e-05
APW10	C - UA	First Reaction	FALSE	median	5.02e-09	0.000900	0.0360	0.000594	0.00229	0.00126	3.57e-06
APW10	C - UA	Second Reaction	FALSE	median	4.80e-09	0.000900	0.0360	0.000594	0.00245	0.00127	1.57e-06
APW02	C - UD	First Reaction	FALSE	median	1.65e-09	0.000105	0.00420	0.00238	0.000454	0.000193	2.33e-06
APW02	C - UD	Second Reaction	FALSE	median	1.52e-09	0.000105	0.00420	0.00238	0.000528	0.000195	7.51e-07
APW04	C - UD	First Reaction	FALSE	median	3.36e-09	0.000105	0.00420	0.00238	0.000449	0.000235	9.37e-07
APW04	C - UD	Second Reaction	FALSE	median	3.03e-09	0.000105	0.00420	0.00238	0.000514	0.000235	4.17e-07
APW05S	C - UD	First Reaction	FALSE	median	2.43e-09	0.000105	0.00420	0.00238	0.000445	0.000248	1.07e-06
APW05S	C - UD	Second Reaction	FALSE	median	2.20e-09	0.000105	0.00420	0.00238	0.000515	0.000248	4.06e-07

Attachment D. PHREEQC modeling output
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Location	Location Description	Model	Charge Balance	Solids Summary	m_Hfo_wSO4-	m_Hfo_wOSi(OH)3	m_Hfo_wOSiO(OH)2-	m_Hfo_wHCO3	m_Hfo_wCO3-	m_Hfo_wPO4-2	m_Hfo_wHPO4-
APW10	C - UA	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	TRUE	25p	1.89e-05	0.00406	0.00398	0.00458	0.00124	2.31e-05	3.48e-05
APW02	C - UD	Speciation Model	TRUE	25p	4.65e-05	0.000424	0.000221	0.00175	0.000251	2.85e-06	8.07e-06
APW04	C - UD	Speciation Model	TRUE	25p	1.98e-05	0.000547	0.000309	0.00162	0.000252	6.40e-06	1.67e-05
APW05S	C - UD	Speciation Model	TRUE	25p	3.00e-05	0.000619	0.000289	0.00166	0.000213	4.46e-06	1.41e-05
APW10	C - UA	First Reaction	TRUE	25p	5.18e-07	0.00372	0.00430	0.00432	0.00137	2.63e-05	3.37e-05
APW10	C - UA	Second Reaction	TRUE	25p	2.52e-07	0.00359	0.00442	0.00407	0.00138	2.81e-05	3.37e-05
APW02	C - UD	First Reaction	TRUE	25p	4.06e-07	0.000290	0.000426	0.00120	0.000487	6.52e-06	6.57e-06
APW02	C - UD	Second Reaction	TRUE	25p	1.17e-07	0.000296	0.000494	0.00102	0.000471	7.94e-06	7.03e-06
APW04	C - UD	First Reaction	TRUE	25p	2.05e-07	0.000415	0.000495	0.00115	0.000378	1.13e-05	1.40e-05
APW04	C - UD	Second Reaction	TRUE	25p	8.14e-08	0.000412	0.000558	0.000985	0.000367	1.29e-05	1.42e-05
APW05S	C - UD	First Reaction	TRUE	25p	2.45e-07	0.000451	0.000505	0.00117	0.000361	8.99e-06	1.19e-05
APW05S	C - UD	Second Reaction	TRUE	25p	8.28e-08	0.000443	0.000570	0.000996	0.000353	1.05e-05	1.21e-05
APW10	C - UA	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	TRUE	75p	3.62e-05	0.00778	0.00763	0.00877	0.00237	4.43e-05	6.68e-05
APW02	C - UD	Speciation Model	TRUE	75p	5.39e-05	0.000491	0.000256	0.00202	0.000290	3.30e-06	9.35e-06
APW04	C - UD	Speciation Model	TRUE	75p	2.29e-05	0.000633	0.000358	0.00187	0.000292	7.41e-06	1.94e-05
APW05S	C - UD	Speciation Model	TRUE	75p	3.47e-05	0.000717	0.000335	0.00192	0.000247	5.17e-06	1.64e-05
APW10	C - UA	First Reaction	TRUE	75p	1.66e-06	0.00728	0.00810	0.00855	0.00262	4.86e-05	6.46e-05
APW10	C - UA	Second Reaction	TRUE	75p	6.35e-07	0.00708	0.00829	0.00818	0.00264	5.09e-05	6.42e-05
APW02	C - UD	First Reaction	TRUE	75p	5.51e-07	0.000334	0.000482	0.00142	0.000565	7.34e-06	7.52e-06
APW02	C - UD	Second Reaction	TRUE	75p	1.52e-07	0.000335	0.000557	0.00121	0.000554	8.87e-06	7.88e-06
APW04	C - UD	First Reaction	TRUE	75p	2.72e-07	0.000480	0.000564	0.00136	0.000438	1.29e-05	1.62e-05
APW04	C - UD	Second Reaction	TRUE	75p	1.04e-07	0.000471	0.000633	0.00116	0.000431	1.47e-05	1.62e-05
APW05S	C - UD	First Reaction	TRUE	75p	3.30e-07	0.000523	0.000576	0.00138	0.000419	1.02e-05	1.37e-05
APW05S	C - UD	Second Reaction	TRUE	75p	1.07e-07	0.000508	0.000648	0.00118	0.000414	1.19e-05	1.38e-05
APW10	C - UA	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	TRUE	median	2.83e-05	0.00609	0.00597	0.00687	0.00185	3.47e-05	5.23e-05
APW02	C - UD	Speciation Model	TRUE	median	5.14e-05	0.000469	0.000244	0.00193	0.000277	3.15e-06	8.92e-06
APW04	C - UD	Speciation Model	TRUE	median	2.19e-05	0.000604	0.000342	0.00179	0.000279	7.08e-06	1.85e-05
APW05S	C - UD	Speciation Model	TRUE	median	3.31e-05	0.000684	0.000319	0.00184	0.000236	4.93e-06	1.56e-05
APW10	C - UA	First Reaction	TRUE	median	9.87e-07	0.00566	0.00638	0.00662	0.00206	3.85e-05	5.05e-05
APW10	C - UA	Second Reaction	TRUE	median	4.11e-07	0.00549	0.00654	0.00630	0.00207	4.05e-05	5.03e-05
APW02	C - UD	First Reaction	TRUE	median	4.98e-07	0.000319	0.000464	0.00135	0.000539	7.07e-06	7.20e-06
APW02	C - UD	Second Reaction	TRUE	median	1.39e-07	0.000322	0.000536	0.00115	0.000526	8.56e-06	7.60e-06
APW04	C - UD	First Reaction	TRUE	median	2.48e-07	0.000458	0.000541	0.00129	0.000418	1.23e-05	1.55e-05
APW04	C - UD	Second Reaction	TRUE	median	9.59e-08	0.000451	0.000608	0.00110	0.000409	1.41e-05	1.55e-05
APW05S	C - UD	First Reaction	TRUE	median	3.00e-07	0.000499	0.000552	0.00131	0.000399	9.79e-06	1.31e-05
APW05S	C - UD	Second Reaction	TRUE	median	9.82e-08	0.000486	0.000623	0.00112	0.000394	1.15e-05	1.32e-05
APW10	C - UA	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	FALSE	25p	1.90e-05	0.00404	0.00396	0.00458	0.00124	2.31e-05	3.49e-05
APW02	C - UD	Speciation Model	FALSE	25p	4.68e-05	0.000423	0.000221	0.00175	0.000251	2.86e-06	8.09e-06
APW04	C - UD	Speciation Model	FALSE	25p	2.01e-05	0.000544	0.000310	0.00162	0.000254	6.46e-06	1.68e-05

Attachment D. PHREEQC modeling output
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Location	Location Description	Model	Charge Balance	Solids Summary	m_Hfo_wSO4-	m_Hfo_wOSi(OH)3	m_Hfo_wOSiO(OH)2-	m_Hfo_wHCO3	m_Hfo_wCO3-	m_Hfo_wPO4-2	m_Hfo_wHPO4-
APW05S	C - UD	Speciation Model	FALSE	25p	3.02e-05	0.000618	0.000289	0.00166	0.000214	4.49e-06	1.42e-05
APW10	C - UA	First Reaction	FALSE	25p	5.17e-07	0.00372	0.00427	0.00432	0.00137	2.62e-05	3.37e-05
APW10	C - UA	Second Reaction	FALSE	25p	2.51e-07	0.00359	0.00440	0.00407	0.00137	2.80e-05	3.38e-05
APW02	C - UD	First Reaction	FALSE	25p	4.05e-07	0.000289	0.000425	0.00120	0.000487	6.54e-06	6.58e-06
APW02	C - UD	Second Reaction	FALSE	25p	1.17e-07	0.000295	0.000494	0.00102	0.000471	7.96e-06	7.05e-06
APW04	C - UD	First Reaction	FALSE	25p	2.03e-07	0.000414	0.000494	0.00115	0.000378	1.14e-05	1.41e-05
APW04	C - UD	Second Reaction	FALSE	25p	8.12e-08	0.000412	0.000556	0.000985	0.000366	1.30e-05	1.42e-05
APW05S	C - UD	First Reaction	FALSE	25p	2.45e-07	0.000451	0.000505	0.00117	0.000361	9.02e-06	1.19e-05
APW05S	C - UD	Second Reaction	FALSE	25p	8.27e-08	0.000443	0.000570	0.000996	0.000353	1.06e-05	1.22e-05
APW10	C - UA	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	FALSE	75p	3.65e-05	0.00775	0.00760	0.00878	0.00237	4.43e-05	6.68e-05
APW02	C - UD	Speciation Model	FALSE	75p	5.42e-05	0.000490	0.000256	0.00202	0.000291	3.31e-06	9.37e-06
APW04	C - UD	Speciation Model	FALSE	75p	2.33e-05	0.000630	0.000358	0.00188	0.000294	7.48e-06	1.95e-05
APW05S	C - UD	Speciation Model	FALSE	75p	3.49e-05	0.000716	0.000335	0.00192	0.000248	5.19e-06	1.64e-05
APW10	C - UA	First Reaction	FALSE	75p	1.65e-06	0.00726	0.00806	0.00855	0.00261	4.85e-05	6.47e-05
APW10	C - UA	Second Reaction	FALSE	75p	6.33e-07	0.00706	0.00825	0.00818	0.00263	5.08e-05	6.43e-05
APW02	C - UD	First Reaction	FALSE	75p	5.49e-07	0.000334	0.000482	0.00142	0.000565	7.36e-06	7.54e-06
APW02	C - UD	Second Reaction	FALSE	75p	1.52e-07	0.000334	0.000556	0.00121	0.000554	8.89e-06	7.90e-06
APW04	C - UD	First Reaction	FALSE	75p	2.70e-07	0.000479	0.000562	0.00136	0.000438	1.29e-05	1.63e-05
APW04	C - UD	Second Reaction	FALSE	75p	1.04e-07	0.000470	0.000632	0.00116	0.000430	1.47e-05	1.62e-05
APW05S	C - UD	First Reaction	FALSE	75p	3.29e-07	0.000523	0.000575	0.00138	0.000419	1.02e-05	1.37e-05
APW05S	C - UD	Second Reaction	FALSE	75p	1.07e-07	0.000507	0.000648	0.00118	0.000414	1.19e-05	1.38e-05
APW10	C - UA	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	FALSE	median	2.86e-05	0.00607	0.00595	0.00687	0.00186	3.47e-05	5.23e-05
APW02	C - UD	Speciation Model	FALSE	median	5.17e-05	0.000468	0.000244	0.00193	0.000278	3.16e-06	8.95e-06
APW04	C - UD	Speciation Model	FALSE	median	2.22e-05	0.000602	0.000342	0.00179	0.000280	7.14e-06	1.86e-05
APW05S	C - UD	Speciation Model	FALSE	median	3.33e-05	0.000683	0.000320	0.00184	0.000237	4.96e-06	1.57e-05
APW10	C - UA	First Reaction	FALSE	median	9.84e-07	0.00565	0.00634	0.00662	0.00205	3.84e-05	5.06e-05
APW10	C - UA	Second Reaction	FALSE	median	4.09e-07	0.00548	0.00650	0.00630	0.00206	4.05e-05	5.04e-05
APW02	C - UD	First Reaction	FALSE	median	4.97e-07	0.000319	0.000463	0.00135	0.000539	7.08e-06	7.22e-06
APW02	C - UD	Second Reaction	FALSE	median	1.39e-07	0.000321	0.000535	0.00115	0.000526	8.58e-06	7.61e-06
APW04	C - UD	First Reaction	FALSE	median	2.46e-07	0.000457	0.000540	0.00129	0.000418	1.24e-05	1.56e-05
APW04	C - UD	Second Reaction	FALSE	median	9.57e-08	0.000451	0.000607	0.00110	0.000409	1.42e-05	1.56e-05
APW05S	C - UD	First Reaction	FALSE	median	2.98e-07	0.000499	0.000552	0.00131	0.000400	9.82e-06	1.31e-05
APW05S	C - UD	Second Reaction	FALSE	median	9.81e-08	0.000486	0.000622	0.00112	0.000394	1.15e-05	1.33e-05

Attachment D. PHREEQC modeling output
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Location	Location Description	Model	Charge Balance	Solids Summary	m_Hfo_wH2PO4	m_Hfo_sCO3-	m_Hfo_sHCO3	m_Hfo_sHPO4-	m_Hfo_sH2BO3	m_Hfo_sH2PO4	m_Hfo_sOSi(OH)3
APW10	C - UA	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	TRUE	25p	8.92e-07	1.07e-07	3.97e-07	3.02e-09	4.20e-12	7.73e-11	3.52e-07
APW02	C - UD	Speciation Model	TRUE	25p	3.89e-07	4.31e-08	3.00e-07	1.39e-09	1.70e-12	6.68e-11	7.28e-08
APW04	C - UD	Speciation Model	TRUE	25p	7.43e-07	3.67e-09	2.35e-08	2.43e-10	3.74e-14	1.08e-11	7.94e-09
APW05S	C - UD	Speciation Model	TRUE	25p	7.61e-07	3.60e-08	2.80e-07	2.39e-09	1.56e-12	1.28e-10	1.04e-07
APW10	C - UA	First Reaction	TRUE	25p	7.33e-07	1.17e-07	3.68e-07	2.87e-09	2.57e-12	6.24e-11	3.17e-07
APW10	C - UA	Second Reaction	TRUE	25p	6.88e-07	1.16e-07	3.42e-07	2.83e-09	2.89e-12	5.78e-11	3.02e-07
APW02	C - UD	First Reaction	TRUE	25p	1.12e-07	7.82e-08	1.93e-07	1.05e-09	1.47e-12	1.80e-11	4.66e-08
APW02	C - UD	Second Reaction	TRUE	25p	1.06e-07	7.32e-08	1.59e-07	1.09e-09	1.37e-12	1.64e-11	4.60e-08
APW04	C - UD	First Reaction	TRUE	25p	2.95e-07	4.44e-09	1.35e-08	1.65e-10	3.69e-14	3.47e-12	4.88e-09
APW04	C - UD	Second Reaction	TRUE	25p	2.63e-07	4.03e-09	1.08e-08	1.56e-10	3.87e-14	2.89e-12	4.54e-09
APW05S	C - UD	First Reaction	TRUE	25p	2.67e-07	5.27e-08	1.71e-07	1.74e-09	1.29e-12	3.89e-11	6.60e-08
APW05S	C - UD	Second Reaction	TRUE	25p	2.37e-07	4.89e-08	1.38e-07	1.68e-09	1.22e-12	3.28e-11	6.14e-08
APW10	C - UA	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	TRUE	75p	1.71e-06	2.05e-07	7.60e-07	5.79e-09	8.04e-12	1.48e-10	6.74e-07
APW02	C - UD	Speciation Model	TRUE	75p	4.50e-07	4.99e-08	3.47e-07	1.61e-09	1.97e-12	7.73e-11	8.43e-08
APW04	C - UD	Speciation Model	TRUE	75p	8.60e-07	4.24e-09	2.72e-08	2.82e-10	4.33e-14	1.25e-11	9.20e-09
APW05S	C - UD	Speciation Model	TRUE	75p	8.81e-07	4.17e-08	3.24e-07	2.76e-09	1.81e-12	1.49e-10	1.21e-07
APW10	C - UA	First Reaction	TRUE	75p	1.46e-06	2.24e-07	7.31e-07	5.52e-09	4.50e-12	1.25e-10	6.23e-07
APW10	C - UA	Second Reaction	TRUE	75p	1.38e-06	2.24e-07	6.92e-07	5.43e-09	4.13e-12	1.16e-10	5.99e-07
APW02	C - UD	First Reaction	TRUE	75p	1.31e-07	9.12e-08	2.29e-07	1.21e-09	1.70e-12	2.11e-11	5.39e-08
APW02	C - UD	Second Reaction	TRUE	75p	1.19e-07	8.65e-08	1.89e-07	1.23e-09	1.58e-12	1.86e-11	5.22e-08
APW04	C - UD	First Reaction	TRUE	75p	3.47e-07	5.20e-09	1.61e-08	1.92e-10	4.21e-14	4.11e-12	5.70e-09
APW04	C - UD	Second Reaction	TRUE	75p	3.02e-07	4.77e-09	1.29e-08	1.79e-10	4.31e-14	3.34e-12	5.22e-09
APW05S	C - UD	First Reaction	TRUE	75p	3.13e-07	6.16e-08	2.03e-07	2.02e-09	1.51e-12	4.60e-11	7.70e-08
APW05S	C - UD	Second Reaction	TRUE	75p	2.71e-07	5.78e-08	1.64e-07	1.92e-09	1.41e-12	3.78e-11	7.08e-08
APW10	C - UA	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	TRUE	median	1.34e-06	1.61e-07	5.95e-07	4.53e-09	6.29e-12	1.16e-10	5.28e-07
APW02	C - UD	Speciation Model	TRUE	median	4.30e-07	4.76e-08	3.31e-07	1.53e-09	1.88e-12	7.38e-11	8.05e-08
APW04	C - UD	Speciation Model	TRUE	median	8.21e-07	4.05e-09	2.60e-08	2.69e-10	4.14e-14	1.19e-11	8.78e-09
APW05S	C - UD	Speciation Model	TRUE	median	8.41e-07	3.98e-08	3.10e-07	2.64e-09	1.73e-12	1.42e-10	1.15e-07
APW10	C - UA	First Reaction	TRUE	median	1.13e-06	1.76e-07	5.66e-07	4.32e-09	3.67e-12	9.62e-11	4.84e-07
APW10	C - UA	Second Reaction	TRUE	median	1.06e-06	1.75e-07	5.33e-07	4.25e-09	3.76e-12	8.96e-11	4.64e-07
APW02	C - UD	First Reaction	TRUE	median	1.25e-07	8.68e-08	2.17e-07	1.16e-09	1.62e-12	2.01e-11	5.14e-08
APW02	C - UD	Second Reaction	TRUE	median	1.14e-07	8.20e-08	1.79e-07	1.18e-09	1.51e-12	1.78e-11	5.01e-08
APW04	C - UD	First Reaction	TRUE	median	3.29e-07	4.95e-09	1.52e-08	1.83e-10	4.04e-14	3.90e-12	5.42e-09
APW04	C - UD	Second Reaction	TRUE	median	2.89e-07	4.52e-09	1.22e-08	1.71e-10	4.17e-14	3.19e-12	4.99e-09
APW05S	C - UD	First Reaction	TRUE	median	2.97e-07	5.86e-08	1.92e-07	1.92e-09	1.43e-12	4.36e-11	7.33e-08
APW05S	C - UD	Second Reaction	TRUE	median	2.60e-07	5.48e-08	1.55e-07	1.84e-09	1.35e-12	3.61e-11	6.77e-08
APW10	C - UA	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	FALSE	25p	8.94e-07	1.06e-07	3.94e-07	3.00e-09	4.15e-12	7.68e-11	3.48e-07
APW02	C - UD	Speciation Model	FALSE	25p	3.89e-07	4.29e-08	2.98e-07	1.38e-09	1.68e-12	6.63e-11	7.21e-08
APW04	C - UD	Speciation Model	FALSE	25p	7.43e-07	3.62e-09	2.31e-08	2.40e-10	3.67e-14	1.06e-11	7.78e-09

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Location	Location Description	Model	Charge Balance	Solids Summary	m_Hfo_wH2PO4	m_Hfo_sCO3-	m_Hfo_sHCO3	m_Hfo_sHPO4-	m_Hfo_sH2BO3	m_Hfo_sH2PO4	m_Hfo_sOSi(OH)3
APW05S	C - UD	Speciation Model	FALSE	25p	7.62e-07	3.59e-08	2.78e-07	2.38e-09	1.55e-12	1.28e-10	1.04e-07
APW10	C - UA	First Reaction	FALSE	25p	7.37e-07	1.16e-07	3.65e-07	2.85e-09	2.53e-12	6.22e-11	3.14e-07
APW10	C - UA	Second Reaction	FALSE	25p	6.92e-07	1.15e-07	3.39e-07	2.82e-09	2.85e-12	5.77e-11	2.99e-07
APW02	C - UD	First Reaction	FALSE	25p	1.13e-07	7.75e-08	1.92e-07	1.05e-09	1.45e-12	1.79e-11	4.61e-08
APW02	C - UD	Second Reaction	FALSE	25p	1.06e-07	7.26e-08	1.58e-07	1.09e-09	1.35e-12	1.63e-11	4.56e-08
APW04	C - UD	First Reaction	FALSE	25p	2.97e-07	4.35e-09	1.33e-08	1.63e-10	3.58e-14	3.42e-12	4.77e-09
APW04	C - UD	Second Reaction	FALSE	25p	2.65e-07	3.95e-09	1.06e-08	1.53e-10	3.75e-14	2.85e-12	4.44e-09
APW05S	C - UD	First Reaction	FALSE	25p	2.67e-07	5.23e-08	1.70e-07	1.73e-09	1.28e-12	3.87e-11	6.53e-08
APW05S	C - UD	Second Reaction	FALSE	25p	2.37e-07	4.85e-08	1.37e-07	1.67e-09	1.20e-12	3.26e-11	6.09e-08
APW10	C - UA	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	FALSE	75p	1.71e-06	2.04e-07	7.55e-07	5.75e-09	7.95e-12	1.47e-10	6.67e-07
APW02	C - UD	Speciation Model	FALSE	75p	4.50e-07	4.96e-08	3.45e-07	1.60e-09	1.95e-12	7.68e-11	8.35e-08
APW04	C - UD	Speciation Model	FALSE	75p	8.60e-07	4.20e-09	2.68e-08	2.78e-10	4.24e-14	1.23e-11	9.01e-09
APW05S	C - UD	Speciation Model	FALSE	75p	8.82e-07	4.15e-08	3.22e-07	2.75e-09	1.79e-12	1.48e-10	1.20e-07
APW10	C - UA	First Reaction	FALSE	75p	1.46e-06	2.22e-07	7.26e-07	5.49e-09	4.42e-12	1.24e-10	6.17e-07
APW10	C - UA	Second Reaction	FALSE	75p	1.38e-06	2.21e-07	6.87e-07	5.40e-09	4.06e-12	1.16e-10	5.93e-07
APW02	C - UD	First Reaction	FALSE	75p	1.31e-07	9.04e-08	2.27e-07	1.21e-09	1.68e-12	2.10e-11	5.34e-08
APW02	C - UD	Second Reaction	FALSE	75p	1.19e-07	8.58e-08	1.87e-07	1.22e-09	1.56e-12	1.85e-11	5.18e-08
APW04	C - UD	First Reaction	FALSE	75p	3.49e-07	5.10e-09	1.58e-08	1.89e-10	4.08e-14	4.05e-12	5.57e-09
APW04	C - UD	Second Reaction	FALSE	75p	3.04e-07	4.67e-09	1.26e-08	1.76e-10	4.18e-14	3.29e-12	5.10e-09
APW05S	C - UD	First Reaction	FALSE	75p	3.14e-07	6.11e-08	2.02e-07	2.00e-09	1.49e-12	4.58e-11	7.63e-08
APW05S	C - UD	Second Reaction	FALSE	75p	2.72e-07	5.73e-08	1.63e-07	1.91e-09	1.39e-12	3.76e-11	7.01e-08
APW10	C - UA	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	FALSE	median	1.34e-06	1.60e-07	5.91e-07	4.50e-09	6.22e-12	1.15e-10	5.22e-07
APW02	C - UD	Speciation Model	FALSE	median	4.30e-07	4.74e-08	3.29e-07	1.53e-09	1.86e-12	7.33e-11	7.97e-08
APW04	C - UD	Speciation Model	FALSE	median	8.21e-07	4.01e-09	2.56e-08	2.65e-10	4.05e-14	1.17e-11	8.60e-09
APW05S	C - UD	Speciation Model	FALSE	median	8.42e-07	3.96e-08	3.08e-07	2.63e-09	1.71e-12	1.41e-10	1.14e-07
APW10	C - UA	First Reaction	FALSE	median	1.13e-06	1.74e-07	5.62e-07	4.29e-09	3.61e-12	9.60e-11	4.79e-07
APW10	C - UA	Second Reaction	FALSE	median	1.07e-06	1.73e-07	5.29e-07	4.23e-09	3.70e-12	8.94e-11	4.59e-07
APW02	C - UD	First Reaction	FALSE	median	1.25e-07	8.62e-08	2.15e-07	1.15e-09	1.60e-12	1.99e-11	5.10e-08
APW02	C - UD	Second Reaction	FALSE	median	1.15e-07	8.14e-08	1.77e-07	1.18e-09	1.49e-12	1.77e-11	4.97e-08
APW04	C - UD	First Reaction	FALSE	median	3.31e-07	4.85e-09	1.49e-08	1.80e-10	3.91e-14	3.84e-12	5.31e-09
APW04	C - UD	Second Reaction	FALSE	median	2.91e-07	4.43e-09	1.20e-08	1.69e-10	4.04e-14	3.15e-12	4.88e-09
APW05S	C - UD	First Reaction	FALSE	median	2.98e-07	5.82e-08	1.91e-07	1.91e-09	1.41e-12	4.34e-11	7.26e-08
APW05S	C - UD	Second Reaction	FALSE	median	2.60e-07	5.44e-08	1.54e-07	1.83e-09	1.33e-12	3.59e-11	6.70e-08

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Location	Location Description	Model	Charge Balance	Solids Summary	m_Hfo_sOSiO(OH)2-	m_Hfo_sOHSO4-2	m_Hfo_sSO4-	m_Hao_SO4-	m_Hao_OHSO4-2	m_Hao_H2BO3	m_Hao_H3BO4-
APW10	C - UA	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	TRUE	25p	3.45e-07	5.19e-09	1.64e-09	8.74e-15	0.000119	2.50e-05	1.59e-12
APW02	C - UD	Speciation Model	TRUE	25p	3.80e-08	1.35e-08	7.99e-09	2.53e-13	0.000725	0.000151	2.03e-12
APW04	C - UD	Speciation Model	TRUE	25p	4.50e-09	5.26e-10	2.88e-10	1.73e-13	0.000665	5.12e-05	9.22e-13
APW05S	C - UD	Speciation Model	TRUE	25p	4.88e-08	7.63e-09	5.06e-09	2.19e-13	0.000689	0.000156	2.29e-12
APW10	C - UA	First Reaction	TRUE	25p	3.66e-07	1.65e-10	4.41e-11	1.65e-15	9.55e-05	2.96e-05	8.02e-12
APW10	C - UA	Second Reaction	TRUE	25p	3.72e-07	8.44e-11	2.12e-11	1.09e-15	9.05e-05	3.39e-05	1.32e-11
APW02	C - UD	First Reaction	TRUE	25p	6.84e-08	3.10e-10	6.52e-11	1.25e-14	0.000517	0.000155	3.00e-11
APW02	C - UD	Second Reaction	TRUE	25p	7.68e-08	9.81e-11	1.81e-11	6.24e-15	0.000474	0.000160	5.69e-11
APW04	C - UD	First Reaction	TRUE	25p	5.82e-09	9.29e-12	2.41e-12	1.05e-14	0.000534	5.86e-05	1.39e-11
APW04	C - UD	Second Reaction	TRUE	25p	6.14e-09	3.92e-12	8.96e-13	6.06e-15	0.000503	6.60e-05	2.56e-11
APW05S	C - UD	First Reaction	TRUE	25p	7.39e-08	1.30e-10	3.58e-11	1.14e-14	0.000508	0.000160	3.33e-11
APW05S	C - UD	Second Reaction	TRUE	25p	7.91e-08	4.77e-11	1.15e-11	6.05e-15	0.000471	0.000165	5.99e-11
APW10	C - UA	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	TRUE	75p	6.61e-07	9.94e-09	3.13e-09	3.28e-14	0.000448	9.36e-05	5.98e-12
APW02	C - UD	Speciation Model	TRUE	75p	4.40e-08	1.56e-08	9.26e-09	3.18e-13	0.000912	0.000190	2.55e-12
APW04	C - UD	Speciation Model	TRUE	75p	5.21e-09	6.09e-10	3.33e-10	2.17e-13	0.000837	6.44e-05	1.16e-12
APW05S	C - UD	Speciation Model	TRUE	75p	5.65e-08	8.83e-09	5.85e-09	2.76e-13	0.000867	0.000196	2.88e-12
APW10	C - UA	First Reaction	TRUE	75p	6.93e-07	5.12e-10	1.42e-10	8.20e-15	0.000373	9.85e-05	2.09e-11
APW10	C - UA	Second Reaction	TRUE	75p	7.02e-07	2.04e-10	5.38e-11	5.06e-15	0.000343	0.000104	3.30e-11
APW02	C - UD	First Reaction	TRUE	75p	7.78e-08	4.15e-10	8.89e-11	1.73e-14	0.000657	0.000194	3.46e-11
APW02	C - UD	Second Reaction	TRUE	75p	8.70e-08	1.28e-10	2.38e-11	8.35e-15	0.000600	0.000199	6.70e-11
APW04	C - UD	First Reaction	TRUE	75p	6.69e-09	1.22e-11	3.22e-12	1.43e-14	0.000677	7.18e-05	1.59e-11
APW04	C - UD	Second Reaction	TRUE	75p	7.01e-09	5.01e-12	1.15e-12	8.05e-15	0.000637	7.93e-05	2.93e-11
APW05S	C - UD	First Reaction	TRUE	75p	8.46e-08	1.73e-10	4.86e-11	1.56e-14	0.000645	0.000200	3.86e-11
APW05S	C - UD	Second Reaction	TRUE	75p	9.05e-08	6.16e-11	1.49e-11	8.08e-15	0.000597	0.000205	7.07e-11
APW10	C - UA	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	TRUE	median	5.17e-07	7.78e-09	2.45e-09	1.31e-14	0.000179	3.74e-05	2.39e-12
APW02	C - UD	Speciation Model	TRUE	median	4.20e-08	1.49e-08	8.84e-09	2.94e-13	0.000841	0.000176	2.35e-12
APW04	C - UD	Speciation Model	TRUE	median	4.97e-09	5.82e-10	3.18e-10	2.01e-13	0.000773	5.94e-05	1.07e-12
APW05S	C - UD	Speciation Model	TRUE	median	5.39e-08	8.43e-09	5.59e-09	2.55e-13	0.000800	0.000181	2.66e-12
APW10	C - UA	First Reaction	TRUE	median	5.45e-07	3.08e-10	8.44e-11	2.85e-15	0.000146	4.22e-05	1.01e-11
APW10	C - UA	Second Reaction	TRUE	median	5.53e-07	1.34e-10	3.47e-11	1.79e-15	0.000136	4.70e-05	1.67e-11
APW02	C - UD	First Reaction	TRUE	median	7.47e-08	3.77e-10	8.03e-11	1.55e-14	0.000604	0.000180	3.29e-11
APW02	C - UD	Second Reaction	TRUE	median	8.36e-08	1.17e-10	2.17e-11	7.54e-15	0.000553	0.000184	6.32e-11
APW04	C - UD	First Reaction	TRUE	median	6.40e-09	1.12e-11	2.93e-12	1.29e-14	0.000623	6.68e-05	1.51e-11
APW04	C - UD	Second Reaction	TRUE	median	6.72e-09	4.62e-12	1.06e-12	7.29e-15	0.000587	7.43e-05	2.80e-11
APW05S	C - UD	First Reaction	TRUE	median	8.11e-08	1.57e-10	4.40e-11	1.40e-14	0.000594	0.000185	3.66e-11
APW05S	C - UD	Second Reaction	TRUE	median	8.67e-08	5.66e-11	1.37e-11	7.30e-15	0.000549	0.000190	6.67e-11
APW10	C - UA	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	FALSE	25p	3.41e-07	5.19e-09	1.64e-09	8.74e-15	0.000119	2.46e-05	1.57e-12
APW02	C - UD	Speciation Model	FALSE	25p	3.77e-08	1.35e-08	7.98e-09	2.53e-13	0.000723	0.000151	2.01e-12
APW04	C - UD	Speciation Model	FALSE	25p	4.42e-09	5.28e-10	2.87e-10	1.72e-13	0.000663	5.03e-05	9.06e-13

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Location	Location Description	Model	Charge Balance	Solids Summary	m_Hfo_sOSiO(OH)2-	m_Hfo_sOHSO4-2	m_Hfo_sSO4-	m_Hao_SO4-	m_Hao_OHSO4-2	m_Hao_H2BO3	m_Hao_H3BO4-
APW05S	C - UD	Speciation Model	FALSE	25p	4.84e-08	7.64e-09	5.05e-09	2.19e-13	0.000687	0.000155	2.27e-12
APW10	C - UA	First Reaction	FALSE	25p	3.61e-07	1.62e-10	4.36e-11	1.65e-15	9.56e-05	2.93e-05	7.95e-12
APW10	C - UA	Second Reaction	FALSE	25p	3.67e-07	8.32e-11	2.10e-11	1.09e-15	9.06e-05	3.37e-05	1.31e-11
APW02	C - UD	First Reaction	FALSE	25p	6.77e-08	3.06e-10	6.45e-11	1.25e-14	0.000517	0.000155	2.99e-11
APW02	C - UD	Second Reaction	FALSE	25p	7.61e-08	9.72e-11	1.80e-11	6.24e-15	0.000474	0.000159	5.67e-11
APW04	C - UD	First Reaction	FALSE	25p	5.70e-09	9.04e-12	2.34e-12	1.05e-14	0.000534	5.77e-05	1.38e-11
APW04	C - UD	Second Reaction	FALSE	25p	6.00e-09	3.83e-12	8.76e-13	6.05e-15	0.000504	6.52e-05	2.54e-11
APW05S	C - UD	First Reaction	FALSE	25p	7.32e-08	1.28e-10	3.54e-11	1.14e-14	0.000508	0.000159	3.32e-11
APW05S	C - UD	Second Reaction	FALSE	25p	7.83e-08	4.73e-11	1.14e-11	6.05e-15	0.000471	0.000164	5.97e-11
APW10	C - UA	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	FALSE	75p	6.53e-07	9.95e-09	3.14e-09	3.28e-14	0.000447	9.24e-05	5.90e-12
APW02	C - UD	Speciation Model	FALSE	75p	4.37e-08	1.56e-08	9.24e-09	3.18e-13	0.000909	0.000190	2.53e-12
APW04	C - UD	Speciation Model	FALSE	75p	5.12e-09	6.11e-10	3.32e-10	2.17e-13	0.000834	6.33e-05	1.14e-12
APW05S	C - UD	Speciation Model	FALSE	75p	5.61e-08	8.85e-09	5.85e-09	2.76e-13	0.000865	0.000195	2.86e-12
APW10	C - UA	First Reaction	FALSE	75p	6.84e-07	5.04e-10	1.40e-10	8.19e-15	0.000373	9.74e-05	2.07e-11
APW10	C - UA	Second Reaction	FALSE	75p	6.93e-07	2.01e-10	5.31e-11	5.05e-15	0.000344	0.000103	3.27e-11
APW02	C - UD	First Reaction	FALSE	75p	7.71e-08	4.11e-10	8.79e-11	1.72e-14	0.000657	0.000193	3.45e-11
APW02	C - UD	Second Reaction	FALSE	75p	8.62e-08	1.27e-10	2.35e-11	8.34e-15	0.000601	0.000198	6.67e-11
APW04	C - UD	First Reaction	FALSE	75p	6.54e-09	1.19e-11	3.14e-12	1.42e-14	0.000677	7.07e-05	1.57e-11
APW04	C - UD	Second Reaction	FALSE	75p	6.86e-09	4.89e-12	1.13e-12	8.03e-15	0.000638	7.82e-05	2.90e-11
APW05S	C - UD	First Reaction	FALSE	75p	8.39e-08	1.71e-10	4.80e-11	1.56e-14	0.000646	0.000199	3.85e-11
APW05S	C - UD	Second Reaction	FALSE	75p	8.96e-08	6.10e-11	1.48e-11	8.07e-15	0.000597	0.000204	7.04e-11
APW10	C - UA	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	FALSE	median	5.11e-07	7.78e-09	2.46e-09	1.31e-14	0.000179	3.70e-05	2.36e-12
APW02	C - UD	Speciation Model	FALSE	median	4.17e-08	1.49e-08	8.82e-09	2.94e-13	0.000839	0.000175	2.34e-12
APW04	C - UD	Speciation Model	FALSE	median	4.89e-09	5.83e-10	3.17e-10	2.00e-13	0.000770	5.84e-05	1.05e-12
APW05S	C - UD	Speciation Model	FALSE	median	5.35e-08	8.45e-09	5.58e-09	2.55e-13	0.000798	0.000180	2.64e-12
APW10	C - UA	First Reaction	FALSE	median	5.38e-07	3.03e-10	8.35e-11	2.85e-15	0.000146	4.18e-05	1.00e-11
APW10	C - UA	Second Reaction	FALSE	median	5.46e-07	1.32e-10	3.43e-11	1.79e-15	0.000136	4.66e-05	1.66e-11
APW02	C - UD	First Reaction	FALSE	median	7.40e-08	3.73e-10	7.94e-11	1.54e-14	0.000604	0.000179	3.28e-11
APW02	C - UD	Second Reaction	FALSE	median	8.28e-08	1.16e-10	2.15e-11	7.54e-15	0.000553	0.000184	6.30e-11
APW04	C - UD	First Reaction	FALSE	median	6.26e-09	1.09e-11	2.85e-12	1.28e-14	0.000623	6.59e-05	1.50e-11
APW04	C - UD	Second Reaction	FALSE	median	6.57e-09	4.51e-12	1.04e-12	7.28e-15	0.000587	7.33e-05	2.77e-11
APW05S	C - UD	First Reaction	FALSE	median	8.03e-08	1.56e-10	4.34e-11	1.40e-14	0.000594	0.000184	3.65e-11
APW05S	C - UD	Second Reaction	FALSE	median	8.58e-08	5.61e-11	1.35e-11	7.30e-15	0.000550	0.000189	6.64e-11

Attachment D. PHREEQC modeling output
Groundwater Polishing Report
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Location	Location Description	Model	Charge Balance	Solids Summary	m_LangmuirLi+	Ferrihydrite	d_Ferrihydrite	Gibbsite	d_Gibbsite	Barite	d_Barite
APW10	C - UA	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	TRUE	25p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	TRUE	25p	3.56e-05	0.124	0	0.0119	0	0	0
APW02	C - UD	Speciation Model	TRUE	25p	0.000157	0.0187	0	0.0620	0	0	0
APW04	C - UD	Speciation Model	TRUE	25p	6.31e-05	0.0187	0	0.0620	0	0	0
APW05S	C - UD	Speciation Model	TRUE	25p	8.88e-05	0.0187	0	0.0620	0	0	0
APW10	C - UA	First Reaction	TRUE	25p	3.31e-05	0.120	1.40e-06	0.0120	3.38e-07	5.53e-07	5.53e-07
APW10	C - UA	Second Reaction	TRUE	25p	3.11e-05	0.120	1.83e-06	0.0120	3.34e-07	0	-5.53e-07
APW02	C - UD	First Reaction	TRUE	25p	0.000115	0.0190	1.26e-06	0.0620	3.39e-07	1.25e-06	1.25e-06
APW02	C - UD	Second Reaction	TRUE	25p	9.14e-05	0.0190	1.26e-06	0.0620	3.31e-07	1.37e-06	1.24e-07
APW04	C - UD	First Reaction	TRUE	25p	5.84e-05	0.0190	1.26e-06	0.0620	3.38e-07	9.58e-07	9.58e-07
APW04	C - UD	Second Reaction	TRUE	25p	5.45e-05	0.0190	1.26e-06	0.0620	3.30e-07	9.01e-07	-5.78e-08
APW05S	C - UD	First Reaction	TRUE	25p	7.68e-05	0.0190	1.26e-06	0.0620	3.38e-07	1.12e-06	1.12e-06
APW05S	C - UD	Second Reaction	TRUE	25p	6.80e-05	0.0190	1.26e-06	0.0620	3.30e-07	1.15e-06	2.91e-08
APW10	C - UA	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	TRUE	75p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	TRUE	75p	3.56e-05	0.226	0	0.0453	0	0	0
APW02	C - UD	Speciation Model	TRUE	75p	0.000157	0.0218	0	0.0782	0	0	0
APW04	C - UD	Speciation Model	TRUE	75p	6.31e-05	0.0218	0	0.0782	0	0	0
APW05S	C - UD	Speciation Model	TRUE	75p	8.88e-05	0.0218	0	0.0782	0	0	0
APW10	C - UA	First Reaction	TRUE	75p	3.32e-05	0.230	1.27e-06	0.0450	3.40e-07	1.02e-06	1.02e-06
APW10	C - UA	Second Reaction	TRUE	75p	3.13e-05	0.230	1.33e-06	0.0450	3.36e-07	9.18e-07	-9.76e-08
APW02	C - UD	First Reaction	TRUE	75p	0.000115	0.0220	1.26e-06	0.0780	3.40e-07	1.32e-06	1.32e-06
APW02	C - UD	Second Reaction	TRUE	75p	9.17e-05	0.0220	1.26e-06	0.0780	3.31e-07	1.59e-06	2.73e-07
APW04	C - UD	First Reaction	TRUE	75p	5.85e-05	0.0220	1.26e-06	0.0780	3.39e-07	1.05e-06	1.05e-06
APW04	C - UD	Second Reaction	TRUE	75p	5.46e-05	0.0220	1.26e-06	0.0780	3.31e-07	1.13e-06	7.77e-08
APW05S	C - UD	First Reaction	TRUE	75p	7.69e-05	0.0220	1.26e-06	0.0780	3.39e-07	1.21e-06	1.21e-06
APW05S	C - UD	Second Reaction	TRUE	75p	6.81e-05	0.0220	1.26e-06	0.0780	3.31e-07	1.38e-06	1.74e-07
APW10	C - UA	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	TRUE	median	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	TRUE	median	3.56e-05	0.182	0	0.0181	0	0	0
APW02	C - UD	Speciation Model	TRUE	median	0.000157	0.0211	0	0.0719	0	0	0
APW04	C - UD	Speciation Model	TRUE	median	6.31e-05	0.0211	0	0.0719	0	0	0
APW05S	C - UD	Speciation Model	TRUE	median	8.88e-05	0.0211	0	0.0719	0	0	0
APW10	C - UA	First Reaction	TRUE	median	3.32e-05	0.180	1.34e-06	0.0180	3.39e-07	7.85e-07	7.85e-07
APW10	C - UA	Second Reaction	TRUE	median	3.12e-05	0.180	1.62e-06	0.0180	3.35e-07	3.30e-07	-4.55e-07
APW02	C - UD	First Reaction	TRUE	median	0.000115	0.0210	1.26e-06	0.0720	3.39e-07	1.30e-06	1.30e-06
APW02	C - UD	Second Reaction	TRUE	median	9.16e-05	0.0210	1.26e-06	0.0720	3.31e-07	1.52e-06	2.20e-07
APW04	C - UD	First Reaction	TRUE	median	5.85e-05	0.0210	1.26e-06	0.0720	3.38e-07	1.02e-06	1.02e-06
APW04	C - UD	Second Reaction	TRUE	median	5.46e-05	0.0210	1.26e-06	0.0720	3.31e-07	1.05e-06	2.94e-08
APW05S	C - UD	First Reaction	TRUE	median	7.69e-05	0.0210	1.26e-06	0.0720	3.39e-07	1.18e-06	1.18e-06
APW05S	C - UD	Second Reaction	TRUE	median	6.81e-05	0.0210	1.26e-06	0.0720	3.31e-07	1.30e-06	1.23e-07
APW10	C - UA	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	FALSE	25p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	FALSE	25p	3.45e-05	0.124	0	0.0119	0	0	0
APW02	C - UD	Speciation Model	FALSE	25p	0.000156	0.0187	0	0.0620	0	0	0
APW04	C - UD	Speciation Model	FALSE	25p	6.10e-05	0.0187	0	0.0620	0	0	0

Attachment D. PHREEQC modeling output
Groundwater Polishing Report
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Location	Location Description	Model	Charge Balance	Solids Summary	m_LangmuirLi+	Ferrihydrite	d_Ferrihydrite	Gibbsite	d_Gibbsite	Barite	d_Barite
APW05S	C - UD	Speciation Model	FALSE	25p	8.77e-05	0.0187	0	0.0620	0	0	0
APW10	C - UA	First Reaction	FALSE	25p	3.23e-05	0.120	1.40e-06	0.0120	3.38e-07	5.56e-07	5.56e-07
APW10	C - UA	Second Reaction	FALSE	25p	3.05e-05	0.120	1.84e-06	0.0120	3.34e-07	0	-5.56e-07
APW02	C - UD	First Reaction	FALSE	25p	0.000114	0.0190	1.26e-06	0.0620	3.39e-07	1.25e-06	1.25e-06
APW02	C - UD	Second Reaction	FALSE	25p	9.10e-05	0.0190	1.26e-06	0.0620	3.31e-07	1.37e-06	1.23e-07
APW04	C - UD	First Reaction	FALSE	25p	5.69e-05	0.0190	1.26e-06	0.0620	3.38e-07	9.52e-07	9.52e-07
APW04	C - UD	Second Reaction	FALSE	25p	5.33e-05	0.0190	1.26e-06	0.0620	3.30e-07	8.91e-07	-6.12e-08
APW05S	C - UD	First Reaction	FALSE	25p	7.60e-05	0.0190	1.26e-06	0.0620	3.38e-07	1.12e-06	1.12e-06
APW05S	C - UD	Second Reaction	FALSE	25p	6.75e-05	0.0190	1.26e-06	0.0620	3.30e-07	1.15e-06	2.78e-08
APW10	C - UA	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	FALSE	75p	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	FALSE	75p	3.45e-05	0.226	0	0.0453	0	0	0
APW02	C - UD	Speciation Model	FALSE	75p	0.000156	0.0218	0	0.0782	0	0	0
APW04	C - UD	Speciation Model	FALSE	75p	6.10e-05	0.0218	0	0.0782	0	0	0
APW05S	C - UD	Speciation Model	FALSE	75p	8.77e-05	0.0218	0	0.0782	0	0	0
APW10	C - UA	First Reaction	FALSE	75p	3.24e-05	0.230	1.28e-06	0.0450	3.40e-07	1.02e-06	1.02e-06
APW10	C - UA	Second Reaction	FALSE	75p	3.07e-05	0.230	1.33e-06	0.0450	3.36e-07	9.19e-07	-9.78e-08
APW02	C - UD	First Reaction	FALSE	75p	0.000114	0.0220	1.26e-06	0.0780	3.40e-07	1.32e-06	1.32e-06
APW02	C - UD	Second Reaction	FALSE	75p	9.12e-05	0.0220	1.26e-06	0.0780	3.31e-07	1.59e-06	2.72e-07
APW04	C - UD	First Reaction	FALSE	75p	5.69e-05	0.0220	1.26e-06	0.0780	3.39e-07	1.05e-06	1.05e-06
APW04	C - UD	Second Reaction	FALSE	75p	5.34e-05	0.0220	1.26e-06	0.0780	3.31e-07	1.12e-06	7.38e-08
APW05S	C - UD	First Reaction	FALSE	75p	7.62e-05	0.0220	1.26e-06	0.0780	3.39e-07	1.21e-06	1.21e-06
APW05S	C - UD	Second Reaction	FALSE	75p	6.76e-05	0.0220	1.26e-06	0.0780	3.31e-07	1.38e-06	1.73e-07
APW10	C - UA	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW02	C - UD	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW04	C - UD	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW05S	C - UD	Initial Soln	FALSE	median	0	0	0	0	0	0	0
APW10	C - UA	Speciation Model	FALSE	median	3.45e-05	0.182	0	0.0181	0	0	0
APW02	C - UD	Speciation Model	FALSE	median	0.000156	0.0211	0	0.0719	0	0	0
APW04	C - UD	Speciation Model	FALSE	median	6.10e-05	0.0211	0	0.0719	0	0	0
APW05S	C - UD	Speciation Model	FALSE	median	8.77e-05	0.0211	0	0.0719	0	0	0
APW10	C - UA	First Reaction	FALSE	median	3.24e-05	0.180	1.35e-06	0.0180	3.39e-07	7.88e-07	7.88e-07
APW10	C - UA	Second Reaction	FALSE	median	3.06e-05	0.180	1.63e-06	0.0180	3.35e-07	3.34e-07	-4.55e-07
APW02	C - UD	First Reaction	FALSE	median	0.000114	0.0210	1.26e-06	0.0720	3.39e-07	1.30e-06	1.30e-06
APW02	C - UD	Second Reaction	FALSE	median	9.12e-05	0.0210	1.26e-06	0.0720	3.31e-07	1.51e-06	2.19e-07
APW04	C - UD	First Reaction	FALSE	median	5.69e-05	0.0210	1.26e-06	0.0720	3.38e-07	1.02e-06	1.02e-06
APW04	C - UD	Second Reaction	FALSE	median	5.33e-05	0.0210	1.26e-06	0.0720	3.31e-07	1.04e-06	2.56e-08
APW05S	C - UD	First Reaction	FALSE	median	7.61e-05	0.0210	1.26e-06	0.0720	3.39e-07	1.18e-06	1.18e-06
APW05S	C - UD	Second Reaction	FALSE	median	6.76e-05	0.0210	1.26e-06	0.0720	3.31e-07	1.30e-06	1.21e-07

Attachment D. PHREEQC modeling output
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Location	Location Description	Model	Charge Balance	Solids Summary	Calcite	d_Calcite	Dolomite(ordered)	d_Dolomite(ordered)	Gypsum	d_Gypsum	si_Ferrihydrite
APW10	C - UA	Initial Soln	TRUE	25p	0	0	0	0	0	0	2.32
APW02	C - UD	Initial Soln	TRUE	25p	0	0	0	0	0	0	1.55
APW04	C - UD	Initial Soln	TRUE	25p	0	0	0	0	0	0	1.16
APW05S	C - UD	Initial Soln	TRUE	25p	0	0	0	0	0	0	1.56
APW10	C - UA	Speciation Model	TRUE	25p	3.95	0	2.65	0	0	0	2.32
APW02	C - UD	Speciation Model	TRUE	25p	3.42	0	1.69	0	0	0	1.55
APW04	C - UD	Speciation Model	TRUE	25p	3.42	0	1.69	0	0	0	1.16
APW05S	C - UD	Speciation Model	TRUE	25p	3.42	0	1.69	0	0	0	1.56
APW10	C - UA	First Reaction	TRUE	25p	4.00	0.000418	3.00	-5.79e-04	0	0	0
APW10	C - UA	Second Reaction	TRUE	25p	4.00	0.000336	3.00	-3.64e-04	0	0	0
APW02	C - UD	First Reaction	TRUE	25p	3.00	0.000248	2.00	-4.65e-04	0	0	0
APW02	C - UD	Second Reaction	TRUE	25p	3.00	0.000223	2.00	-2.07e-04	0	0	0
APW04	C - UD	First Reaction	TRUE	25p	3.00	0.000269	2.00	-4.30e-04	0	0	0
APW04	C - UD	Second Reaction	TRUE	25p	3.00	0.000248	2.00	-2.22e-04	0	0	0
APW05S	C - UD	First Reaction	TRUE	25p	3.00	0.000271	2.00	-4.58e-04	0	0	0
APW05S	C - UD	Second Reaction	TRUE	25p	3.00	0.000242	2.00	-2.22e-04	0	0	0
APW10	C - UA	Initial Soln	TRUE	75p	0	0	0	0	0	0	2.32
APW02	C - UD	Initial Soln	TRUE	75p	0	0	0	0	0	0	1.55
APW04	C - UD	Initial Soln	TRUE	75p	0	0	0	0	0	0	1.16
APW05S	C - UD	Initial Soln	TRUE	75p	0	0	0	0	0	0	1.56
APW10	C - UA	Speciation Model	TRUE	75p	3.95	0	2.65	0	0	0	2.32
APW02	C - UD	Speciation Model	TRUE	75p	3.42	0	1.69	0	0	0	1.55
APW04	C - UD	Speciation Model	TRUE	75p	3.42	0	1.69	0	0	0	1.16
APW05S	C - UD	Speciation Model	TRUE	75p	3.42	0	1.69	0	0	0	1.56
APW10	C - UA	First Reaction	TRUE	75p	4.00	0.000450	3.00	-7.19e-04	0	0	0
APW10	C - UA	Second Reaction	TRUE	75p	4.00	0.000330	3.00	-4.25e-04	0	0	0
APW02	C - UD	First Reaction	TRUE	75p	3.00	0.000244	2.00	-4.97e-04	0	0	0
APW02	C - UD	Second Reaction	TRUE	75p	3.00	0.000212	2.00	-2.12e-04	0	0	0
APW04	C - UD	First Reaction	TRUE	75p	3.00	0.000265	2.00	-4.56e-04	0	0	0
APW04	C - UD	Second Reaction	TRUE	75p	3.00	0.000242	2.00	-2.31e-04	0	0	0
APW05S	C - UD	First Reaction	TRUE	75p	3.00	0.000267	2.00	-4.88e-04	0	0	0
APW05S	C - UD	Second Reaction	TRUE	75p	3.00	0.000235	2.00	-2.31e-04	0	0	0
APW10	C - UA	Initial Soln	TRUE	median	0	0	0	0	0	0	2.32
APW02	C - UD	Initial Soln	TRUE	median	0	0	0	0	0	0	1.55
APW04	C - UD	Initial Soln	TRUE	median	0	0	0	0	0	0	1.16
APW05S	C - UD	Initial Soln	TRUE	median	0	0	0	0	0	0	1.56
APW10	C - UA	Speciation Model	TRUE	median	3.95	0	2.65	0	0	0	2.32
APW02	C - UD	Speciation Model	TRUE	median	3.42	0	1.69	0	0	0	1.55
APW04	C - UD	Speciation Model	TRUE	median	3.42	0	1.69	0	0	0	1.16
APW05S	C - UD	Speciation Model	TRUE	median	3.42	0	1.69	0	0	0	1.56
APW10	C - UA	First Reaction	TRUE	median	4.00	0.000456	3.00	-6.78e-04	0	0	0
APW10	C - UA	Second Reaction	TRUE	median	4.00	0.000348	3.00	-4.15e-04	0	0	0
APW02	C - UD	First Reaction	TRUE	median	3.00	0.000245	2.00	-4.87e-04	0	0	0
APW02	C - UD	Second Reaction	TRUE	median	3.00	0.000217	2.00	-2.11e-04	0	0	0
APW04	C - UD	First Reaction	TRUE	median	3.00	0.000267	2.00	-4.48e-04	0	0	0
APW04	C - UD	Second Reaction	TRUE	median	3.00	0.000244	2.00	-2.28e-04	0	0	0
APW05S	C - UD	First Reaction	TRUE	median	3.00	0.000269	2.00	-4.79e-04	0	0	0
APW05S	C - UD	Second Reaction	TRUE	median	3.00	0.000238	2.00	-2.29e-04	0	0	0
APW10	C - UA	Initial Soln	FALSE	25p	0	0	0	0	0	0	2.32
APW02	C - UD	Initial Soln	FALSE	25p	0	0	0	0	0	0	1.56
APW04	C - UD	Initial Soln	FALSE	25p	0	0	0	0	0	0	1.16
APW05S	C - UD	Initial Soln	FALSE	25p	0	0	0	0	0	0	1.56
APW10	C - UA	Speciation Model	FALSE	25p	3.95	0	2.65	0	0	0	2.32
APW02	C - UD	Speciation Model	FALSE	25p	3.42	0	1.69	0	0	0	1.56
APW04	C - UD	Speciation Model	FALSE	25p	3.42	0	1.69	0	0	0	1.16

Attachment D. PHREEQC modeling output
Groundwater Polishing Report
Primary Ash Pond
Newton Power Plant
Newton, IL

Location	Location Description	Model	Charge Balance	Solids Summary	Calcite	d_Calcite	Dolomite(ordered)	d_Dolomite(ordered)	Gypsum	d_Gypsum	si_Ferrihydrite
APW05S	C - UD	Speciation Model	FALSE	25p	3.42	0	1.69	0	0	0	1.56
APW10	C - UA	First Reaction	FALSE	25p	4.00	0.000415	3.00	-5.73e-04	0	0	0
APW10	C - UA	Second Reaction	FALSE	25p	4.00	0.000336	3.00	-3.63e-04	0	0	0
APW02	C - UD	First Reaction	FALSE	25p	3.00	0.000245	2.00	-4.62e-04	0	0	0
APW02	C - UD	Second Reaction	FALSE	25p	3.00	0.000223	2.00	-2.07e-04	0	0	0
APW04	C - UD	First Reaction	FALSE	25p	3.00	0.000263	2.00	-4.23e-04	0	0	0
APW04	C - UD	Second Reaction	FALSE	25p	3.00	0.000248	2.00	-2.22e-04	0	0	0
APW05S	C - UD	First Reaction	FALSE	25p	3.00	0.000268	2.00	-4.55e-04	0	0	0
APW05S	C - UD	Second Reaction	FALSE	25p	3.00	0.000242	2.00	-2.22e-04	0	0	0
APW10	C - UA	Initial Soln	FALSE	75p	0	0	0	0	0	0	2.32
APW02	C - UD	Initial Soln	FALSE	75p	0	0	0	0	0	0	1.56
APW04	C - UD	Initial Soln	FALSE	75p	0	0	0	0	0	0	1.16
APW05S	C - UD	Initial Soln	FALSE	75p	0	0	0	0	0	0	1.56
APW10	C - UA	Speciation Model	FALSE	75p	3.95	0	2.65	0	0	0	2.32
APW02	C - UD	Speciation Model	FALSE	75p	3.42	0	1.69	0	0	0	1.56
APW04	C - UD	Speciation Model	FALSE	75p	3.42	0	1.69	0	0	0	1.16
APW05S	C - UD	Speciation Model	FALSE	75p	3.42	0	1.69	0	0	0	1.56
APW10	C - UA	First Reaction	FALSE	75p	4.00	0.000443	3.00	-7.07e-04	0	0	0
APW10	C - UA	Second Reaction	FALSE	75p	4.00	0.000330	3.00	-4.24e-04	0	0	0
APW02	C - UD	First Reaction	FALSE	75p	3.00	0.000240	2.00	-4.94e-04	0	0	0
APW02	C - UD	Second Reaction	FALSE	75p	3.00	0.000212	2.00	-2.12e-04	0	0	0
APW04	C - UD	First Reaction	FALSE	75p	3.00	0.000257	2.00	-4.47e-04	0	0	0
APW04	C - UD	Second Reaction	FALSE	75p	3.00	0.000242	2.00	-2.31e-04	0	0	0
APW05S	C - UD	First Reaction	FALSE	75p	3.00	0.000263	2.00	-4.84e-04	0	0	0
APW05S	C - UD	Second Reaction	FALSE	75p	3.00	0.000235	2.00	-2.31e-04	0	0	0
APW10	C - UA	Initial Soln	FALSE	median	0	0	0	0	0	0	2.32
APW02	C - UD	Initial Soln	FALSE	median	0	0	0	0	0	0	1.56
APW04	C - UD	Initial Soln	FALSE	median	0	0	0	0	0	0	1.16
APW05S	C - UD	Initial Soln	FALSE	median	0	0	0	0	0	0	1.56
APW10	C - UA	Speciation Model	FALSE	median	3.95	0	2.65	0	0	0	2.32
APW02	C - UD	Speciation Model	FALSE	median	3.42	0	1.69	0	0	0	1.56
APW04	C - UD	Speciation Model	FALSE	median	3.42	0	1.69	0	0	0	1.16
APW05S	C - UD	Speciation Model	FALSE	median	3.42	0	1.69	0	0	0	1.56
APW10	C - UA	First Reaction	FALSE	median	4.00	0.000452	3.00	-6.68e-04	0	0	0
APW10	C - UA	Second Reaction	FALSE	median	4.00	0.000348	3.00	-4.14e-04	0	0	0
APW02	C - UD	First Reaction	FALSE	median	3.00	0.000242	2.00	-4.84e-04	0	0	0
APW02	C - UD	Second Reaction	FALSE	median	3.00	0.000217	2.00	-2.11e-04	0	0	0
APW04	C - UD	First Reaction	FALSE	median	3.00	0.000260	2.00	-4.40e-04	0	0	0
APW04	C - UD	Second Reaction	FALSE	median	3.00	0.000245	2.00	-2.28e-04	0	0	0
APW05S	C - UD	First Reaction	FALSE	median	3.00	0.000265	2.00	-4.75e-04	0	0	0
APW05S	C - UD	Second Reaction	FALSE	median	3.00	0.000238	2.00	-2.29e-04	0	0	0

Attachment D. PHREEQC modeling output
Groundwater Polishing Report
Primary Ash Pond
Newton Power Plant
Newton, IL

Location	Location Description	Model	Charge Balance	Solids Summary	si_Gibbsite	si_Barite	si_Calcite	si_Dolomite (ordered)	si_Gypsum
APW10	C - UA	Initial Soln	TRUE	25p	1.08	0.434	-7.12e-02	-2.20e-01	-9.29e-01
APW02	C - UD	Initial Soln	TRUE	25p	0.863	0.632	-2.83e-01	-3.40e-01	-5.95e-02
APW04	C - UD	Initial Soln	TRUE	25p	0.796	0.502	-4.82e-01	-8.20e-01	-6.25e-01
APW05S	C - UD	Initial Soln	TRUE	25p	1.15	0.842	-3.21e-01	-4.70e-01	-2.26e-01
APW10	C - UA	Speciation Model	TRUE	25p	1.08	0.434	-7.12e-02	-2.20e-01	-9.29e-01
APW02	C - UD	Speciation Model	TRUE	25p	0.863	0.632	-2.83e-01	-3.40e-01	-5.95e-02
APW04	C - UD	Speciation Model	TRUE	25p	0.796	0.502	-4.82e-01	-8.20e-01	-6.25e-01
APW05S	C - UD	Speciation Model	TRUE	25p	1.15	0.842	-3.21e-01	-4.70e-01	-2.26e-01
APW10	C - UA	First Reaction	TRUE	25p	0	0	0	0	-2.46e+00
APW10	C - UA	Second Reaction	TRUE	25p	0	-3.40e-03	0	0	-2.77e+00
APW02	C - UD	First Reaction	TRUE	25p	0	0	0	0	-2.11e+00
APW02	C - UD	Second Reaction	TRUE	25p	0	0	0	0	-2.64e+00
APW04	C - UD	First Reaction	TRUE	25p	0	0	0	0	-2.30e+00
APW04	C - UD	Second Reaction	TRUE	25p	0	0	0	0	-2.69e+00
APW05S	C - UD	First Reaction	TRUE	25p	0	0	0	0	-2.20e+00
APW05S	C - UD	Second Reaction	TRUE	25p	0	0	0	0	-2.67e+00
APW10	C - UA	Initial Soln	TRUE	75p	1.08	0.434	-7.12e-02	-2.20e-01	-9.29e-01
APW02	C - UD	Initial Soln	TRUE	75p	0.863	0.632	-2.83e-01	-3.40e-01	-5.95e-02
APW04	C - UD	Initial Soln	TRUE	75p	0.796	0.502	-4.82e-01	-8.20e-01	-6.25e-01
APW05S	C - UD	Initial Soln	TRUE	75p	1.15	0.842	-3.21e-01	-4.70e-01	-2.26e-01
APW10	C - UA	Speciation Model	TRUE	75p	1.08	0.434	-7.12e-02	-2.20e-01	-9.29e-01
APW02	C - UD	Speciation Model	TRUE	75p	0.863	0.632	-2.83e-01	-3.40e-01	-5.95e-02
APW04	C - UD	Speciation Model	TRUE	75p	0.796	0.502	-4.82e-01	-8.20e-01	-6.25e-01
APW05S	C - UD	Speciation Model	TRUE	75p	1.15	0.842	-3.21e-01	-4.70e-01	-2.26e-01
APW10	C - UA	First Reaction	TRUE	75p	0	0	0	0	-2.23e+00
APW10	C - UA	Second Reaction	TRUE	75p	0	0	0	0	-2.65e+00
APW02	C - UD	First Reaction	TRUE	75p	0	0	0	0	-2.05e+00
APW02	C - UD	Second Reaction	TRUE	75p	0	0	0	0	-2.60e+00
APW04	C - UD	First Reaction	TRUE	75p	0	0	0	0	-2.24e+00
APW04	C - UD	Second Reaction	TRUE	75p	0	0	0	0	-2.65e+00
APW05S	C - UD	First Reaction	TRUE	75p	0	0	0	0	-2.14e+00
APW05S	C - UD	Second Reaction	TRUE	75p	0	0	0	0	-2.62e+00
APW10	C - UA	Initial Soln	TRUE	median	1.08	0.434	-7.12e-02	-2.20e-01	-9.29e-01
APW02	C - UD	Initial Soln	TRUE	median	0.863	0.632	-2.83e-01	-3.40e-01	-5.95e-02
APW04	C - UD	Initial Soln	TRUE	median	0.796	0.502	-4.82e-01	-8.20e-01	-6.25e-01
APW05S	C - UD	Initial Soln	TRUE	median	1.15	0.842	-3.21e-01	-4.70e-01	-2.26e-01
APW10	C - UA	Speciation Model	TRUE	median	1.08	0.434	-7.12e-02	-2.20e-01	-9.29e-01
APW02	C - UD	Speciation Model	TRUE	median	0.863	0.632	-2.83e-01	-3.40e-01	-5.95e-02
APW04	C - UD	Speciation Model	TRUE	median	0.796	0.502	-4.82e-01	-8.20e-01	-6.25e-01
APW05S	C - UD	Speciation Model	TRUE	median	1.15	0.842	-3.21e-01	-4.70e-01	-2.26e-01
APW10	C - UA	First Reaction	TRUE	median	0	0	0	0	-2.35e+00
APW10	C - UA	Second Reaction	TRUE	median	0	0	0	0	-2.74e+00
APW02	C - UD	First Reaction	TRUE	median	0	0	0	0	-2.07e+00
APW02	C - UD	Second Reaction	TRUE	median	0	0	0	0	-2.61e+00
APW04	C - UD	First Reaction	TRUE	median	0	0	0	0	-2.26e+00
APW04	C - UD	Second Reaction	TRUE	median	0	0	0	0	-2.67e+00
APW05S	C - UD	First Reaction	TRUE	median	0	0	0	0	-2.16e+00
APW05S	C - UD	Second Reaction	TRUE	median	0	0	0	0	-2.64e+00
APW10	C - UA	Initial Soln	FALSE	25p	1.08	0.448	-6.29e-02	-2.03e-01	-9.17e-01
APW02	C - UD	Initial Soln	FALSE	25p	0.864	0.638	-2.80e-01	-3.35e-01	-5.55e-02
APW04	C - UD	Initial Soln	FALSE	25p	0.798	0.519	-4.72e-01	-8.01e-01	-6.12e-01
APW05S	C - UD	Initial Soln	FALSE	25p	1.15	0.850	-3.18e-01	-4.63e-01	-2.21e-01
APW10	C - UA	Speciation Model	FALSE	25p	1.08	0.448	-6.29e-02	-2.03e-01	-9.17e-01
APW02	C - UD	Speciation Model	FALSE	25p	0.864	0.638	-2.80e-01	-3.35e-01	-5.55e-02
APW04	C - UD	Speciation Model	FALSE	25p	0.798	0.519	-4.72e-01	-8.01e-01	-6.12e-01

Attachment D. PHREEQC modeling output
Groundwater Polishing Report
Primary Ash Pond
Newton Power Plant
Newton, IL

Location	Location Description	Model	Charge Balance	Solids Summary	si_Gibbsite	si_Barite	si_Calcite	si_Dolomite (ordered)	si_Gypsum
APW05S	C - UD	Speciation Model	FALSE	25p	1.15	0.850	-3.18e-01	-4.63e-01	-2.21e-01
APW10	C - UA	First Reaction	FALSE	25p	0	0	0	0	-2.46e+00
APW10	C - UA	Second Reaction	FALSE	25p	0	-2.70e-03	0	0	-2.77e+00
APW02	C - UD	First Reaction	FALSE	25p	0	0	0	0	-2.12e+00
APW02	C - UD	Second Reaction	FALSE	25p	0	0	0	0	-2.64e+00
APW04	C - UD	First Reaction	FALSE	25p	0	0	0	0	-2.30e+00
APW04	C - UD	Second Reaction	FALSE	25p	0	0	0	0	-2.69e+00
APW05S	C - UD	First Reaction	FALSE	25p	0	0	0	0	-2.21e+00
APW05S	C - UD	Second Reaction	FALSE	25p	0	0	0	0	-2.67e+00
APW10	C - UA	Initial Soln	FALSE	75p	1.08	0.448	-6.29e-02	-2.03e-01	-9.17e-01
APW02	C - UD	Initial Soln	FALSE	75p	0.864	0.638	-2.80e-01	-3.35e-01	-5.55e-02
APW04	C - UD	Initial Soln	FALSE	75p	0.798	0.519	-4.72e-01	-8.01e-01	-6.12e-01
APW05S	C - UD	Initial Soln	FALSE	75p	1.15	0.850	-3.18e-01	-4.63e-01	-2.21e-01
APW10	C - UA	Speciation Model	FALSE	75p	1.08	0.448	-6.29e-02	-2.03e-01	-9.17e-01
APW02	C - UD	Speciation Model	FALSE	75p	0.864	0.638	-2.80e-01	-3.35e-01	-5.55e-02
APW04	C - UD	Speciation Model	FALSE	75p	0.798	0.519	-4.72e-01	-8.01e-01	-6.12e-01
APW05S	C - UD	Speciation Model	FALSE	75p	1.15	0.850	-3.18e-01	-4.63e-01	-2.21e-01
APW10	C - UA	First Reaction	FALSE	75p	0	0	0	0	-2.23e+00
APW10	C - UA	Second Reaction	FALSE	75p	0	0	0	0	-2.65e+00
APW02	C - UD	First Reaction	FALSE	75p	0	0	0	0	-2.05e+00
APW02	C - UD	Second Reaction	FALSE	75p	0	0	0	0	-2.60e+00
APW04	C - UD	First Reaction	FALSE	75p	0	0	0	0	-2.25e+00
APW04	C - UD	Second Reaction	FALSE	75p	0	0	0	0	-2.65e+00
APW05S	C - UD	First Reaction	FALSE	75p	0	0	0	0	-2.14e+00
APW05S	C - UD	Second Reaction	FALSE	75p	0	0	0	0	-2.62e+00
APW10	C - UA	Initial Soln	FALSE	median	1.08	0.448	-6.29e-02	-2.03e-01	-9.17e-01
APW02	C - UD	Initial Soln	FALSE	median	0.864	0.638	-2.80e-01	-3.35e-01	-5.55e-02
APW04	C - UD	Initial Soln	FALSE	median	0.798	0.519	-4.72e-01	-8.01e-01	-6.12e-01
APW05S	C - UD	Initial Soln	FALSE	median	1.15	0.850	-3.18e-01	-4.63e-01	-2.21e-01
APW10	C - UA	Speciation Model	FALSE	median	1.08	0.448	-6.29e-02	-2.03e-01	-9.17e-01
APW02	C - UD	Speciation Model	FALSE	median	0.864	0.638	-2.80e-01	-3.35e-01	-5.55e-02
APW04	C - UD	Speciation Model	FALSE	median	0.798	0.519	-4.72e-01	-8.01e-01	-6.12e-01
APW05S	C - UD	Speciation Model	FALSE	median	1.15	0.850	-3.18e-01	-4.63e-01	-2.21e-01
APW10	C - UA	First Reaction	FALSE	median	0	0	0	0	-2.35e+00
APW10	C - UA	Second Reaction	FALSE	median	0	0	0	0	-2.74e+00
APW02	C - UD	First Reaction	FALSE	median	0	0	0	0	-2.07e+00
APW02	C - UD	Second Reaction	FALSE	median	0	0	0	0	-2.61e+00
APW04	C - UD	First Reaction	FALSE	median	0	0	0	0	-2.27e+00
APW04	C - UD	Second Reaction	FALSE	median	0	0	0	0	-2.67e+00
APW05S	C - UD	First Reaction	FALSE	median	0	0	0	0	-2.16e+00
APW05S	C - UD	Second Reaction	FALSE	median	0	0	0	0	-2.64e+00

NOTES:
25p = 25th percentile
75p = 75th percentile
All model results are in units of moles with the exceptions of:
pH and pe (standard units)
charge (equivalents)
Results beginning with 'd_' (change from prior model step)
Results beginning with 'si_' (saturation index)

APPENDIX B
CORRECTIVE ACTION GROUNDWATER MONITORING PLAN

Intended for
Illinois Power Generating Company
6725 North 500th Street
Newton, Illinois, 62448

Date
April 1, 2025

Project No.
1940110241-002

CORRECTIVE ACTION GROUNDWATER MONITORING PLAN

NEWTON POWER PLANT, PRIMARY ASH POND, IEPA ID NO W0798070001-1

RAMBOLL Bright ideas. Sustainable change.

CORRECTIVE ACTION GROUNDWATER MONITORING PLAN NEWTON POWER PLANT, PRIMARY ASH POND, IEPA ID NO W0798070001-1

Project name	**Newton Power Plant Primary Ash Pond**
Project no.	**1940110241-002**
Recipient	**Illinois Power Generating Company**
Document type	**Corrective Action Groundwater Monitoring Plan**
Revision	**FINAL**
Date	**April 1, 2025**
Prepared by	**Chase Christensen**
Checked by	**Sung-Woo Lee, PhD**
Approved by	**Brian Hennings, PG**
Description	**Corrective Action Groundwater Monitoring Plan**

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Brian G. Hennings, PG
Project Officer Hydrogeology

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ACRONYMS AND ABBREVIATIONS

35 I.A.C.	Title 35 of the Illinois Administrative Code
ASD	Alternative Source Demonstration
CAAA	Corrective Action Alternatives Analysis
CCR	coal combustion residuals
COC	constituent of concern
CSM	conceptual site model
E001	Event 1
GMP	Groundwater Monitoring Plan
GWP	groundwater polishing
GWPS	groundwater protection standard
HCR	Hydrogeologic Site Characterization Report
ID	identification
IEPA	Illinois Environmental Protection Agency
IPCB	Illinois Pollution Control Board
IPGC	Illinois Power Generating Company
LCU	lower confining unit
LF 1	Landfill Phase 1
LF 2	Landfill Phase 2
NID	National Inventory of Dams
No.	number
NPP	Newton Power Plant
PAP	Primary Ash Pond
PMP	potential migration pathway
QA/QC	quality assurance/quality control
Ramboll	Ramboll Americas Engineering Solutions, Inc.
RL	reporting limit
SI	surface impoundment
StAP	Statistical Analysis Plan
TDS	total dissolved solids
UA	uppermost aquifer
UCL	upper confidence level
UCU	upper confining unit
UD	upper drift
USEPA	United States Environmental Protection Agency

1. INTRODUCTION

1.1 Overview

In accordance with requirements of Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845: Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments, Ramboll Americas Engineering Solutions, Inc. (Ramboll) has prepared this Corrective Action Groundwater Monitoring Plan (GMP) on behalf of Newton Power Plant (NPP), operated by Illinois Power Generating Company (IPGC). This GMP will apply specifically to the coal combustion residuals (CCR) Unit referred to as the Primary Ash Pond (PAP), CCR identification (ID) number (No.) 501, Illinois Environmental Protection Agency (IEPA) ID No. W0798070001-01, and National Inventory of Dams (NID) No. IL50719. The PAP is an active CCR surface impoundment (SI), with a design capacity of approximately 9,715 acre-feet used to manage CCR and non-CCR waste streams at the NPP. This Corrective Action GMP includes 35 I.A.C. § 845 content requirements specific to 35 I.A.C. § 845.630 (*Groundwater Monitoring System*), 35 I.A.C. § 845.640 (*Groundwater Sampling and Analysis*), 35 I.A.C. § 845.650 (*Groundwater Monitoring Program*), and 35 I.A.C. § 845.680 (*Implementation of the Corrective Action Plan*) for the PAP at the NPP.

A checklist in **Table 1-1** provides references to sections, tables, and figures within this document that meet the specific requirements of 35 I.A.C. § 845.630, 35 I.A.C. § 845.640, 35 I.A.C. § 845.650, and 35 I.A.C. § 845.680.

This Corrective Action GMP is included as Appendix B to the Corrective Action Plan for the NPP PAP. The Corrective Action Plan proposes source control (*i.e.,* closure of the PAP) followed by groundwater polishing (GWP) as the remedy for the PAP. As described in the Corrective Action Plan, the proposed remedy meets the performance standards of 35 I.A.C. § 845.670(d) and addresses all current and potential future releases from the PAP. Likewise, this Corrective Action GMP establishes how data will be collected, documented, and evaluated to assess remedy effectiveness for all currently documented and potential future releases from the PAP[1] per the process outlined in **Figure 1-1**.

Adaptive site management strategies are an integral part of corrective action groundwater monitoring. The adaptive site management approach consistent with National Research Council, Interstate Technology & Regulatory Council and United States Environmental Protection Agency (USEPA) methodologies will allow timely incorporation of new site information throughout corrective action to ensure the achievement of the groundwater protection standard (GWPS). The adaptive site management approach expedites progress toward meeting the GWPS while acknowledging uncertainties, such as the persistence of current groundwater flow directions and potential related changes in geochemical conditions. The structured decision-making process proposed in this Corrective Action GMP includes specific metrics used to evaluate remedy progress, criteria which would trigger adaptive management evaluation, and options for those management actions.

1.2 Site Location and Background

The NPP is located in Jasper County in the southeastern part of central Illinois, approximately seven miles southwest of the town of Newton. The NPP operates as a coal-fired power plant with

[1] The presence of exceedances at the waste boundary will continue to be evaluated under the Operating Permit GMP previously submitted to IEPA [5].

three CCR units present, including the PAP and two landfills: the Phase 1 Landfill (LF 1) located northwest and west of the PAP, and the Phase 2 Landfill (LF 2) located to the west of the PAP. The PAP is located within Section 26 and the west half of Section 25, Township 6 North, Range 8 East (**Figure 1-2**). The PAP is located south of the NPP and surrounded by Newton Lake to the south, east, and west (**Figure 1-3**). Beyond the lake is agricultural land.

The PAP was constructed in 1977 and has a design capacity of approximately 9,715 acre-feet. There is also a non-CCR 83.6 acre-feet Secondary Pond located immediately south of the PAP. The PAP has a surface area of 404 acres and the Secondary Pond has an area of 9.3 acres. The PAP currently receives stormwater runoff, bottom ash, fly ash, and low-volume wastewater from the plant's two coal-fired boilers. The SI is operated per National Pollutant Discharge Elimination System Permit No. IL0049191, Outfall 001 (located at the Secondary Pond).

1.3 Conceptual Site Model

Significant site investigation has been completed at the NPP to characterize the geology, hydrogeology, and groundwater quality. Based on extensive investigation and monitoring, the PAP has been well characterized as detailed in the Hydrogeologic Site Characterization Report (HCR) [1] included in the Operating Permit Application[2] and in the Nature and Extent Report [2].[3] A conceptual site model (CSM) has been developed and is discussed below.

In addition to the CCR, five hydrostratigraphic units have been identified at the PAP based on stratigraphic relationships, geologic composition, and common hydrogeologic properties. The units, listed from surface downward, are summarized as follows:

- **Upper Drift (UD)/Potential Migration Pathway (PMP):** The UD is composed of the low permeability silts and clays of the Peoria Silt and Sangamon Soil and the sandier soils of the Hagarstown Member (*i.e.,* PMP).
  - **Hagarstown Member/PMP:** The Hagarstown Member consists of discontinuous sandier deposits of the UD, where present, and overlies the Vandalia Till Member.
- **Upper Confining Unit (UCU):** This unit consists of the low permeability clay and silt of the Vandalia Till Member.
- **Uppermost Aquifer (UA):** This unit is composed of the Mulberry Grove Formation, which has been classified onsite as poorly graded sand, silty sand, clayey sand, and gravel.
- **Lower Confining Unit (LCU):** This unit is comprised of low permeability silt and clay of the Smithboro Till Member and the Banner Formation.
- **Bedrock Unit:** Shale bedrock of the Pennsylvanian-age Mattoon Formation [3] was encountered at the NPP during recent and historical investigations. Based on boring logs, the bedrock surface elevation at the NPP ranges from 408 feet (B141) to 445 feet (APW13) North American Vertical Datum of 1988 [4]. The locations of these wells and measured bedrock elevations indicate the bedrock surface is highest in the southeast portion of the site and slopes downward to the west and north beneath the PAP.

[2] The HCR was previously included as Attachment H of the Newton Primary Ash Pond Operating Permit Application, submitted to IEPA on October 25, 2021.

[3] The Nature and Extent Report was previously submitted to IEPA and is provided with updates as Appendix D of the Corrective Action Alternatives Analysis (CAAA). The CAAA serves as Appendix A to the Corrective Action Plan to which this report is attached.

Groundwater flow in the UA is generally from the north near background wells APW05 and APW06 to the southwest toward a historic drainage feature and southeast toward Newton Lake. Specifically, groundwater flow is north to south beneath the center of the PAP (from APW05/APW06 toward APW09/APW15). Beneath the western portion of the PAP, flow is west to southwest converging towards a former surface drainage feature located west of the PAP and an area where the UA is lowest in elevation and has the highest hydraulic conductivity. Beneath the eastern portion of the PAP, groundwater flows east to southeast (from APW05 toward APW11-APW14). Groundwater elevations exhibit limited variability, generally less than one to two feet per year. Flow directions are generally consistent between seasons. Groundwater elevations and contours for the October 2024 groundwater monitoring event are presented in **Figure 1-4**.

1.4 Groundwater Quality

Groundwater monitoring in accordance with the proposed Operating GMP and sampling methodologies provided in the operating permit application for groundwater compliance at the PAP began in the second quarter of 2023 [5]. The proposed compliance monitoring wells yield groundwater samples that represent the quality of downgradient groundwater at the CCR boundary (as required in 35 I.A.C. § 845.630(a)(2)).

The Event 1 (E001) quarterly groundwater monitoring event was completed on April 28, 2023. In accordance with 35 I.A.C. § 845.610(b)(3)(C) and the statistical analysis plan submitted with the operating permit application (Appendix A of the Groundwater Monitoring Plan), constituent concentrations observed at compliance wells were evaluated for compliance with the GWPSs summarized in 35 I.A.C. § 845.600 to determine exceedances of the GWPS.[4] The following GWPS exceedances at compliance groundwater monitoring wells were identified [6]:

- Chloride at well APW15
- Lithium at well APW10
- Sulfate at wells APW02, APW04, APW05S, and APW10
- Total dissolved solids (TDS) at wells APW02, APW04, and APW05S

Pursuant to 35 I.A.C. § 845.650(e), an Alternative Source Demonstration (ASD) presented evidence demonstrating that sources other than the PAP were the cause of the chloride GWPS exceedance at APW15 [4]. IEPA did not concur with the ASD due to alleged data gaps [7].

IPGC submitted written comments and additional information in response to IEPA's request for information and filed a petition asking the Illinois Pollution Control Board (IPCB) to review IEPA's ASD denial. The petition included a motion for a partial stay of the 35 I.A.C. § 845 requirements as they apply to the exceedance of the chloride GWPS at the PAP. IEPA had no objection to the requested stay, which was granted by IPCB to IPGC on January 18, 2024.

Subsequent compliance sampling events (following E001) were evaluated for exceedances of the GWPS as described in 35 I.A.C. § 845.600 [8, 9, 10, 11, 12, 13]. Exceedances identified during

[4] Throughout this document, "exceedance" or "exceedances" is intended to refer only to potential exceedances of proposed applicable background statistics or Groundwater Protection Standards (GWPSs) as described in the proposed groundwater monitoring program, which was submitted to the IEPA on October 25, 2021 as part of IPGC's operating permit application for the Newton Power Plant Primary Ash Pond. That operating permit application, including the proposed groundwater monitoring program, remains under review by the IEPA and therefore IPGC has not identified any actual exceedances.

the subsequent events were consistent with those listed above. In addition to the exceedances listed above, the following exceedances were identified:

- TDS at well APW12

In accordance with 35 I.A.C. § 845.660, a Corrective Measures Assessment was developed to address current and potential future GWPS exceedances originating from the PAP, excluding the chloride exceedance addressed in the ASD, and was submitted to IEPA on April 3, 2024 [14]. The 35 I.A.C. § 845.650 groundwater monitoring requirements will continue to ensure that there will be timely detection of changes in groundwater quality during the stay. The inclusion of the chloride GWPS exceedances in the Corrective Action Plan process will remain under review pending IPCB's final action on IPGC's appeal of the IEPA ASD denial or until IPCB orders otherwise. The selected remedy will meet the performance standards of 35 I.A.C. § 845.670(d) and once implemented and completed, the selected remedy presented in the Corrective Action Plan will attain the GWPSs.

1.5 Nature and Extent Investigation

A limited investigation was conducted in 2024 to further assess the nature, degree, and extent of lithium, sulfate, and TDS groundwater impacts downgradient of the PAP in accordance with 35 I.A.C. § 845.650. The following monitoring wells were installed in June 2024 to further delineate the extent of lithium, sulfate, and TDS above the GWPS:

- APW19S and APW20S, downgradient of APW02
- APW21S and APW22S, west and northeast, respectively, of APW05S
- Well pair APW23 and APW23S, downgradient of the APW10/APW04 well pair

Soil lithology was logged continuously from borings completed at the above locations, and soil samples were collected from each boring for laboratory analysis from within the screened interval of each well and from the soil just above the screened interval. Soil samples were analyzed for total metals by 7-step sequential extraction procedure, bulk mineralogy and clay mineralogy by x-ray diffraction, loss on ignition, and cation exchange capacity.

Additionally, groundwater at the six new delineation wells was sampled and analyzed for 35 I.A.C. § 845.600 parameters, major ions, and dissolved iron and manganese. An evaluation of the data is provided in the Addendum to the Nature and Extent Report.[5]

[5] The Nature and Extent Report was previously submitted to IEPA [2] and is provided with updates as Appendix D of the CAAA. The CAAA serves as Appendix A to the Corrective Action Plan to which this report is attached.

2. CORRECTIVE ACTION GROUNDWATER MONITORING PLAN

This Corrective Action GMP is being provided to propose a groundwater monitoring program specific to the PAP that will comply with 35 I.A.C. § 845.680. The Corrective Action GMP will monitor and evaluate groundwater quality specifically to document the effectiveness of the corrective action remedy. The groundwater monitoring program will include sampling and analysis procedures that are consistent and that provide an accurate representation of groundwater quality.

2.1 Corrective Action Groundwater Monitoring Program and Parameters

2.1.1 35 I.A.C. § 845 Corrective Action Groundwater Monitoring

The proposed 35 I.A.C. § 845 corrective action monitoring well network will consist of thirteen wells to document the effectiveness of the corrective action remedy and ultimately demonstrate compliance with GWPSs (**Figure 2-1**). The wells included in the corrective action monitoring well network include select compliance monitoring wells from the Operating GMP network (*e.g.*, those with previously reported exceedances of the GWPS) (**Section 1.4**) and monitoring wells installed during the Nature and Extent Investigation (**Section 1.5**).

As appropriate to meet the corrective action monitoring objectives and evaluate the effectiveness of the corrective action remedy (as described in **Section 3**), the corrective action monitoring program involves assigning each well to a monitoring category or purpose (**Table 2-1**). These monitoring categories include:

- **Inside Plume**: monitoring wells installed at the CCR boundary with GWPS exceedances.
- **Plume Definition**: wells located along the lateral or vertical boundary of the plume.

A summary of the well locations and associated purpose as it relates to the above categories is presented in **Table 2-1** and **Figure 2-1**. Monitoring well depths and construction details are listed in **Table 2-2**, and boring logs and monitoring well construction forms are provided in **Appendix A**. Groundwater samples will be collected and analyzed for the laboratory and field parameters in **Table 2-3**. Laboratory parameters include major ions for evaluating groundwater chemistry and constituents of concern (COCs) (*i.e.*, reported exceedances in accordance with the Operating GMP) the Corrective Action is intended to address. Sampling to evaluate corrective action effectiveness will begin the quarter after the corrective action remedy is implemented and commissioned.

2.2 Sampling Schedule

All wells in the 35 I.A.C. § 845 corrective action GMP network, as presented in **Table 2-1**, will be sampled quarterly to provide a complete picture of corrective action effectiveness. Groundwater elevations will be determined at the time of sample collection from each well. Sampling will end in accordance with 35 I.A.C. § 845.680(c), when compliance with the GWPS has been demonstrated "at all points within the plume of contamination that lies beyond the waste boundary […] for a period of three consecutive years" (details in **Section 3.3**).

Consistent with 35 I.A.C. § 845.650(b)(4), quarterly sampling may be reduced to a semiannual frequency with IEPA approval after completion of five years of monitoring. A request for reduced

sampling frequency will include a demonstration that corrective action monitoring effectiveness will not be compromised; sufficient data has been collected to evaluate ongoing remedy effectiveness; and existing data show trends consistent with anticipated remedy performance (details in **Section 3.1**).

2.3 Groundwater Sample Collection

Groundwater sampling procedures have been developed and the collection of groundwater samples is being implemented to meet the requirements of 35 I.A.C. § 845.640. In addition to groundwater well samples, quality assurance samples will be collected as described in **Section 2.5** (**Table 2-3**). Groundwater samples will be collected and analyzed in accordance with the Multi-Site Sampling and Analysis Plan [15].[6]

2.4 Laboratory Analysis

Laboratory analysis will be performed consistent with the requirements of 35 I.A.C. § 845.640(j) by a state-certified laboratory using methods approved by IEPA and USEPA. Laboratory methods may be modified based on laboratory equipment availability or procedures, but the Reporting Limit (RL) for all parameters analyzed, regardless of method, will be lower than the applicable groundwater quality standard [16]. Concentrations lower than the RL will be reported as less than the RL.

2.5 Quality Assurance Program

Consistent with the requirements of 35 I.A.C. § 845.640(a)(5), the sampling and analysis program includes procedures and techniques for quality assurance/quality control (QA/QC) [16].[6] Additional quality assurance samples to be collected will include the following:

- Field duplicates will be collected at a frequency of one per group of ten or fewer investigative water samples.
- One equipment blank sample will be collected and analyzed for each day of sampling. If dedicated sampling equipment is used, then equipment blank samples will not be collected.
- The duplicate and equipment blank quality assurance samples will be supplemented by the laboratory QA/QC program, which typically includes:
  - Regular generation of instrument calibration curves to assure instrument reliability
  - Laboratory control samples and/or quality control check standards that have been spiked, and analyses to monitor the performance of the analytical method
  - Matrix spike/matrix spike duplicate analyses to determine percent recoveries and relative percent differences for each of the parameters detected
  - Analysis of replicate samples to check the precision of the instrumentation and/or methodology employed for all analytical methods
  - Analysis of method blanks to assure that the system is free of contamination

Water quality meters used to measure pH and turbidity will be calibrated according to manufacturer's specifications. At a minimum, it is recommended that calibration of pH occur daily

[6] The Multi-Site Sampling and Analysis Plan and Multi-Site Quality Assurance Project plan are living documents which are subject to routine evaluation and updates in accordance with USEPA recommended best practices [22, 23].

prior to sampling and checked for accuracy at the end of each day. Unusual or suspect pH measurements during sampling events will be flagged, evaluated, and additional calibration may be performed throughout the sampling events. Turbidity meters will be checked daily, prior to and following sampling. Unusual measurements or erratic meter performance will be flagged and evaluated for overall effects on the data prior to reporting.

2.6 Groundwater Monitoring Well Maintenance Plan

Consistent with the requirements of 35 I.A.C. § 845.630(e)(2), maintenance will be performed according to the Multi-Site Sampling and Analysis Plan [15] as needed to assure that the monitoring wells provide representative groundwater samples. Monitoring wells will be inspected during each groundwater sampling event; inspections will consist of the following:

- Visual inspection, clearing of vegetation, replacement of markers, and painting of protective casings as needed to assure that monitoring wells are clearly marked and accessible
- Visual inspection and repair or replacement of well aprons as needed to assure that they are intact, drain water away from the well, and have not heaved
- Visual inspection and repair or replacement of protective casings as needed to assure that they are undamaged, and that locks are present and functional
- Checks to assure that well caps are intact and vented, unless in flood-prone areas in which case caps will not be vented
- Routine measurement of monitoring well depths to determine the degree of siltation within the wells. Wells will be redeveloped as needed to remove siltation from the screened interval if it impedes flow of water into the well
- Checks to assure that wells are clear of internal obstructions, and flow freely

If wells are damaged or become otherwise inoperable, they will be replaced by wells screened at the same elevation and as close to the original well as possible (ideally within 10 feet) and notification will be provided to IEPA. If a replacement well cannot be installed within approximately 10 feet of the original well location, notification will be sent to IEPA and a monitoring well will be installed as close as possible to the original monitoring well and given a new well identification number. Any well replacement activities will also be documented in the Annual Groundwater Monitoring and Corrective Action Report.

2.7 Statistical Analysis

A Multi-Site Statistical Analysis Plan (StAP) (**Appendix B**) has been developed to summarize the statistical procedures that will be used to evaluate the groundwater results.

2.8 Data Reporting

Groundwater monitoring and analysis completed in accordance with 35 I.A.C. § 845 under an approved monitoring program will be reported to IEPA annually by January 31 as required by I.A.C. § 845.550, for data collected the preceding year. The Annual Groundwater Monitoring and Corrective Action Report will include the status of the groundwater monitoring and Corrective Action Plan for the PAP in addition to other requirements detailed in 35 I.A.C. § 845.610(e).

2.9 Compliance with Applicable Groundwater Protection Standards

As provided in 35 I.A.C. § 845.680(c)(2), corrective action is considered complete when compliance with the GWPS has been achieved by demonstrating that concentration of constituents listed in 35 I.A.C. § 845.600 have not exceeded the GWPSs for a period of three consecutive years, using the statistical procedures and performance standards in 35 I.A.C. § 845.640(f) and (g).

Attainment of GWPSs and conclusion of corrective action monitoring is discussed below in **Section 3.3**.

If a new exceedance is determined during monitoring under the Operating GMP, the Corrective Action groundwater monitoring program will be evaluated for monitoring of additional locations and/or constituents using the adaptive site management methods presented herein.

3. EFFECTIVENESS OF THE CORRECTIVE ACTION REMEDY

The methods for evaluating the effectiveness of the corrective action remedy described in this section are based on the following guidance documents:

- "Methods for Evaluating the Attainment of Cleanup Standards Volume 2: Ground Water," USEPA, Office of Policy, Planning, and Evaluation, 1992. [17]
- "Groundwater Remedy Completion Strategy: Moving Forward with the End in Mind," USEPA, Office of Solid Waste and Emergency Response, 2014. [18]
- "Adaptive Site Management – A Framework for Implementing Adaptive Management at Contaminated Sediment Superfund Sites," USEPA, Office of Superfund Remediation and Technology Innovation, 2022. [19]
- "Environmental Cleanup Best Management Practices: Effective Use of the Project Life Cycle Conceptual Site Model," USEPA, Office of Solid Waste and Emergency Response, 2011. [20]

Evaluation of corrective action remedy effectiveness will occur in three phases (**Figure 3-1**): remedy progress evaluation, stability evaluation, and attainment evaluation [17].

1. Remedy progress evaluation occurs after implementation of corrective actions to assess if the remedy is functioning as anticipated.
2. The stability evaluation, which assesses if a new post-treatment steady state in the groundwater has been reached.
3. Attainment evaluation occurs after a new steady state has been achieved and assesses if COC concentrations are below the GWPS.

COCs are parameters with exceedances of the GWPS to be addressed by the Corrective Action Plan. Corrective action monitoring at NEW PAP includes the following COC parameters:

- Lithium, sulfate, and TDS

The effectiveness of the remedy at each phase is evaluated using performance metrics designed to assess the goals of that phase. Performance metrics answer questions designed to evaluate multiple aspects of remedy effectiveness with the ultimate goal of holistically guiding management decisions [18]. These metrics may be evaluated using qualitative (subject to expert judgement) or quantitative (numerical outcomes) methods.

This section details the goals and performance metrics of each phase of remedy evaluation. Within each phase, the well groups described in **Section 2.1** have distinct applicable metrics and/or potential management actions consistent with the role of that well group within the corrective action monitoring framework. The remedy evaluation metrics documented here are specific to wells within the Corrective Action monitoring program.

3.1 Remedy Progress Evaluation

The goal of remedy process evaluation is to determine if a groundwater remedy is on track to achieve cleanup standards within the proposed time frame and to inform adaptive management decisions if performance metrics are not achieved. Evaluation of remedy progress includes evaluating the response of COCs in individual monitoring wells and in the plume as a whole. Remedy progress is evaluated using performance metrics as described below. **Table 3-1** details

the questions used to assess remedy progress and metrics which would trigger additional evaluation of adaptive site management options. **Figure 3-2** presents an outline of the decision-making process regarding adaptive management actions (the first step of which is assessing remedy progress per **Table 3-1**).

Documentation of remedy progress metrics will be provided in the Annual Groundwater Monitoring and Corrective Action Report (**Section 2.8**) beginning after the second year of data collection: a minimum of eight data points is required to complete meaningful statistical analysis required for evaluation of the remedy progress metrics, which will be available after two years of quarterly sampling. Per USEPA guidance [18], a thorough review of corrective action progress and remedy effectiveness will be conducted every five years. A Five-Year Annual Groundwater Monitoring and Corrective Action Report will evaluate the comprehensive data set and, if triggered by the results of the remedy progress evaluation metrics (**Table 3-1**), evaluate whether adaptive management actions are needed (**Figure 3-2**). The five-year time frame allows adaptive management decisions to be based on robust data sufficient to complete meaningful statistical analysis while remaining responsive to changing site conditions [18]. The remedy progress evaluation metrics and triggers for additional evaluation are described below.

3.1.1 Comparison to Groundwater Protection Standard

The Inside Plume wells in this monitoring plan were defined based on exceedances of the GWPS. The question posed to evaluate whether exceedances of the GWPS occur, and associated method of evaluation is (**Table 3-1**):

- Are COC concentrations greater than the GWPS? – Compare data points or summary statistics to site-specific GWPS values.

COC concentrations below the GWPS at Inside Plume wells may indicate that remedial actions are approaching completion and that moving to the next phase of remedy effectiveness evaluation may be warranted (see **Section 3.2**). Persistence of COC concentrations above the GWPS at Plume Definition wells may indicate that the plume is no longer properly delineated. Therefore, the trigger criterion for further evaluation is a central tendency measure of the last eight data points exceeding the GWPS.

3.1.2 Agreement with Groundwater Model

A groundwater flow and transport model[7] was used to compare the anticipated time to reach the GWPS for the different corrective actions considered at the PAP.

The question posed to evaluate agreement of corrective action remedy progress with the groundwater model results is provided in **Table 3-1** and summarized below:

- Are concentrations of COCs at individual wells consistent with modeling expectations? – Evaluate if the observed results track with the predicted results in general direction and magnitude using expert professional judgement.

Only Inside Plume and Plume Definition wells included in the flow and transport model are evaluated according to this metric. Trigger criteria for additional adaptive site management evaluation include monitoring results failing to follow the general magnitude and direction of

[7] The Groundwater Modeling Technical Memorandum is included as an attachment to the Corrective Actions Alternative Analysis presented as part of the Corrective Action Plan.

groundwater model results at one or more locations. It is acceptable to conclude that no further adaptive site management evaluation is triggered if future observations do not precisely match modeled results on an individual well basis if the direction of remedy progress is adequate.

3.1.3 Trend Analysis

Evaluation of COC trends in wells both within and outside of the plume is a major component of remedy progress evaluations [17, 18]. Decreasing COC concentrations within the groundwater plume provides critical support for remedy effectiveness evaluations. Changing concentrations in wells defining the plume may indicate unanticipated plume migration or a need for better plume definition. Both short-term and long-term trends are important to evaluate remedy performance [17]. All trend analyses are performed in accordance with the Multi-Site StAP (**Appendix B**) and the USEPA Unified Guidance for groundwater statistics [21].

The questions posed to evaluate if COC concentrations are decreasing in Inside Plume wells and the associated methods for evaluation are provided in **Table 3-1** and summarized as follows:

- Are average plume COC concentrations decreasing? – Evaluate trend based on quarterly average of COC concentrations of Inside Plume wells, both for the last eight sampling events and since corrective action was initiated.

The questions posed to evaluate if COC concentrations are changing in Inside Plume wells and Plume Definition wells and the associated methods for evaluation are provided in **Table 3-1** and summarized below:

- Are concentrations of COCs at individual wells changing? – Evaluate trend of COC concentrations, both for the last eight sampling events and since corrective action was initiated.

The goal of the corrective action is to reduce COC concentrations in the groundwater. Therefore, trigger criteria have been established for the two types of corrective action monitoring wells as follows:

- Inside Plume well triggers for adaptive site management evaluation are based on no decreasing trend in COC concentrations (short-term or long-term).
- Plume Definition well triggers are based on increasing COC concentrations, which may indicate improper delineation of the plume. Therefore, the trigger criterion for adaptive site management evaluation at Plume Definition wells is increasing short- or long-term trend.

3.1.4 Adaptive Management Actions

The goal of adaptive management actions is to understand why performance metrics are not met and, if the remedy is found to be unsuccessful in meeting remediation goals, drive supplemental corrective actions or, in extreme cases, re-evaluation of remedy selection. This section describes in greater detail the steps in the flow chart presented in **Figure 3-2** (adapted from Figure 2 in [18]).

As the remedy progress evaluation metrics are evaluated annually, failure to meet the metrics (as described in **Table 3-1**) leads to further action. If the data available at the time of the Five-Year Review are anticipated to be inadequate for determining the need for adaptive site management actions, additional data may be collected before the Five-Year Review including collecting samples from additional wells or measuring additional parameters.

If the remedy progress is not found to be adequate during the Five-Year Review, the most critical question is whether or not the remedy is likely to achieve the GWPS in a reasonable time frame. This may be evaluated using methods such as regression analysis or analysis of groundwater flow. If the remedy progress is not judged to be adequate but the remedy is likely to achieve the GWPS in a reasonable time frame, the CSM or the groundwater model may require updating to reflect evolving field conditions[8]. Additional data collected may also suggest ways to optimize the monitoring network or performance metrics [18].

If the remedy does not appear likely to achieve the GWPS in a reasonable time frame, it may be due to changing hydrogeochemical dynamics within the plume or an additional source of COCs not accounted for in the CSM. If available data suggests either occurrence, the Five-Year Review will describe additional activities planned to investigate if the existing remedy is still a viable option for attaining the GWPS. If the remedy is still viable, an update to the CSM and groundwater model is likely required [18, 20] and will be conducted after additional investigation is completed.

If the remedy does not appear likely to achieve the GWPS in a reasonable time frame, there is no alternative source of COCs not accounted for in the CSM, and the plume is appropriately delineated; or if the investigation into the hydrogeochemical changes or alternative source of COCs determines that the remedial action is no longer solely viable as a corrective action, an evaluation of additional remedial actions will be initiated.

If the remedy progress evaluation metrics indicate that concentrations across the monitoring network are below the GWPS, the remedy progress phase may be considered complete, and the monitoring program may move to the Stability Evaluation phase (see **Section 3.2**).

3.2 Stability Evaluation

Evaluation of groundwater stability reflects the idea that implementation of a remedy will, by necessity, cause changes to the physical and chemical environment of the groundwater. Before assessing if compliance with the GWPS has been attained (**Section 3.3**), any transient effects of treatment on the groundwater (*e.g.*, rebounding concentrations) should be allowed to dissipate [17]. Stability is evaluated to assess if a new stable equilibrium has been reached after final closure has been implemented. Stability is achieved when groundwater elevations are stable (accounting for seasonal variability), average COC concentrations are stable across all wells, and COC concentrations are stable at each well.

Trends in groundwater elevation and COC concentrations at each plume well will be evaluated using the most recent eight data points (*i.e.*, two years of data when sampling quarterly) according to methods presented in the Multi-Site StAP (**Appendix B**). This metric is met for a plume well when there is no statistically significant trend in groundwater elevation or COC concentrations.

Plume COC concentrations will be evaluated for trend using the most recent eight data points, with the average concentration across plume wells per sampling event considered as one data point, according to methods presented in the Multi-Site StAP (**Appendix B**). This metric is met when there is no statistically significant trend in average COC concentrations.

[8] As stated in Section 1.4.1 of the Corrective Action Plan, "Estimated times to reach GWPS will be periodically reviewed and updated based on observed corrective action performance via an adaptive site management strategy."

3.3 Attainment Evaluation and Conclusion of Corrective Action Monitoring

The ultimate goal of groundwater corrective action is to attain compliance with the GWPS for each COC in Inside Plume wells. After stability has been achieved per the metrics discussed in **Section 3.2**, attainment evaluation will begin. Per 35 I.A.C. § 845.680(c), corrective action is considered complete when compliance with the GWPS has been demonstrated "at all points within the plume of contamination that lies beyond the waste boundary […] for a period of three consecutive years". Attainment of the GWPS will be evaluated in accordance with the Multi-Site StAP (**Appendix B**). Corrective action monitoring is considered complete for the site when COCs in the corrective action monitoring well network do not exceed the GWPS for three years.

4. REFERENCES

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[4] Ramboll Americas Engineering Solutions, Inc., 35 I.A.C. § 845.650(e): Alternative Source Demonstration, Primary Ash Pond, Newton Power Plant, Newton, Illinois, IEPA ID: W0798070001-1., October 6, 2023.

[5] Ramboll Americas Engineering Solutions, Inc., Groundwater Monitoring Plan, Newton Power Plant, Primary Ash Pond, Newton, Illinois, Illinois Power Generating Company, October 25, 2021.

[6] Ramboll Americas Engineering Solutions, Inc., 35 I.A.C. § 845.610(B)(3)(D) Groundwater Monitoring Data and Detected Exceedances, Quarter 2, 2023, Primary Ash Pond, Newton Power Plant, Newton, Illinois, August 7, 2023.

[7] Illinois Environmental Protection Agency, "Letter from Michasel Summers (IEPA) to Phil Morris (Illinois Power Generating Company): Re: Newton Power Plant Primary Ash Pond - W0798070001-01," October 6, 2023.

[8] Ramboll Americas Engineering Solutions, Inc., 35 I.A.C. § 845.610(B)(3)(D) Groundwater Monitoring Data and Detected Exceedances Quarter 3, 2023: Primary Ash Pond, Newton Power Plant, Newton, Illinois., January 8, 2024.

[9] Ramboll Americas Engineering Solutions, Inc., 35 I.A.C. § 845.610(B)(3)(D) Groundwater Monitoring Data and Detected Exceedances Quarter 4, 2023: Primary Ash Pond, Newton Power Plant, Newton, Illinois., January 16, 2024.

[10] Ramboll Americas Engineering Solutions, Inc., 35 I.A.C. § 845.610(B)(3)(D) Groundwater Monitoring Data and Detected Exceedances Quarter 1, 2024: Primary Ash Pond, Newton Power Plant, Newton, Illinois, April 27, 2024.

[11] Ramboll Americas Engineering Solutions, Inc., 35 I.A.C. § 845.610(B)(3)(D) Groundwater Monitoring Data and Detected Exceedances Quarter 2, 2024: Primary Ash Pond, Newton Power Plant, Newton, Illinois, August 11, 2024.

[12] Ramboll Americas Engineering Solutions, Inc., 35 I.A.C. § 845.610(B)(3)(D) Groundwater Monitoring Data and Detected Exceedances Quarter 3, 2024: Primary Ash Pond, Newton Power Plant, Newton, Illinois, November 10, 2024.

[13] Ramboll Americas Engineering Solutions, Inc., 35 I.A.C. § 845.610(B)(3)(D) Groundwater Monitoring Data and Detected Exceedances Quarter 4, 2024: Primary Ash Pond, Newton Power Plant, Newton, Illinois., January 11, 2025.

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[15] Ramboll Americas Engineering Solutions, Inc., "Multi-Site Sampling and Analysis Plan," December 28, 2022. [Online]. Available: https://www.luminant.com/documents/ccr/il-ccr/Newton/2023/Multi-Site%20Sampling%20Analysis%20Plan-Newton-W0798070001%E2%80%9001.pdf.

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[17] United States Environmental Protection Agency, "Methods for Evaluating the Attainment of Cleanup Standards Volume 2: Groundwater," Office of Policy, Planning, and Evaluation, 1992.

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TABLES

Table 1-1. 35 I.A.C. § 845 Requirements Checklist
Corrective Action Groundwater Monitoring Plan
Newton Power Plant
Primary Ash Pond
Newton, IL

35 I.A.C. § 845 Reference	35 I.A.C. § 845 Components	Location of Information in Corrective Action GMP
845.630	**Groundwater Monitoring Systems**	
845.630(a)(2)	Potential contaminant pathways must be monitored.	NA
845.630(a) 845.630(b) 845.630(c)	At least two upgradient wells and four downgradient wells (min. 1 and 3, but requires additional documentation)	Section 2.1 Figure 1-4
845.630(a) 845.630(b) 845.630(c)	Downgradient Well Density	Figure 1-4
845.630(a)(2)	Downgradient wells at waste boundary	Figure 1-4
845.640	**Groundwater Sampling and Analysis Requirements**	
845.640(a)	Consistent sampling and analysis procedures	Section 2 Tables 2-3 and 2-4
845.640(b)	Methods are appropriate	Section 2 Tables 2-3 and 2-4
845.640(c)	Groundwater elevations must be measured in each well prior to purging, each time groundwater is sampled.	Section 2.2
845.640 (d)(e)(f)(g)(h)	Establishment of background and application of statistical methods	Section 2.7 Appendix A
845.640(i)	Analyze total recoverable metals	Table 2-3
845.640(j)	Analyze groundwater samples using a certified laboratory	Section 2.4

Table 1-1. 35 I.A.C. § 845 Requirements Checklist
Corrective Action Groundwater Monitoring Plan
Newton Power Plant
Primary Ash Pond
Newton, IL

35 I.A.C. § 845 Reference	35 I.A.C. § 845 Components	Location of Information in Corrective Action GMP
845.650	**Groundwater Monitoring Program**	
845.650(a)	Must include monitoring for all constituents with a groundwater protection standard in Section 845.600(a), calcium, and turbidity	Section 2.1 Table 2-3
845.650(b)(c)	Groundwater Monitoring Frequency	Section 2.2
845.650(d)(e)	Exceedances of the groundwater protection standard	Sections 2.9 and 3.1.1
845.650(b)(2) and (3)	Staff gauge/ piezometer to monitor head in impoundment	Figure 1-4 (XSG01)
NA	Staff gauge/ piezometer to monitor head of neighboring surface water body	Figure 1-4 (SG03)
845.680	**Implementation of the Corrective Action Plan**	
845.680(a)(1)(a)	Establish and implement a corrective action groundwater monitoring program that meets requirements of 845.650	Sections 2.1 and 3 Tables 2-1 and 3-1 Figure 2-1
845.680(a)(1)(b)	Document the effectiveness of the corrective action remedy	Section 3
845.680(a)(1)(c)	Demonstrate compliance with the groundwater protection standard under Subsection [845.680] (c)	Sections 2.9 and 3

Table 1-1. 35 I.A.C. § 845 Requirements Checklist
Corrective Action Groundwater Monitoring Plan
Newton Power Plant
Primary Ash Pond
Newton, IL

35 I.A.C. § 845 Reference	35 I.A.C. § 845 Components	Location of Information in Corrective Action GMP
845.680(c)(1)	Demonstrate compliance with the groundwater protection standards established by 845.600 has been achieved at all points within the plume of contamination that lies beyond the waste boundary	Section 3.3
845.680(c)(2)	Demonstrate that concentrations of constituents listed in 845.600 have not exceeded the groundwater protection standards for a period of three consecutive years using statistical procedures and performance standards in 845.640(f) and (g)	Sections 3.3 and 3.4

[O: CJC 10/23/2024; C: LDC 11/7/2024]

Notes:
GMP = Groundwater Monitoring Plan
NA = Not Applicable

Table 2-1. Summary of Monitoring Well Locations and Purpose

Corrective Action Groundwater Monitoring Plan

Newton Power Plant

Primary Ash Pond

Newton, IL

Well ID	Monitored Unit	Corrective Action Monitoring Well System	
		Inside Plume	Plume Definition
APW02	UD	X	
APW04	UD	X	
APW05S	UD	X	
APW10	UA	X	
APW11	UA		X
APW12	UD	X	
APW13	UA		X
APW19S	UD	X	
APW20S	UD		X
APW21S	UD	X	
APW22S	UD		X
APW23S	UD	X	
APW23	UA		X

[O: CJC 10/23/2024; C: AOC 10/30/2024]

Notes:

UA = uppermost aquifer

UD = upper drift

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Table 2-2. Monitoring Well Locations and Construction Details
Corrective Action Groundwater Monitoring Plan
Newton Power Plant
Primary Ash Pond
Newton, IL

Location	HSU	Date Constructed	Top of PVC Elevation (ft)	Measuring Point Elevation (ft)	Measuring Point Description	Ground Elevation (ft)	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Screen Top Elevation (ft)	Screen Bottom Elevation (ft)	Well Depth (ft bgs)	Bottom of Boring Elevation (ft)	Screen Length (ft)	Screen Diameter (inches)	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)
APW02	UD	6/19/2010	533.4	533.6	Top of Casing	530.1	9.7	19.7	520.4	510.4	23.492	506.6	10	2	38.925926	-88.293911
APW04	UD	6/19/2010	525.1	525.2	Top of Casing	521.9	7.7	17.7	514.2	504.2	21.372	500.5	10	2	38.927451	-88.273118
APW05S	UD	1/19/2021	544.4	544.5	Top of Casing	541.4	10.0	20.0	531.4	521.4	23.164	518.2	10	2	38.933951	-88.281029
APW10	UA	11/6/2015	524.5	524.6	Top of Casing	521.8	40.7	45.5	481.1	476.3	48.765	473.0	4.8	2	38.927444	-88.273132
APW11	UA	1/23/2021	539.0	539.2	Top of Casing	536.4	60.0	65.0	476.4	471.4	67.834	468.5	5	2	38.932803	-88.275445
APW12	UD	2/21/2021	546.8	546.9	Top of Casing	543.8	20.0	30.0	523.8	513.8	33.102	510.7	10	2	38.929743	-88.272053
APW13	UA	1/22/2021	538.3	538.5	Top of Casing	535.4	58.5	63.5	476.9	471.9	66.557	468.9	5	2	38.925652	-88.274411
APW19S	UD	6/18/2024	531.8	531.8	Top of Casing	529.6	8.0	18.0	521.6	511.6	20.259	509.3	10	2	38.925146	-88.294493
APW20S	UD	6/18/2024	525.6	525.6	Top of Casing	521.9	13.0	23.0	508.9	498.9	26.668	495.3	10	2	38.925944	-88.294895
APW21S	UD	6/19/2024	545.7	545.7	Top of Casing	541.9	8.0	18.0	533.9	523.9	21.845	520.0	10	2	38.933963	-88.283070
APW22S	UD	6/19/2024	549.0	549.0	Top of Casing	545.6	12.0	22.0	533.6	523.6	25.408	520.2	10	2	38.935718	-88.279442
APW23S	UD	6/20/2024	519.5	519.5	Top of Casing	515.8	8.0	18.0	507.8	497.8	21.74	494.1	10	2	38.926892	-88.273474
APW23	UA	6/19/2024	520.7	520.7	Top of Casing	517.5	32.0	42.0	485.5	475.5	47.171	470.3	10	2	38.926917	-88.273550

[O: CJC 10/23/2024; C: AOC 10/30/2024]

Notes:
All elevation data are presented relative to the North American Vertical Datum 1988 (NAVD88), GEOID 12A
-- = data not available
bgs = below ground surface
ft = foot or feet
HSU = Hydrostratigraphic Unit
PVC = polyvinyl chloride
UA = uppermost aquifer
UD = upper drift

Table 2-3. Sampling and Analysis Summary
Corrective Action Groundwater Monitoring Plan
Newton Power Plant
Primary Ash Pond
Newton, IL

Parameter	Analytical Method [1]	Number of Samples	Field Duplicates [2]	Field Blanks [3]	Equipment Blanks [3]	MS/MSD [4]	Total	Container Type	Minimum Volume [5]	Preservation (Cool to 4 °C for all samples)	Sample Hold Time from Collection Date
Corrective Action Parameter(s) [6]											
Lithium	6020 [7]	13	2	0	0	1	16	plastic	600 mL	HNO_3 to pH<2	6 months
Sulfate	9036 or EPA 300	13	2	0	0	1	16	plastic	50 mL	Cool to 4 °C	28 days
Total Dissolved Solids	SM 2540 C	13	2	0	0	1	16	plastic	200 mL	Cool to 4 °C	7 days
Inorganic Parameters											
Alkalinity, bicarbonate	SM 2320 B	13	2	0	0	1	16	plastic	500 mL	Cool to 4 °C	14 days
Alkalinity, carbonate	SM 2320 B	13	2	0	0	1	16	plastic	500 mL	Cool to 4 °C	14 days
Chloride	9251 or EPA 300	13	2	0	0	1	16	plastic	100 mL	Cool to 4 °C	28 days
Fluoride	9214 or EPA 300	13	2	0	0	1	16	plastic	300 mL	Cool to 4 °C	28 days
Magnesium	6020 [7]	13	2	0	0	1	16	plastic	600 mL	HNO_3 to pH<2	6 months
Sodium	6020 [7]	13	2	0	0	1	16	plastic	600 mL	HNO_3 to pH<2	6 months
Potassium	6020 [7]	13	2	0	0	1	16	plastic	600 mL	HNO_3 to pH<2	6 months
Field Parameters											
pH	SM 4500-H+ B	13	NA	NA	NA	NA	13	flow-through cell	NA	none	immediately
Dissolved Oxygen [8]	SM 4500-O/405.1	13	NA	NA	NA	NA	13	flow-through cell	NA	none	immediately
Temperature [8]	SM 2550	13	NA	NA	NA	NA	13	flow-through cell	NA	none	immediately
Oxidation/Reduction Potential [8]	SM 258O B	13	NA	NA	NA	NA	13	flow-through cell	NA	none	immediately
Specific Conductance [8]	SM 2510 B	13	NA	NA	NA	NA	13	flow-through cell	NA	none	immediately
Turbidity [9]	SM 2130 B	13	NA	NA	NA	NA	13	flow-through cell or hand-held turbidity meter	NA	none	immediately

[O: CJC 10/23/2024, C: AOC 10/30/2024]

Notes:
[1] Analytical method numbers are from SW-846 unless otherwise indicated. Analytical methods may be updated with more recent versions as appropriate.
[2] Field duplicates will be collected at a frequency of one per group of 10 or fewer investigative water samples. Field duplicates will not be collected for radium analysis.
[3] Field blanks will be collected at the discretion of the project manager; Equipment blanks will be collected at a rate of 1 per sampling event if non-dedicated equipment is used.
[4] Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples will be collected at a frequency of one per group of 20 or fewer investigative water samples per CCR unit/multi-unit. Additional volume to be determined by laboratory.
[5] Sample volume is estimated and will be determined by the laboratory.
[6] Determined by reported exceedances under the Operating Groundwater Monitoring Plan
[7] Metals may be analyzed via ICP/ ICP-MS USEPA methods 6010 or 6020 depending on laboratory instrument availability.
[8] Parameter collected for quality assurance and quality control for field sampling purposes only; not required to be collected or reported under 35 IAC § 845; collection of parameter may be discontinued without notification.
[9] If turbidity exceeds 10 NTU, a duplicate sample filtered through a 0.45 micron filter may be collected for metals analysis in addition to the unfiltered sample. Both samples would be submitted for analysis.
< = less than
°C = degrees Celsius
HNO_3 = nitric acid
mL = milliliter
NA = not applicable
NTU = nephelometric turbidity unit

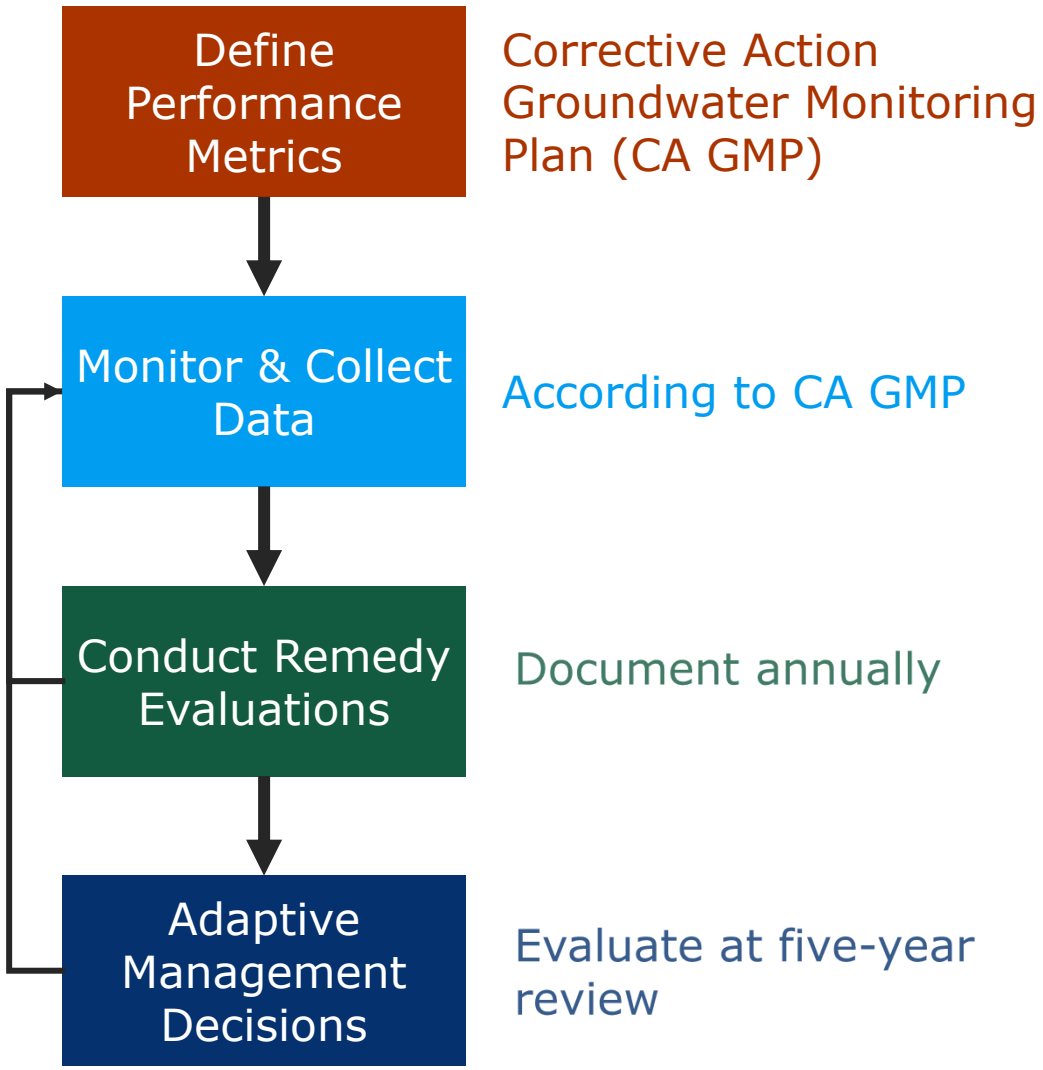
Table 3-1. Adaptive Site Management Metrics and Trigger Criteria
Corrective Action Groundwater Monitoring Plan
Coffeen Power Plant
Ash Pond No. 2
Coffeen, IL

QUESTION	Are COC concentrations greater than the GWPS?		Are concentrations of COCs at individual wells consistent with modeling expectations?[a]		Are the average COC concentrations decreasing?	Are concentrations of COCs at individual wells changing?	Adaptive Site Management Outcome
EVALUATION[b]	Compare data points or summary statistics to site specific GWPS		Do the observed results track with the predicted results in general direction and magnitude? (Professional judgement)		Evaluate trend on quarterly average of well concentrations, both for last 8 data points and since corrective action initiated or closure completed	Evaluate trend of COCs at each well, both for last 8 data points and since corrective action initiated	
Inside Plume	Central tendency concentration of last eight data points above the GWPS	**AND**	Results inconsistent with model	**AND MORE THAN ONE OF**	Neither trend decreasing	Neither trend decreasing	**Additional Evaluation Triggered (See Figure 3-2)**
Lateral/Vertical Plume Definition	Central tendency concentration of last eight data points above the GWPS		Results inconsistent with model		--	Either trend increasing	

[O: CJC 10/23/2024; C: AOC 10/30/2024]

Notes:
a. Only applies to wells included in the flow and transport model
b. To be documented in Annual Monitoring and Corrective Action Reports
= No relevant trigger criteria
COC = constituent of concern
GWPS = groundwater protection standard

FIGURES



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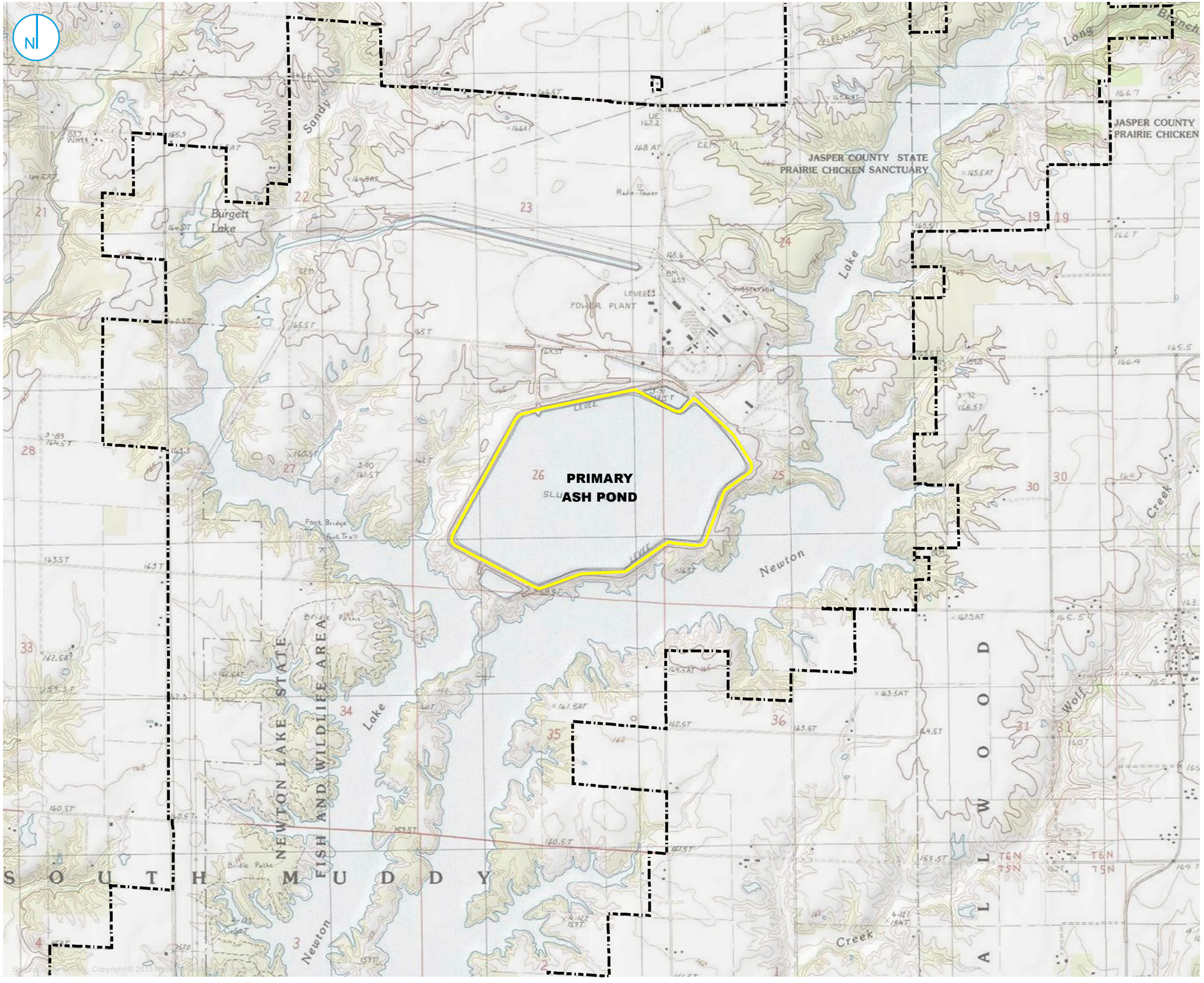
DRAFTED BY: AO | 11/7/2024

CORRECTIVE ACTION MONITORING OUTLINE

CORRECTIVE ACTION GROUNDWATER MONITORING PLAN
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Figure 1-1



40 C.F.R. § 257 REGULATED UNIT (SUBJECT UNIT)

PROPERTY BOUNDARY

0 1,000 2,000 Feet

SITE LOCATION MAP

CORRECTIVE ACTION
GROUNDWATER MONITORING PLAN
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 1-2

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\22285\MXD\GMP\Newton\PAP_501\Figure 1-1. Site Location Map.mxd

PROJECT: 169000XXXX | DATED: 1/13/2023 | DESIGNER: galammc

MONITORING WELL
REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE

0 400 800
Feet

SITE MAP

CORRECTIVE ACTION
GROUNDWATER MONITORING PLAN
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 1-3

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\2285\MXD\GMP\Newton\PAP_501\845_CorrectiveAction\NEW_501_CA_GMP aprx\Figure 1-3. Site Map

PROJECT: 169000XXXX | DATED: 12/4/2024 | DESIGNER: GALARNMC

Y:\Mapping\Projects\222285\MXD\GW_Contours\Round_2024\Newton\PAP_501\PAP_501.aprx\NEW 501 PAP Pot Surface 20241001

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- MONITORING WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, LAKE
- LEACHATE WELL
- CLOSED POREWATER WELL
- GROUNDWATER ELEVATION CONTOUR (5-FT CONTOUR INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE

NOTES:
1.ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

0 400 800 Feet

FIGURE 1-4
POTENTIOMETRIC SURFACE MAP
OCTOBER 1 AND 2, 2024

CORRECTIVE ACTION GROUNDWATER MONITORING PLAN
PRIMARY ASH POND

NEWTON POWER PLANT
NEWTON, ILLINOIS

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: 169000XXXX | DATED: 11/21/2024 | DESIGNER: PWYSIATKO

MONITORING WELL
REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
XXX INSIDE PLUME MONITORING WELL
XXX PLUME DEFINITION MONITORING WELL

0 400 800 Feet

PROPOSED 35 I.A.C. § 845 CORRECTIVE ACTION MONITORING WELL LOCATION MAP

CORRECTIVE ACTION
GROUNDWATER MONITORING PLAN
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

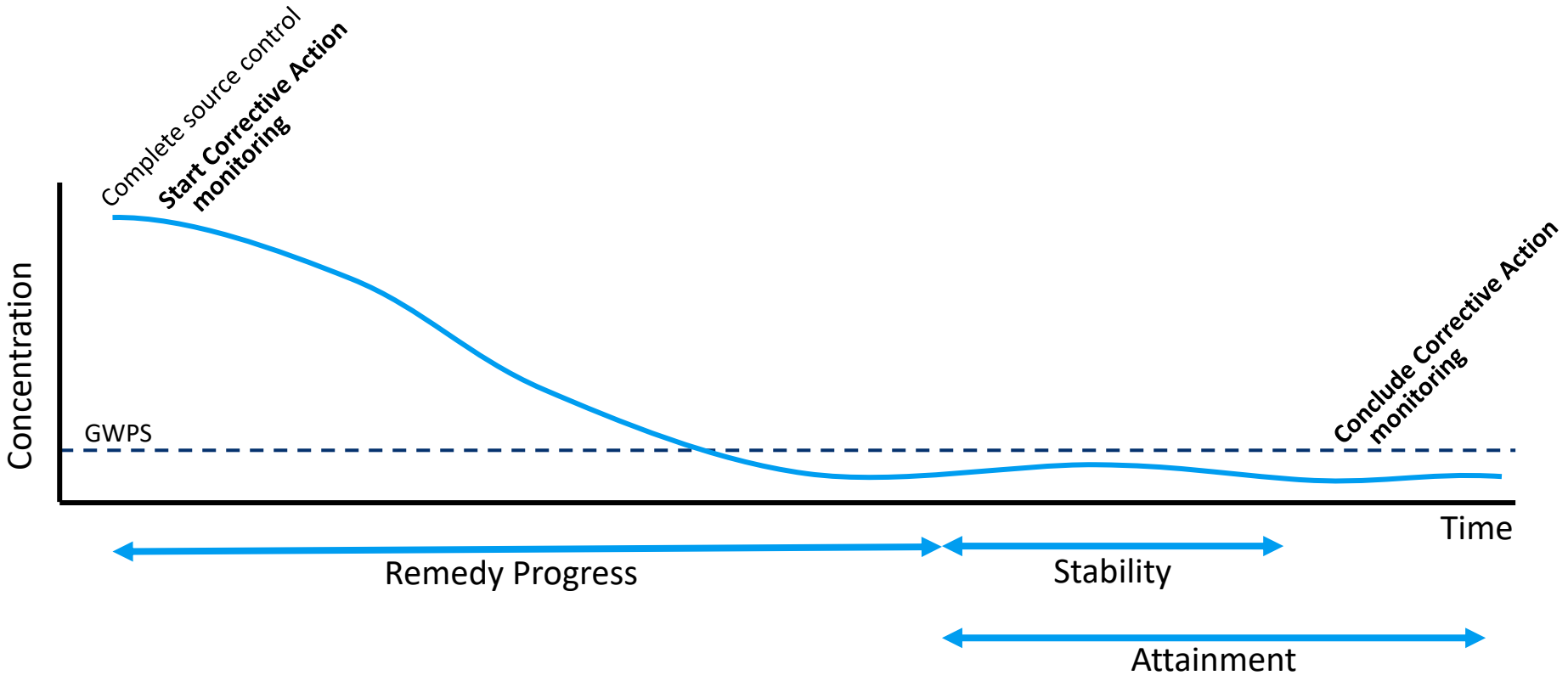
FIGURE 2-1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: 169000XXXX | DATED: 12/19/2024 | DESIGNER: GALARNMC

Y:\Mapping\Projects\222285\MXD\GMP\Newton\PAP_501\845_CorrectiveAction\NEW_501_CA_GMP.aprx\Figure 2-1. Proposed 845 CA Monitoring Well Location Map



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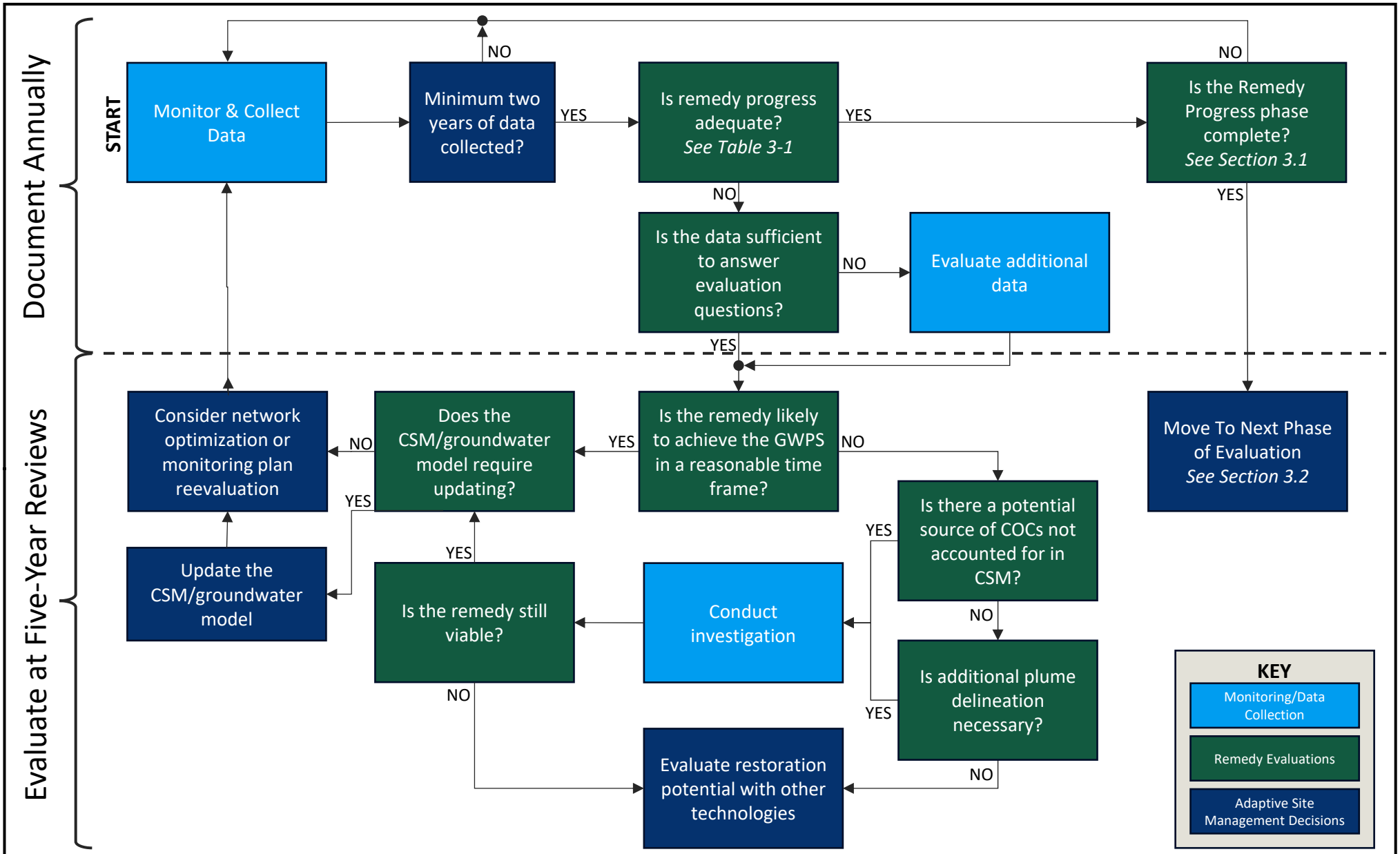
DRAFTED BY: AO | 11/7/2024

CORRECTIVE ACTION MONITORING TIMELINE

CORRECTIVE ACTION GROUNDWATER MONITORING PLAN
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Figure 3-1



Adapted from Figure 2 in USEPA (2014) *"Groundwater Remedy Completion Strategy: Moving Forward with the End in Mind,"* Office of Solid Waste and Emergency Response. 9200.2-144. May. https://semspub.epa.gov/work/HQ/100000021.pdf

RAMBOLL

DRAFTED BY: AO | 11/7/2024

ADAPTIVE SITE MANAGEMENT DECISION-MAKING FLOW CHART

CORRECTIVE ACTION GROUNDWATER MONITORING PLAN
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Figure 3-2

APPENDICES

APPENDIX A
BORING LOGS AND WELL CONSTRUCTION FORMS

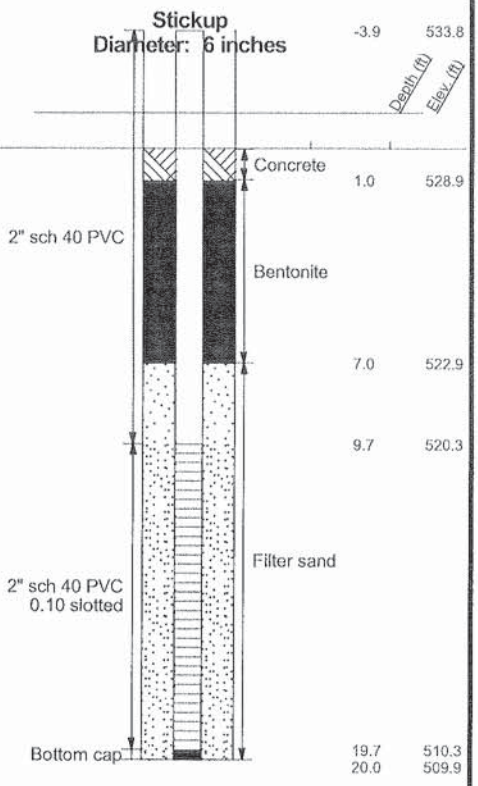
BORING LOGS

Surface Elevation: 529.93
Datum msl
Completion Date: 6/19/10
Northing: 822688.04
Easting: 995465.25

DEPTH IN FEET	DESCRIPTION OF MATERIAL
	Soft, brown, silty CLAY - CL
5	Stiff, brown, sandy CLAY - CL
	Hard, brown, sandy CLAY with gravel - CL ▽
10	
	Hard, dark gray CLAY and glacial till - CH
15	
20	Boring terminated at 20 feet.
25	
30	
35	

GRAPHIC LOG | DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD | SAMPLES

WELL DIAGRAM



GROUNDWATER DATA

ENCOUNTERED AT 8.5 FEET ▽

DRILLING DATA

4 1/4" AUGER ___ HOLLOW STEM
WASHBORING FROM ___ FEET
MVU DRILLER KCR LOGGER
CME 750X DRILL RIG
HAMMER TYPE Auto

REMARKS:

Drawn by: KA	Checked by: RBF	App'vd. by: DTK
Date: 6/29/10	Date: 2-7-11	Date: 2-7-11

GEOTECHNOLOGY INC
FROM THE GROUND UP

Ameren Power Plant
Newton, Illinois

LOG OF BORING: APW-2

Project No. J017150.01

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

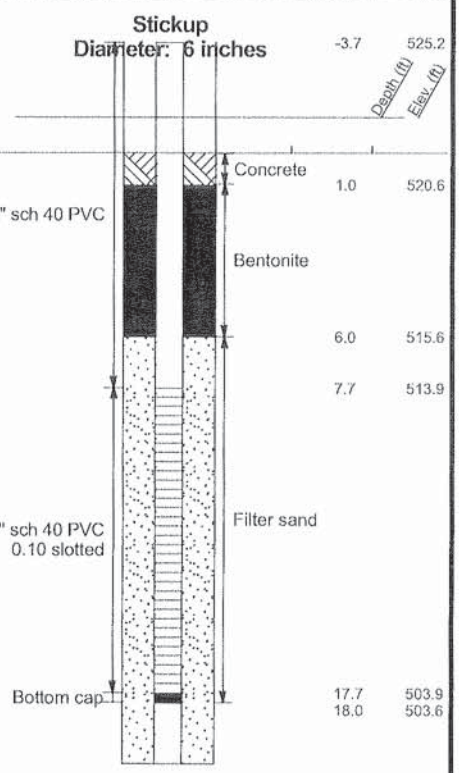
LOG OF BORING 2002 WL J017150.01ENV - AMEREN-NEWTON.GPJ GTINC 0638301.GPJ 2/22/11

Surface Elevation: 521.56 | Completion Date: 6/19/10

Datum msl | Northing: 823246.45 | Easting: 1001379.56

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	Soft, brown, silty CLAY - CL			
5				
	Soft, brown, sandy CLAY - CL ▽			
10				
	Stiff, brown, sandy CLAY with gravel - CL			
15				
	Boring terminated at 18 feet.			
20				
25				
30				
35				

WELL DIAGRAM



NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2002 WL J017150.01ENV - AMEREN-NEWTON.GPJ GTINC 0638301.GPJ 2/7/11

GROUNDWATER DATA

ENCOUNTERED AT 8 FEET ▽

DRILLING DATA

4 1/4" AUGER ___ HOLLOW STEM

WASHBORING FROM ___ FEET

MVU DRILLER KCR LOGGER

CME 750X DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: KA	Checked by: KJS	App'vd. by: DJK
Date: 6/29/10	Date: 2-7-11	Date: 2-7-11

GEOTECHNOLOGY INC
FROM THE GROUND UP

Ameren Power Plant
Newton, Illinois

LOG OF BORING: APW-4

Project No. J017150.01

RAMBOLL

SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Station		APW5S

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Dave Gordon Cascade Drilling	1/19/2021	1/19/2021	Mini Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW5S	Feet (NAVD88)	541.05 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 825,612.15 N, 999,129.20 E Ⓔ/W

1/4 of 1/4 of Section 26, T 6 N, R 8 E

Lat 38° 55' 2.22"

Long -88° 16' 51.7"

Local Grid Location: Feet ☐N ☐S ☐E ☐W

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 CS	120 115		0	0 - 0.7' **FILL, LEAN CLAY:** CL, very dark gray (10YR 3/1), yellowish brown (10YR 5/4) mottling (30-45%), roots (5-15%), sand (5-15%), gravel (0-5%), very stiff, no dilatancy, low to medium toughness, low plasticity, wet.	(FILL) CL				3.25					CS= Core Sample
			1											
			2	0.7 - 5.5' **FILL, LEAN CLAY:** CL, yellowish brown (10YR 5/4), gray (10YR 5/1) mottling (0-5%), sand (0-5%), gravel (0-5%), very stiff to stiff, no dilatancy , medium toughness, low plasticity, moist.										
			3	2.8' - 2.9' black (10YR 2/1), black (2.5Y 2.5/1) mottling (0-5%), coal (0-5%).	(FILL) CL				3.25					
			4	3.1' strong brown (7.5YR 5/6), gray (10YR 5/1) mottling (0-5%), black (10YR 2/1) mottling (0-5%), sand (5-15%), gravel (0-5%).										
			5						3.25					
			6	5.5 - 6.3' **LEAN CLAY:** CL, grayish brown (10YR 5/2) to brown (10YR 5/3), light olive brown (2.5Y 5/6) mottling (15-30%), stiff, no dilatancy, low toughness, medium plasticity, moist.	CL									
			7	5.9' no mottling.					2					
			8	6.3 - 14.3' **LEAN CLAY WITH SAND:** (CL)s, gray (10YR 5/1), organic material (0-5%), stiff to firm, no dilatancy, low toughness, medium plasticity, moist.	(CL)s									
			9						2.25					
2 CS	36 36		10											
			11						2					
			12											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm Ramboll
234 W. Florida Street, Milwaukee, WI 53204
Tel: (414) 837-3607
Fax: (414) 837-3608

Boring Number APW5S

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
3 CS	120 94		13	6.3 - 14.3' **LEAN CLAY WITH SAND:** (CL)s, gray (10YR 5/1), organic material (0-5%), stiff to firm, no dilatancy, low toughness, medium plasticity, moist. *(continued)* 12.4' yellowish brown (10YR 5/6), gravel (0-5%).	(CL)s				0.75						
			14											
			15	14.3 - 17.5' **POORLY-GRADED SAND:** SP, yellowish brown (10YR 5/6) , subrounded to rounded, fine sand, clay (5-15%), gravel (0-5%), moist.	SP									
			16											
			17											
			18	17.5 - 23' **SILT:** ML, yellowish brown (10YR 5/6) to dark gray (10YR 4/1), strong brown (7.5YR 4/6) mottling (5-15%), very dark gray (7.5YR 3/1) mottling (0-5%), clay (5-15%), sand (5-15%), gravel (0-5%), very stiff to hard, no dilatancy, medium to high toughness, low plasticity.	ML				4.5						
			19											
			20	19.4' yellowish brown (10YR 5/6), gray (10YR 5/1) mottling (0-5%).										
			21						4					
			22						3.5					
			23	23' End of Boring.										

FIELD BORING LOG

CLIENT: Natural Resource Technology, Inc.
Site: Newton Energy Center
Location: Newton, Illinois
Project: 15E0030
DATES: **Start:** 10/27/2015
Finish: 10/27/2015
WEATHER: Cool, rainy, lo-50s

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-550X ATV Drill
Drilling Method: 4¼" HSA

FIELD STAFF: **Driller:** C. Dutton
Helper: C. Jones
Eng/Geo: S. Keim

BOREHOLE ID: APW10a
Well ID: APW10
Surface Elev: 521.98 ft. MSL
Completion: 45.94 ft. BGS
Station: 5,371.32N
11,541.23E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Latona
Township: North Muddy
Section 25, **Tier** 6N; **Range** 8E

WATER LEVEL INFORMATION:
▼ = 36.00 - During Drilling
▼ =
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Moisture (%)	Dry Den. (lb/ft^3)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
							0			522	
							2			520	
							4			518	
							6			516	
							8			514	
							10	Blind drill - see APW4 boring log for lithology, sample, and testing data		512	
							12			510	
							14			508	
							16			506	
							18			504	
							20			502	

NOTE(S): APW10 installed in borehole.
Lithology, sample, and testing data can be found on APW-4 Field Boring Log.

FIELD BORING LOG

CLIENT: Natural Resource Technology, Inc.
Site: Newton Energy Center
Location: Newton, Illinois
Project: 15E0030
DATES: **Start:** 10/27/2015
Finish: 10/27/2015
WEATHER: Cool, rainy, lo-50s

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-550X ATV Drill
Drilling Method: 4¼" HSA

FIELD STAFF: **Driller:** C. Dutton
Helper: C. Jones
Eng/Geo: S. Keim

BOREHOLE ID: APW10a
Well ID: APW10
Surface Elev: 521.98 ft. MSL
Completion: 45.94 ft. BGS
Station: 5,371.32N
11,541.23E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Latona
Township: North Muddy
Section 25, **Tier** 6N; **Range** 8E

WATER LEVEL INFORMATION:
▼ = 36.00 - During Drilling
▼ =
▽ =

SAMPLE Number	SAMPLE Recov / Total (in) % *Recovery*	SAMPLE Type	TESTING *Blows / 6 in* N - Value **RQD**	TESTING Moisture (%)	TESTING Dry Den. (lb/ft³)	TESTING Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
							22	Yellowish brown (10YR5/6) with 5% gray (N6/1) mottles, moist, hard, SILT with little clay, few very fine-grained sand, and trace small gravel.		500	
							24			498	
							26			496	
							28	Yellowish brown (10YR5/4) with 5% dark yellowish brown (10YR4/6) and 5% gray (N6/1) mottles, moist, hard, SILT with little clay, few very fine-grained sand, and trace small gravel.		494	
							30			492	
							32			490	
							34			488	
							▼ 36	Brown (10YR5/3) with 5% gray (N6/1) mottles, moist, hard, SILT with little clay, few very fine-grained sand, and trace small gravel.		486	
							38			484	
							40	Brown (10YR5/3), wet, very dense, silty, very fine- to medium-grained SAND with trace small gravel.		482	

NOTE(S): APW10 installed in borehole.
Lithology, sample, and testing data can be found on APW-4 Field Boring Log.

FIELD BORING LOG

CLIENT: Natural Resource Technology, Inc.
Site: Newton Energy Center
Location: Newton, Illinois
Project: 15E0030
DATES: **Start:** 10/27/2015
Finish: 10/27/2015
WEATHER: Cool, rainy, lo-50s

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-550X ATV Drill
Drilling Method: 4¼" HSA

FIELD STAFF: **Driller:** C. Dutton
Helper: C. Jones
Eng/Geo: S. Keim

BOREHOLE ID: APW10a
Well ID: APW10
Surface Elev: 521.98 ft. MSL
Completion: 45.94 ft. BGS
Station: 5,371.32N
11,541.23E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Latona
Township: North Muddy
Section 25, **Tier** 6N; **Range** 8E

WATER LEVEL INFORMATION:
▼ = 36.00 - During Drilling
▼ =
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Moisture (%)	Dry Den. (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail / Elevation ft. MSL / Remarks
							42	Brown (10YR5/3), wet, very dense, silty, very fine- to medium-grained SAND with trace small gravel. *[Continued from previous page]*	480
							44		478

End of boring = 45.94 feet

NOTE(S): APW10 installed in borehole.
Lithology, sample, and testing data can be found on APW-4 Field Boring Log.

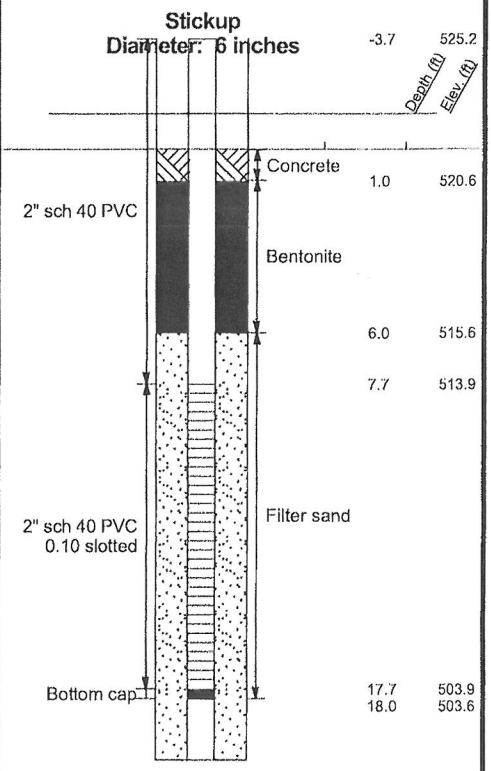
Surface Elevation: 521.56 | Completion Date: 6/19/10

Datum msl | Northing: 823246.45 | Easting: 1001379.56

DEPTH IN FEET	DESCRIPTION OF MATERIAL
	Soft, brown, silty CLAY - CL
5	
	Soft, brown, sandy CLAY - CL ▽
10	
	Stiff, brown, sandy CLAY with gravel - CL
15	
	Boring terminated at 18 feet.
20	
25	
30	
35	

GRAPHIC LOG | DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD | SAMPLES

WELL DIAGRAM



GROUNDWATER DATA

ENCOUNTERED AT 8 FEET ▽

DRILLING DATA

4 1/4" AUGER ___ HOLLOW STEM

WASHBORING FROM ___ FEET

MVU DRILLER KCR LOGGER

CME 750X DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: KA	Checked by: RJS	App'vd. by: DTK
Date: 6/29/10	Date: 2-7-11	Date: 2-7-11

GEOTECHNOLOGY INC
FROM THE GROUND UP

Ameren Power Plant
Newton, Illinois

LOG OF BORING: APW-4

Project No. J017150.01

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2002.WL J017150.01ENV - AMEREN-NEWTON.GPJ GTINC 0638301.GPJ 2/7/11

RAMBOLL

SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Station		APW11

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Dave Gordon Cascade Drilling	1/23/2021	1/23/2021	Mini Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW11	Feet (NAVD88)	536.05 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 825,195.28 N, 1,000,717.50 E Ⓔ/W

1/4 of 1/4 of Section 25, T 6 N, R 8 E

Lat 38° 55' 58.09"

Long -88° 16' 31.6"

Local Grid Location

Feet ☐N ☐S Feet ☐E ☐W

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 CS	120 113		0 1 2 3 4 5 6 7 8 9 10 11 12	0 - 0.4' **CLAYEY SILT** ML/CL, grayish brown (10YR 5/2) to brownish yellow (10YR 6/6), roots (5-15%), gravel (0-5%), no dilatancy, medium toughness, low plasticity, wet. 0.4 - 10' **LEAN CLAY:** CL, gray (10YR 6/1), strong brown (7.5YR 5/8) mottling (15-30%), brown (10YR 3/3), silt (15-30%), sand (0-5%), organic material (0-5%), no dilatancy, low toughness, medium plasticity, wet to moist.	ML/CL CL										CS= Core Sample
2 SH	24 24			10 - 12' **LEAN CLAY:** CL.	CL					17.8	28	16	53.8	SH= Shelby Tube

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm Ramboll
234 W. Florida Street, Milwaukee, WI 53204

Tel: (414) 837-3607
Fax: (414) 837-3608

Boring Number APW11 Page 2 of 6

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
3 CS	96 96		12	12 - 22.3' **SILT WITH SAND:** (ML)s, brown (10YR 5/3), clay (5-15%), gravel (0-5%), cohesive, low toughness, non-plastic to low plasticity, moist.										
			13											
			14											
			15	15' brown (10YR 4/3), clay (5-15%), gravel (5-15%), low to medium toughness.										
			16											
			17		(ML)s									
			18	18' sand seams (0-5%) 1/16" diameter.										
			19											
4 CS	120 120		20											
			21											
			22											
			23	22.3 - 28' **SILT:** ML, yellowish brown (10YR 5/4), grayish brown (10YR 5/2) mottling (0-5%), strong brown (7.5YR 5/6) mottling (0-5%), clay (15-30%), sand (0-5%), gravel (0-5%), no dilatancy, medium toughness, low plasticity.										
			24											
			25		ML									
			26											
			27											
			28	28 - 58' **LEAN CLAY:** CL, yellowish brown (10YR 5/4), grayish brown (10YR 5/2) mottling (0-5%), strong brown (7.5YR 5/6) mottling (0-5%), silt (15-30%), sand (0-5%), gravel (0-5%), no dilatancy, low toughness, medium to high plasticity.										
			29											
5 CS	120 120		30		CL									
			31											
			32											

Boring Number APW11 Page 3 of 6

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			33	28 - 58' **LEAN CLAY:** CL, yellowish brown (10YR 5/4), grayish brown (10YR 5/2) mottling (0-5%), strong brown (7.5YR 5/6) mottling (0-5%), silt (15-30%), sand (0-5%), gravel (0-5%), no dilatancy, low toughness, medium to high plasticity. *(continued)*										
			34	33.2' - 34.4' gray (10YR 5/1) mottling (5-15%), sand (5-15%).										
			35	34.4' - 40' sand (5-15%).										
			36											
			37											
			38											
			39											
6 CS	120 120		40											
			41											
			42		CL									
			43											
			44											
			45											
			46											
			47											
			48											
			49	48.6' dark grayish brown (10YR 4/2), olive gray (5Y 4/2) mottling (5-15%), dark grayish brown (2.5Y 4/2) mottling (5-15%), dark reddish brown (5YR 3/4) mottling (0-5%),.										
7 CS	120 120		50											
			51											
			52											

Boring Number APW11 Page 4 of 6

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			53	28 - 58' **LEAN CLAY:** CL, yellowish brown (10YR 5/4), grayish brown (10YR 5/2) mottling (0-5%), strong brown (7.5YR 5/6) mottling (0-5%), silt (15-30%), sand (0-5%), gravel (0-5%), no dilatancy, low toughness, medium to high plasticity. *(continued)*										
			54											
			55		CL									
			56	55.7' - 56.9' dark gray (10YR 4/1) to (7.5YR 4/1).										
			57											
			58	58 - 58.9' **SILTY SAND:** SM, grayish brown (10YR 5/2), gravel (5-15%), dense, moist.	SM									
			59	58.9 - 59.5' **SILT WITH SAND:** (ML)s, grayish brown (10YR 5/2), dark yellowish brown (10YR 4/6) mottling (0-5%), clay (15-30%), gravel (0-5%), low toughness, low plasticity.	(ML)s									
8 MC	24 20		60	59.5 - 60' **POORLY-GRADED GRAVEL:** GP, grayish brown (10YR 5/2), subrounded to subangular, fine gravel, sand (30-45%), silt (15-30%), moist.	GP					17.8	27	9	78.6	MC= Modified California Sample
			61	60 - 62' **LEAN CLAY:** CL.	CL									
9 CS	96 96		62	62 - 64.5' **POORLY-GRADED SAND WITH CLAY:** SP-SC, dark gray (10YR 4/1), subrounded, fine sand, dense, wet.										
			63		SP-SC									
			64											
			65	64.5 - 66.6' **CLAYEY SILT** ML/CL, dark gray (10YR 4/1), sand (0-5%), gravel (0-5%), no dilatancy, medium toughness, low to medium plasticity, moist.										
			66		ML/CL									
			67	66.6 - 67.2' **POORLY-GRADED SAND WITH CLAY:** SP-SC, dark gray (10YR 4/1), subrounded, fine sand, gravel (5-15%), dense, wet.	SP-SC									
			68	67.2 - 80' **CLAYEY SILT** to **SILTY CLAY:** ML/CL, dark gray (10YR 4/1), sand (0-5%), gravel (0-5%), no dilatancy, high toughness, medium plasticity, moist.										
			69											
			70		ML/CL									
10 CS	120 120		71											
			72											

Boring Number APW11 Page 5 of 6

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			73	67.2 - 80' **CLAYEY SILT** to **SILTY CLAY:** ML/CL, dark gray (10YR 4/1), sand (0-5%), gravel (0-5%), no dilatancy, high toughness, medium plasticity, moist. *(continued)*										
			74											
			75											
			76		ML/CL									
			77											
			78											
			79											
11 SH	24 24		80	80 - 82' **LEAN CLAY:** CL.						16.5	32	18	79	
			81		CL									
12 CS	96 96		82	82 - 93.5' **CLAYEY SILT** to **SILTY CLAY:** ML/CL, dark gray (10YR 4/1), sand (0-5%), gravel (0-5%), no dilatancy, high toughness, medium plasticity, moist.										
			83											
			84											
			85											
			86	86' olive (5Y 4/4), dark yellowish brown (10YR 4/6) mottling (5-15%), dark gray (10YR 4/1) mottling (0-5%), black (10YR 2/1) mottling (0-5%).										
			87		ML/CL									
			88	87.4' olive gray (5Y 4/2), dark gray (10YR 4/1) mottling (15-30%), organic material (0-5%).										
			89	88.5' dark gray (10YR 4/1), olive gray (5Y 4/2) mottling (5-15%), olive brown (2.5Y 4/4) mottling (0-5%).										
			90	89.7' olive (5Y 4/4).										
13 CS	120 120			90.2' olive gray (5Y 4/2), organic material (0-5%).										
			91											
			92											

Boring Number APW11 Page 6 of 6

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			93	82 - 93.5' **CLAYEY SILT** to **SILTY CLAY:** ML/CL, dark gray (10YR 4/1), sand (0-5%), gravel (0-5%), no dilatancy, high toughness, medium plasticity, moist. *(continued)* 92' - 92.2' layer of organic material.	ML/CL									
			94	93.5 - 94' **SANDY SILT:** s(ML), dark gray (10YR 4/1), reddish brown (5YR 4/4) mottling (5-15%), clay (5-15%), gravel (0-5%), cohesive, non-plastic, moist.	s(ML)									
				94 - 94.5' **SILT:** ML, olive gray (5Y 4/2).	ML									
			95	94.5 - 94.7' **CLAYEY SAND:** SC, dark gray (10YR 4/1), wet.	SC									
				94.7 - 96' **SANDY SILT:** s(ML), dark gray (10YR 4/1), reddish brown (5YR 4/4) mottling (5-15%), clay (5-15%), gravel (0-5%), cohesive, non-plastic, moist.	s(ML)									
			96	96 - 96.2' **POORLY-GRADED SAND WITH CLAY:** SP-SC, dark gray (10YR 4/1), loose, moist.	SP-SC									
				96.2 - 97' **SILT:** ML, dark gray (10YR 4/1), clay (5-15%), sand (5-15%), no dilatancy to slow dilatancy, low toughness, medium plasticity.	ML									
			97	97 - 97.2' **SILT:** ML, very dark grayish brown (10YR 3/2), dry.	ML									
			98	97.2 - 100' **LEAN CLAY:** CL, dark gray (10R 4/1), silt (5-15%), organic material (0-5%), no dilatancy, high toughness, medium to high plasticity, moist.	CL									
			99											
			100	100' End of Boring.										

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SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Station		APW12

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Russ Gordon Cascade Drilling	1/21/2021	2/21/2021	Mini Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW12	Feet (NAVD88)	543.33 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 824,081.13 N, 1,001,683.34 E Ⓔ/W

1/4 of 1/4 of Section 25, T 6 N, R 8 E

Lat 38° 55' 47.07"

Long -88° 16' 19.39"

Local Grid Location: Feet ☐N ☐S ☐E ☐W

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 CS	60 / 37		0	0 - 0.4' **LEAN CLAY:** CL, dark brown (10YR 3/3), sand (0-5%), roots (0-5%), moist.	CL				2					CS= Core Sample
			1	0.4 - 6.4' **SANDY LEAN CLAY:** s(CL), yellowish brown (10YR 5/6), gravel (0-5%), stiff, low plasticity, moist.										
			2											
			3		s(CL)				1.5					
			4											
2 CS	60 / 43		5											
			6						1.5					
			7	6.4 - 11.8' **LEAN CLAY:** CL, yellowish brown (10YR 5/6), gray and yellowish brown mottling (0-5%), sand (0-5%), stiff medium plasticity.					1.5					
			8						1.5					
			9		CL									
			10											
3 CS	60 / 60		11						1					
			12	11.8 - 20' **LEAN CLAY:** to **SILTY CLAY:** CL, yellowish brown (10YR 5/6), gray and yellowish brown mottling (0-5%), gravel (0-5%), sand (0-5%), very stiff, medium plasticity, moist.					2					
			13						2.5					
			14		CL				2					
			15	15' hard, gray and yellowish brown mottling (15-25%).					2.5					
4 CS	60 / 60		16											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature SH WL

Firm Ramboll
234 W. Florida Street, Milwaukee, WI 53204
Tel: (414) 837-3607
Fax: (414) 837-3608

Boring Number APW12 Page 2 of 4

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			17	11.8 - 20' **LEAN CLAY:** to **SILTY CLAY:** CL, yellowish brown (10YR 5/6), gray and yellowish brown mottling (0-5%), gravel (0-5%), sand (0-5%), very stiff, medium plasticity, moist. *(continued)*					4.5					
			18		CL				4.5					
			19						4.5					
5 SH	24 24		20	20 - 22' **CLAYEY SAND:** SC.	SC					15.1	27	15	45.8	SH= Shelby Tube
			21											
6 CS	36 36		22	22 - 23.5' **SANDY LEAN CLAY:** s(CL), yellowish brown (10YR 5/6), silt (15-25%), gravel (0-5%), hard, low plasticity, wet.	s(CL)				4.5					
			23											
			24	23.5 - 25' **POORLY-GRADED SAND:** SP, yellowish brown (10YR 5/6), fine to medium sand, gravel (0-5%), silt (0-5%), wet.	SP									
7 MC	24 24		25	25 - 27' **POORLY-GRADED SAND WITH SILT:** SP-SM.						8.4	10		6.2	MC= Modified California Sample
			26		SP-SM									
8 CS	36 36		27	27 - 29.2' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/6), sand (15-25%), gravel (15-25%), hard, low plasticity, dry.					4.5					
			28		CL/ML									
			29											
9 CS	60 60		30	29.2 - 35' **SILTY CLAY:** CL/ML, dark gray (10YR 4/1), gravel (15-25%), sand (0-5%), hard, low plasticity, dry.					4.5					
			31											
			32		CL/ML									
			33	32.6' - 34' sand (15-25%).										
			34											
10 CS	60 60		35	35 - 55' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/6), yellowish brown and gray mottling (0-5%), gravel (15-25%), sand (0-25%), hard, low plasticity, dry.					4.5					
			36											
			37						4.5					
			38											
			39		CL/ML									
			40						4.5					
11 CS	60 60		41											
			42	41.7' - 43.2' gravel (15-45%).					4.5					

Boring Number APW12 Page 3 of 4

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			43	35 - 55' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/6), yellowish brown and gray mottling (0-5%), gravel (15-25%), sand (0-25%), hard, low plasticity, dry. *(continued)*					4.5					
			44											
12 CS	60 60		45						4.5					
			46											
			47						4.5					
			48											
			49		CL/ML				4.5					
13 CS	60 60		50											
			51						4.5					
			52						4.5					
			53											
			54											
			55											
14 CS	60 60		56	55 - 56.4' **SILTY CLAY:** CL/ML, dark gray (10YR 4/1), yellowish brown mottling (0-5%), sand (0-5%), hard, medium plasticity, moist.	CL/ML				4.5					
			57	56.4 - 58.6' **SILT:** ML, dark gray (10YR 4/1), clay (15-25%), sand (0-5%), moist.	ML									
			58											
			59	58.4' - 58.6' layer of clayey sand. 58.6 - 70.8' **LEAN CLAY:** to **SILTY CLAY:** CL, dark gray (10YR 4/1), gravel (15-25%), sand (0-5%), hard, low plasticity, dry.					4.5					
15 CS	60 60		60											
			61						4.5					
			62											
			63						4.5					
			64		CL									
16 CS	60 60		65						4.5					
			66											
			67						4.5					
			68											
			69											

Boring Number APW12 Page 4 of 4

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			70	58.6 - 70.8' **LEAN CLAY:** to **SILTY CLAY:** CL, dark gray (10YR 4/1), gravel (15-25%), sand (0-5%), hard, low plasticity, dry. *(continued)*	CL				4.5					
17 CS	60 60		71	70.8 - 72.6' **SILT:** ML, dark gray (10YR 4/1), sand (0-5%), dry to moist.	ML									
			72											
			73	72.6 - 74' **SILTY CLAY:** CL/ML, dark gray (10YR 4/1), sand (0-5%), gravel (0-5%), hard, low plasticity, dry.	CL/ML									
			74	74 - 77.5' **SILT:** ML, dark gray (10YR 4/1), sand (0-5%), dry.										
18 CS	60 60		75		ML									
			76											
			77											
			78	77.5 - 85' **SILTY CLAY:** CL/ML, gray (10YR 4/1), sand (0-5%), gravel (0-5%), dry.										
			79											
19 CS	60 60		80											
			81		CL/ML									
			82											
			83											
			84											
20 SH	24 24		85	85 - 87' **LEAN CLAY:** CL.						14.4	29	15	80.2	
			86		CL									
			87	87' End of Boring.										

RAMBOLL

SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Station		APW13

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Russ Gordon Cascade Drilling	1/22/2021	1/22/2021	Mini Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW13	Feet (NAVD88)	535.16 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 822,591.02 N, 1,001,013.30 E Ⓔ/W

1/4 of 1/4 of Section 25, T 6 N, R 8 E

Lat 38° 55' 32.35"

Long -88° 16' 27.88"

Local Grid Location: Feet ☐N ☐S ☐E ☐W

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 CS	60 / 60		0	0 - 0.4' **SILTY SAND:** SM, dark brown (10YR 3/3), clay (15-25%), moist.	SM									CS= Core Sample
			1	0.4 - 2.3' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/6), gray mottling (0-5%), sand (0-5%), gravel (0-5%), firm to stiff, medium plasticity, moist.	CL/ML				1					
			2											
			3	2.3 - 6.2' **SILTY CLAY:** to **LEAN CLAY:** CL/ML, yellowish brown (10YR 5/6), sand (0-5%), gravel (0-5%), stiff, low plasticity, moist.	CL/ML				2					
			4											
2 CS	60 / 60		5						2					
			6	6.2 - 8.7' **SANDY LEAN CLAY:** (CL)g, yellowish brown (10YR 5/6), gravel (0-5%), stiff, low plasticity, moist.	(CL)g				1.5					
			7	6.5' yellowish brown and gray mottling (15-25%).					1.5					
			8						1.5					
			9	8.7 - 10' **SILTY CLAY:** to **LEAN CLAY:** CL/ML, yellowish brown (10YR 5/6), sand (0-5%), gravel (0-5%), stiff, low plasticity, moist.	CL/ML				1.5					
			10											
3 CS	60 / 60		11	10 - 13.8' **SANDY LEAN CLAY:** (CL)g, yellowish brown (10YR 5/6), gravel (15-25%), hard, low plasticity, moist. 10.8' - 11.1' layer of clayey sand.	(CL)g				2					
			12						4.5					
			13											
			14	13.8 - 22.1' **SILT:** ML, dark gray (10YR 4/1), clay (0-25%), sand (0-5%), gravel (0-5%), hard, dry.	ML									
4 CS	60 / 60		15											
			16											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature SH WL

Firm Ramboll
234 W. Florida Street, Milwaukee, WI 53204

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Boring Number APW13 Page 2 of 4

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			17	13.8 - 22.1' **SILT:** ML, dark gray (10YR 4/1), clay (0-25%), sand (0-5%), gravel (0-5%), hard, dry. *(continued)*										
			18	17.8' clay (0-5%).										
			19		ML									
5 CS	60 60		20											
			21											
			22											
			23	22.1 - 25' **SILTY CLAY:** CL/ML, dark gray (10YR 4/1), gravel (0-5%), sand (0-5%), hard, low plasticity, dry.					4.5					
			24		CL/ML									
6 SH	24 24		25	25 - 27' **POORLY-GRADED SAND WITH SILT:** SP-SM.						21.2	9		11.1	SH= Shelby Tube
			26		SP-SM									
7 CS	36 36		27	27 - 31.2' **SILTY CLAY:** CL/ML, dark gray (10YR 4/1), gravel (0-5%), sand (0-5%), hard, low plasticity, dry.					4.5					
			28	27.8' - 28' layer of sand, moist.										
			29		CL/ML				4.5					
8 CS	60 60		30											
			31						4.5					
			32	31.2 - 35' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/6), yellowish brown and gray mottling (0-5%), gravel (15-25%), sand (0-5%), hard, low plasticity, dry.										
			33		CL/ML				4.5					
			34											
9 CS	60 60		35	35 - 51.7' **SILTY CLAY:** CL/ML, brown (10YR 5/3), gravel (0-5%), sand (0-5%), hard, low plasticity, dry.										
			36											
			37	37.2' - 38.3' gray mottling (15-25%).										
			38											
			39		CL/ML									
10 CS	60 60		40	40' very stiff to hard, medium plasticity.										
			41						3					
			42						3.5					

Boring Number APW13 Page 3 of 4

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			43	35 - 51.7' **SILTY CLAY:** CL/ML, brown (10YR 5/3), gravel (0-5%), sand (0-5%), hard, low plasticity, dry. *(continued)*					4.5					
			44						3.5					
11 CS	60 60		45						4.5					
			46						4.5					
			47		CL/ML				3.5					
			48						3.5					
			49						4.5					
12 CS	60 60		50						4.5					
			51						4.5					
			52	51.7 - 54.6' **SILT:** ML, brown (10YR 5/3), gray mottling (15-25%), sand (0-5%), gravel (0-5%).										
			53		ML									
			54											
13 CS	60 60		55	54.6 - 57.6' **SILTY CLAY:** CL/ML, brown (10YR 5/3), sand (0-5%), gravel (0-5%), hard, low plasticity.					4.5					
			56		CL/ML									
			57											
			58	57.6 - 60' **SILTY SAND:** SM, brown (10YR 5/3), fine sand, clay (0-5%), wet.										
			59		SM									
14 MC	24 24		60	60 - 62' **SILTY SAND:** SM.						14.5	8		24.5	MC= Modified California Sample
			61		SM									
15 CS	96 96		62	62 - 63.7' **SILTY SAND:** SM, brown (10YR 5/3), fine sand, clay (0-5%), wet.										
			63	62.5' - 63.1' layer of silt.	SM									
			64	63.7 - 65' **SILT:** ML, brown (10YR 5/3), sand (0-5%), clay (0-5%), dry.	ML									
			65	65 - 67.6' **LEAN CLAY:** CL, dark gray (10YR 4/1), silt (15-25%), sand (0-5%), stiff to very stiff, medium plasticity, dry.					2					
			66		CL				2					
			67											
			68	67.6 - 89.7' **SILTY CLAY:** CL/ML, dark gray (10YR 4/1), gravel (15-25%), sand (15-25%), hard, low plasticity, dry.					4.5					
			69		CL/ML									

Boring Number APW13 Page 4 of 4

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
16 CS	120 120		70	67.6 - 89.7' **SILTY CLAY:** CL/ML, dark gray (10YR 4/1), gravel (15-25%), sand (15-25%), hard, low plasticity, dry. *(continued)*					4.5					
			71	70' dark green mottling, gravel (0-5%).					4.5					
			72											
			73						4.5					
			74											
			75						4.5					
			76											
			77						4.5					
			78											
			79						4.5					
17 CS	120 120		80		CL/ML									
			81											
			82											
			83											
			84											
			85											
			86											
			87											
			88											
			89											
			90	89.7 - 90' **SHALE:** BDX (SH), black (10YR 2/1). 90' End of Boring.	BDX (SH)									

RAMBOLL

SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Plant		APW19S

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Gavin Morgan Cascade Drilling LP	6/18/2024	6/18/2024	Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW19S	Feet (NAVD88)	529.58 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 822,400.65 N, 995,301.68 E Ⓔ/ W

1/4 of 1/4 of Section , T N, R

Lat 38.925146

Long -88.294493

Local Grid Location ☐ N ☐ E Feet ☐ S Feet ☐ W

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 CS	96 108		0.5	0 - 0.5' **FILL, TOPSOIL:** CL, grass, roots, vegetation, moist.	(FILL) CL									
			1.0	0.5 - 1' **FILL, POORLY-GRADED GRAVEL:** GP, light gray (10YR 7/1), loose, moist.	(FILL) GP									
			1.5	1 - 1.8' **FILL, ASH (Coal):** ASH (Coal), very dark gray (10YR 3/1), silt-sized, loose.	(FILL) ASH (Coal)									
			2.0	1.8 - 4' **SILTY CLAY:** CL/ML, grayish brown (10YR 5/2) with dark yellowish brown (10YR 4/6) mottling, sand (15-25%), gravel (0-5%), low plasticity, very stiff, moist.	CL/ML				2.5					
			4.0	4 - 7.5' **SANDY LEAN CLAY:** s(CL), yellowish brown (10YR 5/6), gravel (5-10%), low to medium plasticity, very stiff to hard, moist.					4.5					
			5.0	5' very dark gray (10YR 3/1) laminations.					3					
			6.0		s(CL)				1					
			7.0	7.1' - 7.2' layer of fine sand, wet.					4.5					
			7.5	7.5 - 8.2' **POORLY-GRADED SAND WITH GRAVEL:** (SP)g, brown (10YR 5/3), well-rounded sand and gravel, clay (5-10%), medium dense, wet.	(SP)g									Soil sample collected at 7.5 - 8.2 feet below ground surface.
2 CS	120 120		8.0	8.2 - 15' **LEAN CLAY WITH SAND:** (CL)s, brown (10YR 5/3) with yellowish brown (10YR 5/6) mottling, very dark gray (10YR 3/1) staining, sand (15-25%), gravel (5-10%), low plasticity, hard, moist.	(CL)s				4.5					
			8.5											
			9.0											
			9.5											
			10.0											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Michael Davie

Firm Ramboll

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Template: RAMBOLL_IL_BORING LOG - Project: NEWTON N&E.GPJ

Boring Number APW19S

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			10.5	8.2 - 15' **LEAN CLAY WITH SAND:** (CL)s, brown (10YR 5/3) with yellowish brown (10YR 5/6) mottling, very dark gray (10YR 3/1) staining, sand (15-25%), gravel (5-10%), low plasticity, hard, moist. *(continued)*	(CL)s				4.5					
			11.0											
			11.5											
			12.0											
			12.5											
			13.0						4.5					
			13.5											
			14.0											
			14.5											
			15.0	15 - 18' **SANDY LEAN CLAY WITH GRAVEL:** s(CL)g, brown (10YR 4/3), well-rounded sand and gravel, medium plasticity, stiff to very stiff, wet.	s(CL)g				1					
			15.5											
			16.0						2					Soil sample collected at 16 - 18 feet below ground surface.
			16.5											
			17.0						2					
			17.5											
			18.0	18' End of Boring.										

RAMBOLL

SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Plant		APW20S

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Gavin Morgan Cascade Drilling LP	6/18/2024	6/18/2024	Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW20S	Feet (NAVD88)	521.93 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 822,691.50 N, 995,187.09 E Ⓔ/ W

1/4 of 1/4 of Section , T N, R

Lat 38.925944

Long -88.294895

Local Grid Location ☐ N ☐ S Feet ☐ E ☐ W Feet

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 CS	96 105		0.5 1.0 1.5 2.0	0 - 2' **CLAYEY SILT:** ML/CL, brown (10YR 4/3), gravel (0-5%), sand (0-5%), low plasticity, medium stiff, moist.	ML/CL				0.75					
			2.5 3.0 3.5 4.0 4.5	2 - 19' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/4), dark yellowish brown (10YR 4/6) mottling, sand (15-25%), gravel (5-10%), low plasticity, hard, dry.					4.5					
			5.0 5.5 6.0 6.5 7.0	5' cobble. 6' gravel (30-45%).	CL/ML				4.5					
2 CS	120 99		7.5 8.0 8.5 9.0 9.5 10.0	7.5' moist.					4.5					

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Michael Panic

Firm Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

Boring Number APW20S

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			10.5	2 - 19' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/4), dark yellowish brown (10YR 4/6) mottling, sand (15-25%), gravel (5-10%), low plasticity, hard, dry. *(continued)*										
			11.0						4.5					
			11.5											
			12.0											
			12.5											
			13.0						4.5					
			13.5											
			14.0											
			14.5	14' dark yellowish brown (10YR 3/6) mottling or oxidation along fractures.	CL/ML									Soil sample collected at 14 - 16 feet below ground surface.
			15.0	15' coarse gravel-sized coal fragment.					4.5					
			15.5											
			16.0											
			16.5											
			17.0						4.5					
			17.5											
3 CS	60 72		18.0											
			18.5											
			19.0	19 - 23' **SILTY CLAY:** CL/ML, dark reddish gray (2.5YR 4/1), gravel (5-10%), sand (0-5%), low plasticity, hard, moist.					4.5					
			19.5											
			20.0						4.5					Soil sample collected at 20 - 22 feet below ground surface.
			20.5											
			21.0		CL/ML				4.5					
			21.5											
			22.0											
			22.5											
			23.0	23' End of Boring.										

RAMBOLL

SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Plant		APW21S

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Gavin Morgan Cascade Drilling LP	6/18/2024	6/18/2024	Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW21S	Feet (NAVD88)	541.85 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 825,613.44 N, 998,549.65 E Ⓔ/ W

1/4 of 1/4 of Section , T N, R

Lat 38.933963

Long -88.283070

Local Grid Location ☐ N ☐ S Feet ☐ E ☐ W Feet

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 CS	96 80		0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0	0 - 0.3' **FILL, TOPSOIL:** CL, grass, roots, vegetation. 0.3 - 1' **FILL, ASH (Coal):** ASH (Coal), gray (10YR 5/1), silt-sized, roots (0-5%), loose. 1 - 3' **SANDY LEAN CLAY WITH GRAVEL:** s(CL)g, brown (10YR 5/3) with dark yellowish brown (10YR 4/6) mottling, gravel (15-25%), roots (0-5%), medium plasticity, very stiff, moist. 3 - 5' **SILT:** ML, grayish brown (10YR 5/2) with dark yellowish brown (10YR 4/6) mottling, roots (0-5%), stiff to very stiff, moist. 5 - 7.5' **SILTY CLAY WITH SAND:** (CL/ML)S, brown (10YR 5/3) with dark yellowish brown (10YR 4/6) mottling, gravel (5-10%), low to medium plasticity, very stiff to hard, moist. 7.5 - 10' **POORLY-GRADED SAND WITH CLAY:** SP-SC, dark yellowish brown (10YR 3/6) to brown (10YR 5/3), well-rounded sand, well-rounded gravel (5-10%), loose, wet.	(FILL) CL (FILL) ASH (Coal) s(CL)g ML (CL/ML)S SP-SC				2 3 3.5 4.5					
2 CS	120 120													Soil sample collected at 8 - 10 feet below ground surface.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Michael Davis

Firm Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204

Tel: (414)837-3607
Fax: (414)837-3608

Boring Number APW21S

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			10.5	10 - 11.5' **SILTY CLAY WITH SAND:** (CL/ML)S, dark gray (10YR 4/1), gravel (5-10%), hard, moist.	(CL/ML)S				4.5					
			11.0											
			11.5	11.5 - 12' **SILT WITH GRAVEL:** (ML)g, yellowish brown (10YR 5/4), clay (0-5%), hard, moist.	(ML)g				4.5					
			12.0	12 - 14' **SILTY CLAY:** CL/ML, dark gray (10YR 4/1), gravel (0-5%), sand (0-5%), hard, moist.										
			12.5											
			13.0		CL/ML				4.5					
			13.5											
			14.0	14 - 16' **POORLY-GRADED SAND:** SP, dark grayish brown (10YR 4/2), rounded, medium to coarse grained, gravel (0-10%), medium dense, wet.										Soil sample collected at 14 - 16 feet below ground surface.
			14.5											
			15.0		SP									
			15.5											
			16.0	16 - 18' **SILTY CLAY:** CL/ML, dark gray (10YR 4/1), gravel (0-5%), sand (0-5%), hard, moist.										
			16.5											
			17.0		CL/ML				4.5					
			17.5											
			18.0	18' End of Boring.										

RAMBOLL

SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Plant		APW22S

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Gavin Morgan Cascade Drilling LP	6/19/2024	6/19/2024	Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW22S	Feet (NAVD88)	545.57 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 826,253.53 N, 999,581.23 E Ⓔ/ W

1/4 of 1/4 of Section , T N, R

Lat 38.935718

Long -88.279442

Local Grid Location ☐ N ☐ S Feet ☐ E ☐ W Feet

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 CS	96 91		0	0 - 0.5' **FILL, WELL-GRADED GRAVEL:** GW, dark gray (10YR 4/1), angular gravel, loose, moist.	(FILL) GW									
			1	0.5 - 1.7' **FILL, ASH (Coal):** ASH (Coal), very dark grayish brown (10YR 6/2) with dark yellowish brown (10YR 4/6) mottling, medium sand- to fine gravel-sized, subangular, loose, moist.	(FILL) ASH (Coal)									
			2	1.7 - 4.2' **FILL, LEAN CLAY:** CL, light brownish gray (10YR 6/2) with dark yellowish brown (10YR 4/6) mottling, gravel (5-10%), coarse sand (0-5%), medium plasticity, stiff to very stiff, moist.	(FILL) CL				1					
			3											
			4						2					
			4	4.2 - 4.5' **SILTY CLAY:** CL/ML, black (10YR 2/1), roots (5-10%), organics present, soft, wet.	CL/ML				2					
			5	4.5 - 6' **SILTY CLAY:** CL/ML, dark yellowish brown (10YR 4/4) with dark yellowish brown (10YR 4/6) mottling (0-5%), gravel (15-25%), sand (15-25%), roots (0-5%), medium plasticity very stiff, moist.	CL/ML				3					
			6	6 - 7' **SILTY CLAY:** CL/ML, gray (10YR 5/1) with brown (10YR 4/4) mottling, fine gravel (0-10%), coarse sand (0-10%), medium plasticity, stiff, moist.	CL/ML				0.5					
			7											
2 CS	120 117		8	7 - 11.5' **SILTY CLAY WITH GRAVEL:** (CL/ML)g, yellowish brown (10YR 5/4), dark yellowish brown (10YR 4/6) mottling (0-5%), low plasticity, very stiff, moist.					2					
			9		(CL/ML)g									
			10						3					Soil sample collected at 9 - 11 feet below ground surface.
			11	11' dark gray (10YR 4/1) mottling.										
			12	11.5 - 16.2' **SILTY CLAY WITH SAND:** (CL/ML)S, dark gray (10YR 4/1), dark yellowish brown (10YR 4/6) mottling (0-5%), gravel (5-10%), medium plasticity, moist.	(CL/ML)S				2					
			13											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Michael Davis

Firm Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

Boring Number APW22S

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			14	11.5 - 16.2' **SILTY CLAY WITH SAND:** (CL/ML)S, dark gray (10YR 4/1), dark yellowish brown (10YR 4/6) mottling (0-5%), gravel (5-10%), medium plasticity, moist. *(continued)*	(CL/ML)S				2					
			15	15' dark yellowish brown (10YR 4/6) mottling (40-50%). 15.2' - 15.3' layer of fine sand, wet.					1.5					
			16	16' - 16.2' layer of clayey sand with gravel, yellowish brown (10YR 5/6), rounded gravel, loose, wet.										
			17	16.2 - 19.5' **CLAYEY SILT:** to **SILTY CLAY:** ML/CL, yellowish brown (10YR 5/6), gravel (15-25%), sand (15-25%), moist.	ML/CL				4					
3 CS	60 72		18	17.2' - 17.5' layer of sandy lean clay with gravel, dark yellowish brown (10YR 4/4), high plasticity, wet.					4.5					
			19	17.5' yellowish brown (10YR 4/4).										
			20	19.5 - 20.5' **SILT:** ML, yellowish brown (10YR 5/4), gravel (0-5%), stiff, moist.	ML									
			21	20.5 - 22' **POORLY-GRADED SAND WITH GRAVEL:** (SP)g, yellowish brown (10YR 5/4), rounded sand and gravel, loose, wet.	(SP)g									Soil sample collected at 20.5 - 22 feet below ground surface.
			22	22 - 23' **SILTY CLAY:** CL/ML, yellowish brown (10YR 4/4), gravel (15-25%), sand (15-25%), hard, moist.	CL/ML				4.5					
			23	23' End of Boring.										

RAMBOLL

SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Plant		APW23

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Gavin Morgan Cascade Drilling LP	6/19/2024	6/20/2024	Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW23	Feet (NAVD88)	517.48 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 823,048.97 N, 1,001,259.46 E Ⓔ/ W

1/4 of 1/4 of Section , T N, R

Lat 38.926917

Long -88.273550

Local Grid Location ☐ N ☐ S Feet ☐ E ☐ W Feet

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 CS	96 78		0 1 2 3 4 5 6 7	0 - 0.5' **FILL, POORLY-GRADED GRAVEL WITH SAND:** (GP)s, gray (10YR 5/1), coarse grained, angular gravel, loose, moist. 0.5 - 1.5' **FILL, ASH (Coal):** ASH (Coal), very dark gray (10YR 3/1), fine to coarse sand-sized, subangular, coarse gravel, loose, moist. 1.5 - 3' **SILTY CLAY:** CL/ML, olive (5Y 4/3) with dark yellowish brown (10YR 4/4) mottling (5-15%), gravel (15-25%), sand (15-25%), medium plasticity, medium stiff, moist. 3 - 7' **FAT CLAY:** CH, olive gray (5Y 5/2), organic mottling (10-20%), sand (15-25%), roots (0-5%), medium to high plasticity, medium stiff, moist.	(FILL) (GP)s (FILL) ASH (Coal) CL/ML CH				1 1					
2 CS	120 120		8 9 10 11 12 13	7 - 8.5' **SILTY CLAY:** CL/ML, olive (5Y 4/3) with dark yellowish brown (10YR 4/4) mottling (5-15%), (gravel (15-25%), sand (15-25%), medium plasticity, stiff, moist. 8.5 - 34.5' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/6), gray (10YR 5/1) mottling (5-15%), gravel (15-25%), sand (15-25%), low to medium plasticity, hard, moist. 11.5' layer of gravel, moist to wet (1" thick). 12.5' layer of gravel, moist to wet (1" thick).	CL/ML CL/ML				1.5 4.5 4.5					

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm	
Michael Davis	Ramboll 234 W Florida Street, 5th Floor, Milwaukee, WI 53204	Tel: (414)837-3607 Fax: (414)837-3608

Boring Number APW23 Page 2 of 3

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			14	8.5 - 34.5' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/6), gray (10YR 5/1) mottling (5-15%), gravel (15-25%), sand (15-25%), low to medium plasticity, hard, moist. *(continued)* 14' layer of gravel, moist to wet (1" thick).					4.5					
			15						4.5					
			16											
			17	16.5' layer of gravel, moist to wet (1" thick).					4.5					
3 CS	120 128		18											
			19						4.5					
			20											
			21						4.5					
			22											
			23						4.5					
			24		CL/ML									
			25						4.5					
			26											
			27						4.5					
4 CS	120 128		28	28' brown (10YR 5/3).										
			29						4.5					
			30											
			31						4.5					
			32											
			33						4.5					
			34											

RAMBOLL

SOIL BORING LOG INFORMATION

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Newton Power Plant		APW23S

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Gavin Morgan Cascade Drilling LP	6/19/2024	6/19/2024	Sonic

Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
APW23S	Feet (NAVD88)	515.79 Feet (NAVD88)	6.0 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒

State Plane 823,040.09 N, 1,001,281.17 E Ⓔ/ W

1/4 of 1/4 of Section , T N, R

Lat 38.926892

Long -88.273474

Local Grid Location ☐ N ☐ E Feet ☐ S Feet ☐ W

Facility ID	County	State	Civil Town/City/ or Village
	Jasper	IL	Newton

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 HA	48 48		0.5	0 - 0.5' **FILL, POORLY-GRADED GRAVEL WITH SAND:** (GP)s, gray (10YR 5/1), coarse grained, angular gravel, loose, moist.	(FILL) (GP)s									
			1.0	0.5 - 1.5' **FILL, ASH (Coal):** ASH (Coal), very dark gray (10YR 3/1), fine to coarse sand-sized, subangular, coarse gravel, loose, moist.	(FILL) ASH (Coal)									
			1.5	1.5 - 3' **SILTY CLAY:** CL/ML, olive (5Y 4/3) with dark yellowish brown (10YR 4/4) mottling (5-15%), gravel (15-25%), sand (15-25%), medium plasticity, medium stiff, moist.	CL/ML				2					
			3.0	3 - 7' **FAT CLAY:** CH, olive gray (5Y 5/2), organic mottling (10-20%), sand (15-25%), roots (0-5%), medium to high plasticity, medium stiff, moist.					0.5					
2 CS	48 48		4.5		CH				2					
			6.0						3.5					
			7.0	7 - 8.5' **SILTY CLAY:** CL/ML, olive (5Y 4/3) with dark yellowish brown (10YR 4/4) mottling (5-15%), (gravel (15-25%), sand (15-25%), medium plasticity, stiff, moist.	CL/ML									
3 CS	120 75		8.5						4					
			9.0	8.5 - 18' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/6), gray (10YR 5/1) mottling (5-15%), gravel (15-25%), sand (15-25%), low to medium plasticity, hard, moist.	CL/ML				4.5					
			10.0											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Michael Davis

Firm Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

Boring Number APW23S

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID 10.6 eV Lamp	Soil Properties: Compressive Strength (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			10.5	8.5 - 18' **SILTY CLAY:** CL/ML, yellowish brown (10YR 5/6), gray (10YR 5/1) mottling (5-15%), gravel (15-25%), sand (15-25%), low to medium plasticity, hard, moist. *(continued)*										
			11.0						4.5					
			11.5	11.5' layer of gravel, moist to wet (1" thick).										
			12.0											
			12.5	12.5' layer of gravel, moist to wet (1" thick).										Soil sample collected at 12 - 16 feet below ground surface.
			13.0						4.5					
			13.5											
			14.0	14' layer of gravel, moist to wet (1" thick).	CL/ML									
			14.5											
			15.0						2					
			15.5											
			16.0											
			16.5	16.5' layer of gravel, moist to wet (1" thick).										
			17.0						4.5					
			17.5											
			18.0	18' End of Boring.										

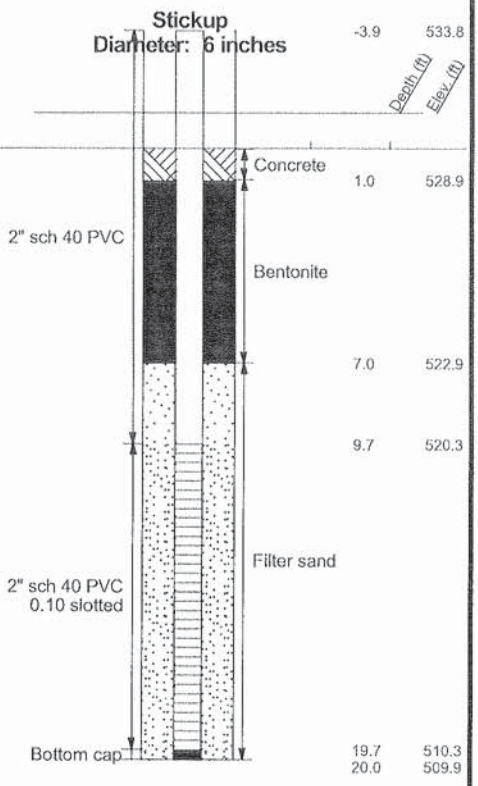
WELL CONSTRUCTION FORMS

Surface Elevation: 529.93
Datum msl
Completion Date: 6/19/10
Northing: 822688.04
Easting: 995465.25

DEPTH IN FEET	DESCRIPTION OF MATERIAL
	Soft, brown, silty CLAY - CL
5	Stiff, brown, sandy CLAY - CL
	Hard, brown, sandy CLAY with gravel - CL ▽
10	
	Hard, dark gray CLAY and glacial till - CH
15	
20	Boring terminated at 20 feet.
25	
30	
35	

GRAPHIC LOG | DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD | SAMPLES

WELL DIAGRAM



GROUNDWATER DATA

ENCOUNTERED AT 8.5 FEET ▽

DRILLING DATA

4 1/4" AUGER ___ HOLLOW STEM
WASHBORING FROM ___ FEET
MVU DRILLER KCR LOGGER
CME 750X DRILL RIG
HAMMER TYPE Auto

REMARKS:

Drawn by: KA	Checked by: RBF	App'vd. by: DTK
Date: 6/29/10	Date: 2-7-11	Date: 2-7-11

GEOTECHNOLOGY INC
FROM THE GROUND UP

Ameren Power Plant
Newton, Illinois

LOG OF BORING: APW-2

Project No. J017150.01

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

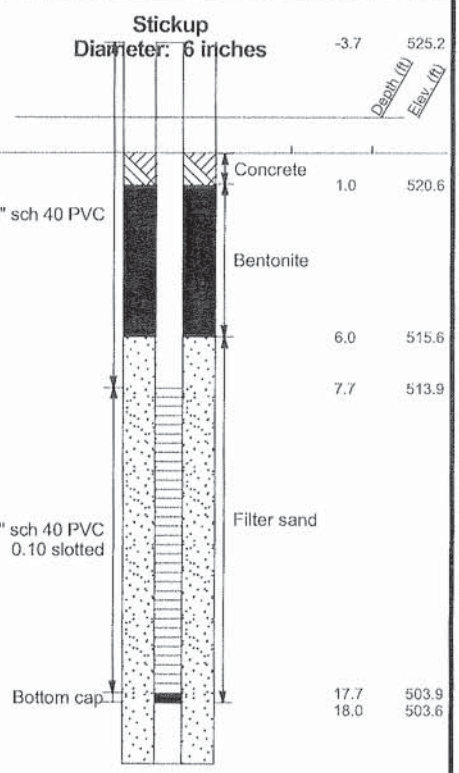
LOG OF BORING 2002 WL J017150.01ENV - AMEREN-NEWTON.GPJ GTINC 0638301.GPJ 2/22/11

Surface Elevation: 521.56 | Completion Date: 6/19/10

Datum msl | Northing: 823246.45 | Easting: 1001379.56

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
	Soft, brown, silty CLAY - CL			
5				
	Soft, brown, sandy CLAY - CL ▽			
10				
	Stiff, brown, sandy CLAY with gravel - CL			
15				
	Boring terminated at 18 feet.			
20				
25				
30				
35				

WELL DIAGRAM



NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2002 WL J017150.01ENV - AMEREN-NEWTON.GPJ GTINC 0638301.GPJ 2/7/11

GROUNDWATER DATA

ENCOUNTERED AT 8 FEET ▽

DRILLING DATA

4 1/4" AUGER ___ HOLLOW STEM

WASHBORING FROM ___ FEET

MVU DRILLER KCR LOGGER

CME 750X DRILL RIG

HAMMER TYPE Auto

REMARKS:

Drawn by: KA	Checked by: KJS	App'vd. by: DJK
Date: 6/29/10	Date: 2-7-11	Date: 2-7-11

GEOTECHNOLOGY INC
FROM THE GROUND UP

Ameren Power Plant
Newton, Illinois

LOG OF BORING: APW-4

Project No. J017150.01

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Station	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: APW5S
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 38° 55' 2.2" Long. -88° 16' 51.7" or	
Facility ID	St. Plane 825,612 ft. N, 999,129 ft. E. Ⓔ/W	Date Well Installed: 01/19/2021
Type of Well: Well Code 71/dw	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. 26, T. 6 N, R. 8 ☒ E ☐ W	Well Installed By: (Person's Name and Firm) Dave Gordon
Distance from Waste/Source ft. / State IL	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ____ / Cascade Drilling

A. Protective pipe, top elevation 544.41 ft. (NAVD88)

B. Well casing, top elevation 543.94 ft. (NAVD88)

C. Land surface elevation 541.0 ft. (NAVD88)

D. Surface seal, bottom 540.0 ft. (NAVD88) or 1.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☒ MH ☐ CL ☒ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Mini-Sonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☐

16. Drilling additives used? ☐ Yes ☒ No

Describe ____

17. Source of water (attach analysis, if required):
Potable Plant Water

E. Bentonite seal, top 540.0 ft. (NAVD88) or 1.0 ft.

F. Fine sand, top ____ ft. (NAVD88) or ____ ft.

G. Filter pack, top 533.0 ft. (NAVD88) or 8.0 ft.

H. Screen joint, top 531.0 ft. (NAVD88) or 10.0 ft.

I. Well bottom 521.0 ft. (NAVD88) or 20.0 ft.

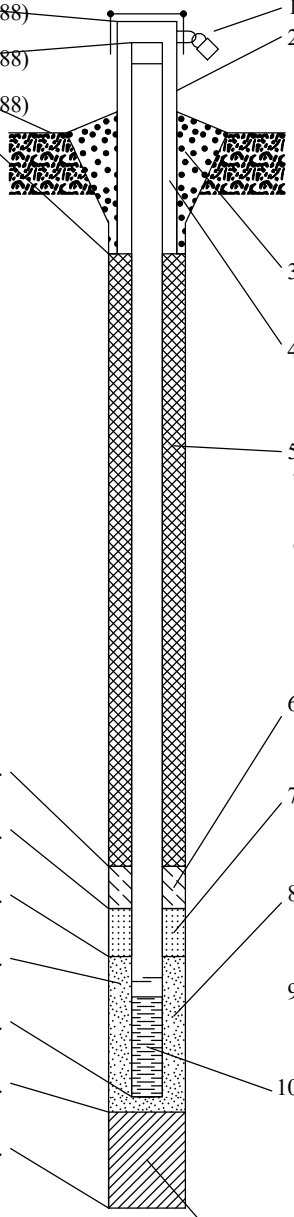
J. Filter pack, bottom 518.0 ft. (NAVD88) or 23.0 ft.

K. Borehole, bottom 518.0 ft. (NAVD88) or 23.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.38 in.

N. I.D. well casing 2.07 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: Bollards
3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐
4. Material between well casing and protective pipe: Bentonite ☐ Sand Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☒
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐
c. ____ Lbs/gal mud weight . . . Bentonite slurry ☐
d. ____ % Bentonite . . . Bentonite-cement grout ☐
e. 1.222 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ Tremie pumped ☐ Gravity ☒
6. Bentonite seal: a. Bentonite granules ☐
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. Not Applicable
b. Volume added 0 ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. Filter Sil, Industrial Quartz
b. Volume added 2.683 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
10. Screen material: Schedule 40 PVC
a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
b. Manufacturer Johnson Screens
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒ Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge. Date Modified: 5/3/2021

Signature ____ Firm Ramboll
234 W. Florida Street, Milwaukee, WI 53204
Tel: (414) 837-3607
Fax: (414) 837-3608

Illinois Environmental Protection Agency — Well Completion Report

Site #: _____ County: Jasper County Well #: APW10

Site Name: Newton Energy Center Borehole #: APW10a

~~State~~ Plant
~~Plane~~ Coordinate: X 11,541.2 Y 5,371.3 (or) Latitude: 38° 55' 38.790" Longitude: -88° 16' 23.280"

Surveyed By: Michael J. Graminski IL Registration #: 035-002901

Drilling Contractor: Bulldog Drilling, Inc. Driller: C. Dutton

Consulting Firm: Hanson Professional Services Inc. Geologist: Rhonald W. Hasenyager, LPG #196-000246

Drilling Method: Hollow Stem Auger Drilling Fluid (Type): Water

Logged By: Suzanna L. Keim Date Started: 10/27/2015 Date Finished: 10/27/2015

Report Form Completed By: Suzanna L. Keim Date: 11/6/2015

ANNULAR SPACE DETAILS

Type of Surface Seal: Concrete

Type of Annular Sealant: High-solids bentonite

Installation Method: Tremie

Setting Time: >48 hours

Type of Bentonite Seal -- Granular (Pellet) Slurry
(choose one)

Installation Method: Gravity

Setting Time: 50 minutes

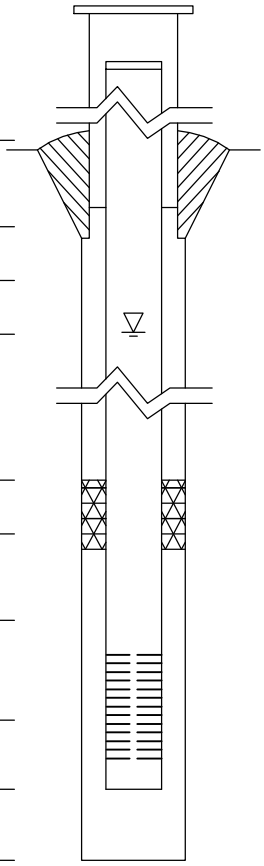
Type of Sand Pack: Quartz Sand

Grain Size: 10-20 (sieve size)

Installation Method: Gravity

Type of Backfill Material: n/a
(if applicable)

Installation Method: _____



	Elevations (MSL)*	Depths (BGS) (0.01 ft.)
Top of Protective Casing	525.12	-3.14
Top of Riser Pipe	524.74	-2.76
Ground Surface	521.98	0.00
Top of Annular Sealant	519.98	2.00
Static Water Level (After Completion) 12/15/2015	504.12	17.86
Top of Seal	484.66	37.32
Top of Sand Pack	483.22	38.76
Top of Screen	481.24	40.74
Bottom of Screen	476.44	45.54
Bottom of Well	476.04	45.94
Bottom of Borehole	476.04	45.94

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIALS
(Choose one type of material for each area)

Protective Casing	SS304	SS316	PTFE	PVC	OTHER: (Steel)
Riser Pipe Above W.T.	SS304	SS316	PTFE	(PVC)	OTHER:
Riser Pipe Below W.T.	SS304	SS316	PTFE	(PVC)	OTHER:
Screen	SS304	SS316	PTFE	(PVC)	OTHER:

CASING MEASUREMENTS

Diameter of Borehole	(inches)	8.0
ID of Riser Pipe	(inches)	2.0
Protective Casing Length	(feet)	5.0
Riser Pipe Length	(feet)	43.50
Bottom of Screen to End Cap	(feet)	0.40
Screen Length (1st slot to last slot)	(feet)	4.80
Total Length of Casing	(feet)	48.70
Screen Slot Size **	(inches)	0.010

**Hand-Slotted Well Screens Are Unacceptable

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Station

Facility License, Permit or Monitoring No.:

Facility ID:

Type of Well: Well Code 72/dp

Distance from Waste/Source: ft. | State: IL

Local Grid Location of Well: ft. ☐ N. ☐ S. ft. ☐ E. ☐ W.

Local Grid Origin ☐ (estimated: ☐) or Well Location ☒

Lat. 38° 55' 58.1" Long. -88° 16' 31.6" or

St. Plane 825,195 ft. N, 1,000,718 ft. E. Ⓔ/W

Section Location of Waste/Source: ☒ E ☐ W

1/4 of 1/4 of Sec. 25, T. 6 N, R. 8

Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known

Gov. Lot Number:

Well Name: APW11

Date Well Installed: 01/23/2021

Well Installed By: (Person's Name and Firm): Dave Gordon, Cascade Drilling

A. Protective pipe, top elevation: 539.11 ft. (NAVD88)

B. Well casing, top elevation: 538.63 ft. (NAVD88)

C. Land surface elevation: 536.0 ft. (NAVD88)

D. Surface seal, bottom: 534.0 ft. (NAVD88) or 2.0 ft.

12. USCS classification of soil near screen:
GP ☒ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☒ SC ☒ ML ☒ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Mini-Sonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☐

16. Drilling additives used? ☐ Yes ☒ No

Describe

17. Source of water (attach analysis, if required): Potable Plant Water

E. Bentonite seal, top: 481.0 ft. (NAVD88) or 55.0 ft.

F. Fine sand, top: ft. (NAVD88) or ft.

G. Filter pack, top: 478.0 ft. (NAVD88) or 58.0 ft.

H. Screen joint, top: 476.0 ft. (NAVD88) or 60.0 ft.

I. Well bottom: 471.0 ft. (NAVD88) or 65.0 ft.

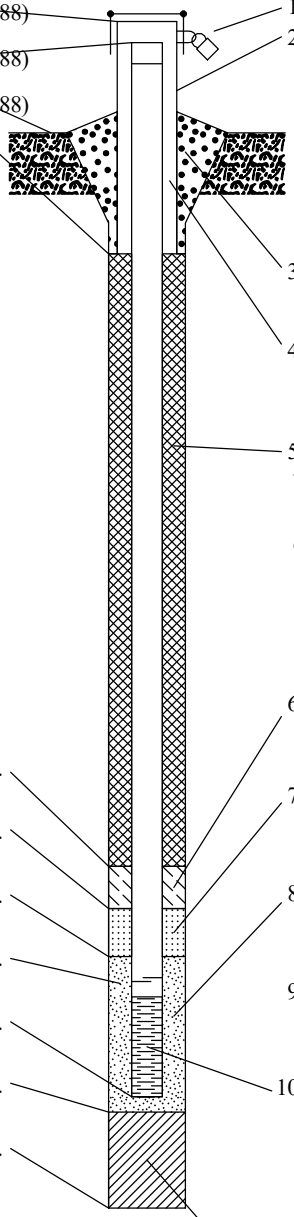
J. Filter pack, bottom: 469.0 ft. (NAVD88) or 67.0 ft.

K. Borehole, bottom: 436.0 ft. (NAVD88) or 100.0 ft.

L. Borehole, diameter: 6.0 in.

M. O.D. well casing: 2.38 in.

N. I.D. well casing: 2.07 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: Bollards

3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐

4. Material between well casing and protective pipe: Bentonite ☐ Sand Other ☒

5. Annular space seal: a. Granular/Chipped Bentonite ☐
b. Lbs/gal mud weight . . . Bentonite-sand slurry ☐
c. 9.6 Lbs/gal mud weight . . . Bentonite slurry ☒
d. % Bentonite . . . Bentonite-cement grout ☐
e. 9.250 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ Tremie pumped ☒ Gravity ☐

6. Bentonite seal: a. Bentonite granules ☐
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
c. Other ☐

7. Fine sand material: Manufacturer, product name & mesh size
a. Not Applicable
b. Volume added 0 ft^3

8. Filter pack material: Manufacturer, product name & mesh size
a. Filter Sil, Industrial Quartz
b. Volume added 1.614 ft^3

9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐

10. Screen material: Schedule 40 PVC
a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
b. Manufacturer Johnson Screens
c. Slot size: 0.010 in.
d. Slotted length: 5.0 ft.

11. Backfill material (below filter pack): None ☐ Benoite Slurry Grout Other ☒

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Date Modified: 5/3/2021

Signature

Firm: Ramboll
234 W. Florida Street, Milwaukee, WI 53204
Tel: (414) 837-3607
Fax: (414) 837-3608

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Station	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: APW12
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 38° 55' 47.1" Long. -88° 16' 19.4" or St. Plane 824,081 ft. N, 1,001,683 ft. E. Ⓔ/W	
Facility ID		Date Well Installed: 01/21/2021
Type of Well: Well Code 72/dp	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. 25, T. 6 N, R. 8 ☒ E ☐ W	Well Installed By: (Person's Name and Firm) Russ Gordon
Distance from Waste/Source ____ ft. / State IL	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ____ / Cascade Drilling

A. Protective pipe, top elevation 546.68 ft. (NAVD88)

B. Well casing, top elevation 546.29 ft. (NAVD88)

C. Land surface elevation 543.3 ft. (NAVD88)

D. Surface seal, bottom 541.3 ft. (NAVD88) or 2.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☒ MH ☐ CL ☒ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Mini-Sonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☐

16. Drilling additives used? ☐ Yes ☒ No

Describe ____

17. Source of water (attach analysis, if required):
Potable Plant Water

E. Bentonite seal, top 541.3 ft. (NAVD88) or 2.0 ft.

F. Fine sand, top ____ ft. (NAVD88) or ____ ft.

G. Filter pack, top 525.3 ft. (NAVD88) or 18.0 ft.

H. Screen joint, top 523.3 ft. (NAVD88) or 20.0 ft.

I. Well bottom 513.3 ft. (NAVD88) or 30.0 ft.

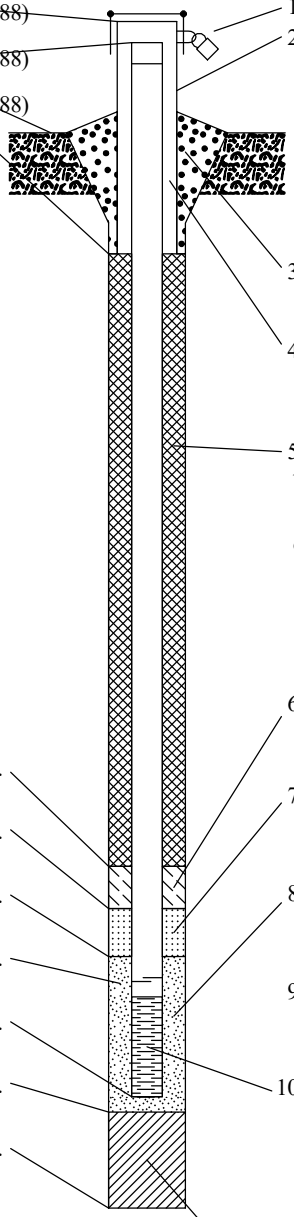
J. Filter pack, bottom 511.3 ft. (NAVD88) or 32.0 ft.

K. Borehole, bottom 456.3 ft. (NAVD88) or 87.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.38 in.

N. I.D. well casing 2.07 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: Bollards

3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐

4. Material between well casing and protective pipe: Bentonite ☐ Sand Other ☒

5. Annular space seal: a. Granular/Chipped Bentonite ☒
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐
c. ____ Lbs/gal mud weight . . . Bentonite slurry ☐
d. ____ % Bentonite . . . Bentonite-cement grout ☐
e. 0.000 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ Tremie pumped ☐ Gravity ☒

6. Bentonite seal: a. Bentonite granules ☐
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
c. ____ Other ☐

7. Fine sand material: Manufacturer, product name & mesh size
a. Not Applicable
b. Volume added 0 ft^3

8. Filter pack material: Manufacturer, product name & mesh size
a. Filter Sil, Industrial Quartz
b. Volume added 2.487 ft^3

9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐

10. Screen material: Schedule 40 PVC
a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
b. Manufacturer Johnson Screens
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.

11. Backfill material (below filter pack): None ☐ Benoite Slurry Grout Other ☒

I hereby certify that the information on this form is true and correct to the best of my knowledge. Date Modified: 5/3/2021

Signature: SA Wb

Firm: Ramboll
234 W. Florida Street, Milwaukee, WI 53204
Tel: (414) 837-3607
Fax: (414) 837-3608

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Station

Facility License, Permit or Monitoring No.:

Facility ID:

Type of Well: Well Code 72/dp

Distance from Waste/Source: ft. | State: IL

Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.

Local Grid Origin ☐ (estimated: ☐) or Well Location ☒

Lat. 38° 55' 32.4" Long. -88° 16' 27.9" or

St. Plane 822,591 ft. N, 1,001,013 ft. E. Ⓔ/W

Section Location of Waste/Source: ☒ E ☐ W

____ 1/4 of ____ 1/4 of Sec. 25, T. 6 N, R. 8

Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known

Gov. Lot Number:

Well Name: APW13

Date Well Installed: 01/23/2021

Well Installed By: (Person's Name and Firm): Russ Gordon, Cascade Drilling

A. Protective pipe, top elevation 538.33 ft. (NAVD88)

B. Well casing, top elevation 537.99 ft. (NAVD88)

C. Land surface elevation 535.2 ft. (NAVD88)

D. Surface seal, bottom 533.2 ft. (NAVD88) or 2.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☒ SC ☐ ML ☒ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Mini-Sonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☐

16. Drilling additives used? ☐ Yes ☒ No

Describe ____

17. Source of water (attach analysis, if required): Potable Plant Water

E. Bentonite seal, top 481.2 ft. (NAVD88) or 54.0 ft.

F. Fine sand, top ____ ft. (NAVD88) or ____ ft.

G. Filter pack, top 479.2 ft. (NAVD88) or 56.0 ft.

H. Screen joint, top 476.7 ft. (NAVD88) or 58.5 ft.

I. Well bottom 471.7 ft. (NAVD88) or 63.5 ft.

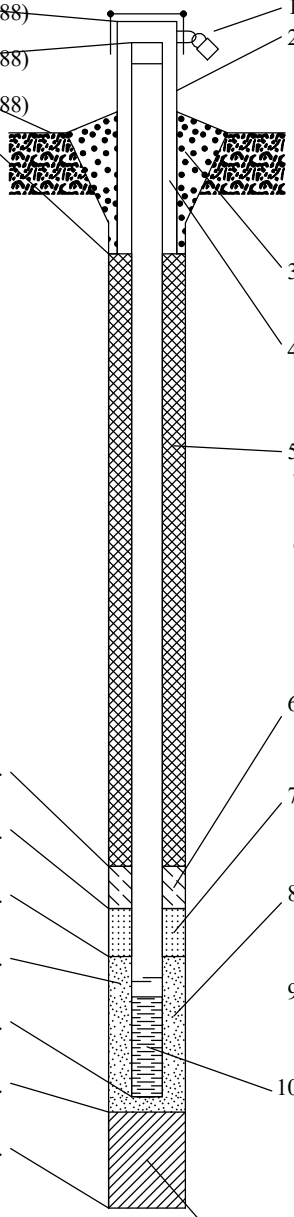
J. Filter pack, bottom 470.2 ft. (NAVD88) or 65.0 ft.

K. Borehole, bottom 445.2 ft. (NAVD88) or 90.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.38 in.

N. I.D. well casing 2.07 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: Bollards
3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐
4. Material between well casing and protective pipe: Bentonite ☐ Sand Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☐
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐
c. 9.6 Lbs/gal mud weight . . . Bentonite slurry ☒
d. ____ % Bentonite . . . Bentonite-cement grout ☐
e. 9.076 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ Tremie pumped ☒ Gravity ☐
6. Bentonite seal: a. Bentonite granules ☐
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. Not Applicable
b. Volume added 0 ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. Filter Sil, Industrial Quartz
b. Volume added 1.604 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
10. Screen material: Schedule 40 PVC
a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
b. Manufacturer Johnson Screens
c. Slot size: 0.010 in.
d. Slotted length: 5.0 ft.
11. Backfill material (below filter pack): None ☐ Formation Materials Other ☒

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Date Modified: 5/3/2021

Signature: [signature]

Firm: Ramboll
234 W. Florida Street, Milwaukee, WI 53204
Tel: (414) 837-3607
Fax: (414) 837-3608

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Plant	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: APW19S
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 38.925146 Long. -88.294493 or	
Facility ID	St. Plane 822,401 ft. N, 995,302 ft. E. Ⓔ/W	Date Well Installed: 06/18/2024
Type of Well: Well Code 11/mw	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W	Well Installed By: (Person's Name and Firm): Gavin Morgan
Distance from Waste/Source: ____ ft. State: IL	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ____ Cascade Drilling LP

A. Protective pipe, top elevation 532.39 ft. (NAVD88)

B. Well casing, top elevation 531.84 ft. (NAVD88)

C. Land surface elevation 529.58 ft. (NAVD88)

D. Surface seal, bottom 528.6 ft. (NAVD88) or 1.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☒ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☒ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Sonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☐

16. Drilling additives used? ☒ Yes ☐ No

Describe ____

17. Source of water (attach analysis, if required):
Potable water source from Newton Power Plant

E. Bentonite seal, top 527.6 ft. (NAVD88) or 2.0 ft.

F. Fine sand, top ____ ft. (NAVD88) or ____ ft.

G. Filter pack, top 523.6 ft. (NAVD88) or 6.0 ft.

H. Screen joint, top 521.6 ft. (NAVD88) or 8.0 ft.

I. Well bottom 511.6 ft. (NAVD88) or 18.0 ft.

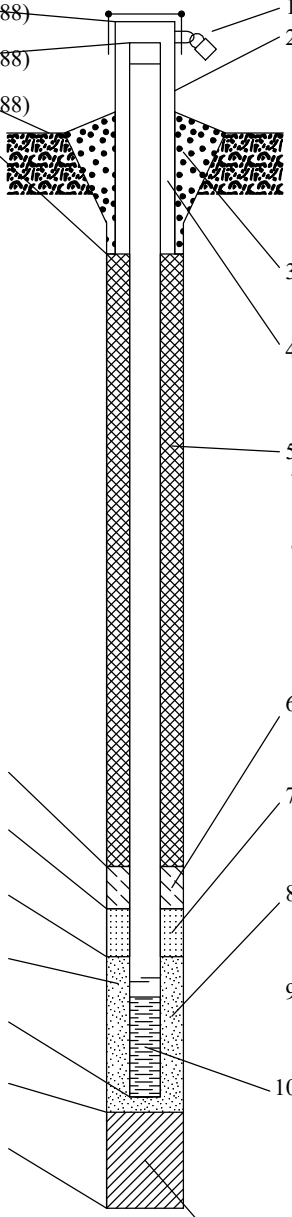
J. Filter pack, bottom 511.6 ft. (NAVD88) or 18.0 ft.

K. Borehole, bottom 511.6 ft. (NAVD88) or 18.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.38 in.

N. I.D. well casing 2.07 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: 4 steel bollards
3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐
4. Material between well casing and protective pipe: Bentonite ☒ Sand Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☒
b. ____Lbs/gal mud weight . . . Bentonite-sand slurry ☐
c. ____Lbs/gal mud weight . . . Bentonite slurry ☐
d. ____% Bentonite . . . Bentonite-cement grout ☐
e. 0.5 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ Tremie pumped ☐ Gravity ☒
6. Bentonite seal: a. Bentonite granules ☐
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. ____
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. K&E Well Gravel
b. Volume added 1.5 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
10. Screen material: Schedule 40 PVC
a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
b. Manufacturer Johnson Screens
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒ Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge. Date Modified: 10/24/2024

Signature: Michael Davie

Firm: Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Plant	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: APW20S
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 38.925944 Long. -88.294895 or	
Facility ID	St. Plane 822,692 ft. N, 995,187 ft. E. Ⓔ/W	Date Well Installed: 06/18/2024
Type of Well: Well Code 11/mw	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W	Well Installed By: (Person's Name and Firm): Gavin Morgan; Cascade Drilling LP
Distance from Waste/Source: ____ ft. State: IL	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number:

A. Protective pipe, top elevation 525.93 ft. (NAVD88)

B. Well casing, top elevation 525.60 ft. (NAVD88)

C. Land surface elevation 521.93 ft. (NAVD88)

D. Surface seal, bottom 520.9 ft. (NAVD88) or 1.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☒ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Sonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☐

16. Drilling additives used? ☒ Yes ☐ No

Describe ____

17. Source of water (attach analysis, if required):
Potable water source from Newton Power Plant

E. Bentonite seal, top 512.9 ft. (NAVD88) or 9.0 ft.

F. Fine sand, top ____ ft. (NAVD88) or ____ ft.

G. Filter pack, top 509.9 ft. (NAVD88) or 12.0 ft.

H. Screen joint, top 508.9 ft. (NAVD88) or 13.0 ft.

I. Well bottom 498.9 ft. (NAVD88) or 23.0 ft.

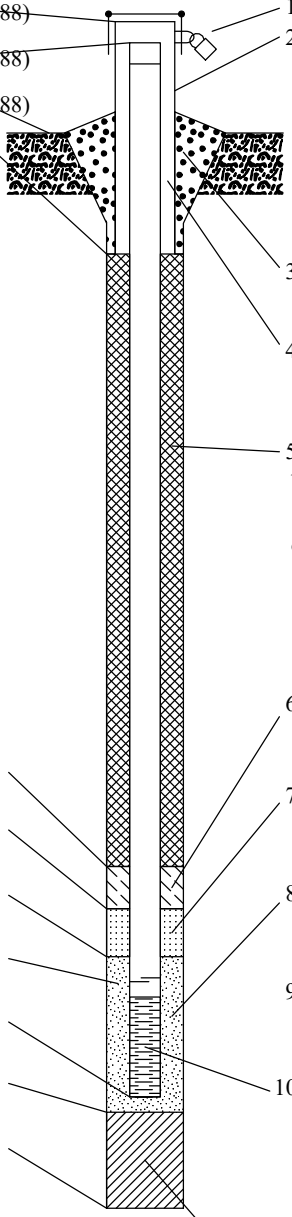
J. Filter pack, bottom 498.9 ft. (NAVD88) or 23.0 ft.

K. Borehole, bottom 498.9 ft. (NAVD88) or 23.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.38 in.

N. I.D. well casing 2.07 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: 4 steel bollards
3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐
4. Material between well casing and protective pipe: Bentonite ☒ Sand Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☐
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐
c. ____ Lbs/gal mud weight . . . Bentonite slurry ☐
d. 5 % Bentonite . . . Bentonite-cement grout ☒
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ Tremie pumped ☒ Gravity ☐
6. Bentonite seal: a. Bentonite granules ☐
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. ____
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. K&E Well Gravel
b. Volume added 1 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
10. Screen material: Schedule 40 PVC
a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
b. Manufacturer Johnson Screens
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒ Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge. Date Modified: 10/24/2024

Signature: Michael Davie

Firm: Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Plant	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: APW21S
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 38.933963 Long. -88.283070 or	
Facility ID	St. Plane 825,613 ft. N, 998,550 ft. E. Ⓔ/W	Date Well Installed: 06/18/2024
Type of Well: Well Code 11/mw	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W	Well Installed By: (Person's Name and Firm): Gavin Morgan
Distance from Waste/Source: ____ ft. State: IL	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ____ Cascade Drilling LP

A. Protective pipe, top elevation 545.99 ft. (NAVD88)

B. Well casing, top elevation 545.70 ft. (NAVD88)

C. Land surface elevation 541.85 ft. (NAVD88)

D. Surface seal, bottom 540.9 ft. (NAVD88) or 1.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☒ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☒ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Sonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☐

16. Drilling additives used? ☒ Yes ☐ No

Describe ____

17. Source of water (attach analysis, if required):
Potable water source from Newton Power Plant

E. Bentonite seal, top 539.9 ft. (NAVD88) or 2.0 ft.

F. Fine sand, top ____ ft. (NAVD88) or ____ ft.

G. Filter pack, top 535.9 ft. (NAVD88) or 6.0 ft.

H. Screen joint, top 533.9 ft. (NAVD88) or 8.0 ft.

I. Well bottom 523.9 ft. (NAVD88) or 18.0 ft.

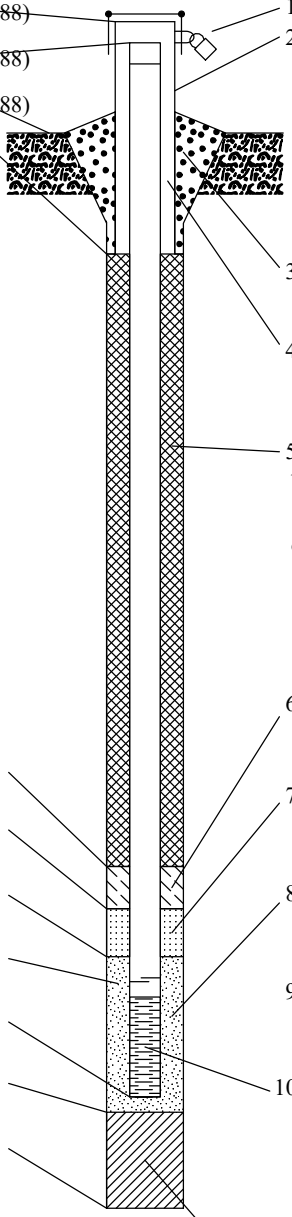
J. Filter pack, bottom 523.9 ft. (NAVD88) or 18.0 ft.

K. Borehole, bottom 523.9 ft. (NAVD88) or 18.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.38 in.

N. I.D. well casing 2.07 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: 4 steel bollards
3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐
4. Material between well casing and protective pipe: Bentonite ☒ Sand Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☒
b. ____Lbs/gal mud weight . . . Bentonite-sand slurry ☐
c. ____Lbs/gal mud weight . . . Bentonite slurry ☐
d. ____% Bentonite . . . Bentonite-cement grout ☐
e. 0.5 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ Tremie pumped ☐ Gravity ☒
6. Bentonite seal: a. Bentonite granules ☐
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. ____
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. K&E Well Gravel
b. Volume added 1.5 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
10. Screen material: Schedule 40 PVC
a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
b. Manufacturer Johnson Screens
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒ Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge. Date Modified: 10/24/2024

Signature: Michael Davie

Firm: Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Plant	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: APW22S
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 38.935718 Long. -88.279442 or	
Facility ID	St. Plane 826,254 ft. N, 999,581 ft. E. Ⓔ/W	Date Well Installed: 06/19/2024
Type of Well: Well Code 11/mw	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W	Well Installed By: (Person's Name and Firm): Gavin Morgan
Distance from Waste/Source: ____ ft. State: IL	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ____ Cascade Drilling LP

A. Protective pipe, top elevation 549.23 ft. (NAVD88)

B. Well casing, top elevation 548.97 ft. (NAVD88)

C. Land surface elevation 545.57 ft. (NAVD88)

D. Surface seal, bottom 544.6 ft. (NAVD88) or 1.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☒ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☒ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Sonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☐

16. Drilling additives used? ☒ Yes ☐ No

Describe ____

17. Source of water (attach analysis, if required):
Potable water source from Newton Power Plant

E. Bentonite seal, top 543.6 ft. (NAVD88) or 2.0 ft.

F. Fine sand, top ____ ft. (NAVD88) or ____ ft.

G. Filter pack, top 535.6 ft. (NAVD88) or 10.0 ft.

H. Screen joint, top 533.6 ft. (NAVD88) or 12.0 ft.

I. Well bottom 523.6 ft. (NAVD88) or 22.0 ft.

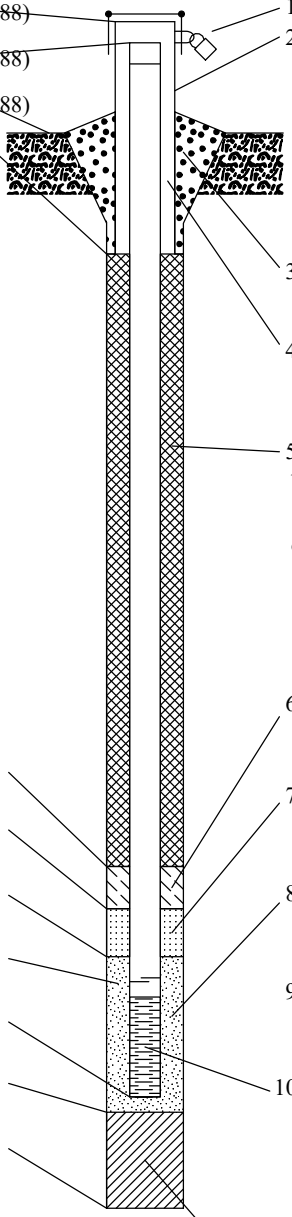
J. Filter pack, bottom 523.6 ft. (NAVD88) or 22.0 ft.

K. Borehole, bottom 522.6 ft. (NAVD88) or 23.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.38 in.

N. I.D. well casing 2.07 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: 4 steel bollards
3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐
4. Material between well casing and protective pipe: Bentonite ☒ Sand Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☒
b. ____Lbs/gal mud weight . . . Bentonite-sand slurry ☐
c. ____Lbs/gal mud weight . . . Bentonite slurry ☐
d. ____% Bentonite . . . Bentonite-cement grout ☐
e. 0.5 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ Tremie pumped ☐ Gravity ☒
6. Bentonite seal: a. Bentonite granules ☐
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. ____
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. K&E Well Gravel
b. Volume added 2.5 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
10. Screen material: Schedule 40 PVC
a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
b. Manufacturer Johnson Screens
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☐ K&E Well Gravel Other ☒

I hereby certify that the information on this form is true and correct to the best of my knowledge. Date Modified: 10/24/2024

Signature: Michael Davie

Firm: Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Plant	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: APW23
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 38.926917 Long. -88.273550 or	
Facility ID	St. Plane 823,049 ft. N, 1,001,259 ft. E. Ⓔ/W	Date Well Installed: 06/20/2024
Type of Well: Well Code 11/mw	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W	Well Installed By: (Person's Name and Firm): Gavin Morgan; Cascade Drilling LP
Distance from Waste/Source: ____ ft. State: IL	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ____

A. Protective pipe, top elevation 521.13 ft. (NAVD88)

B. Well casing, top elevation 520.66 ft. (NAVD88)

C. Land surface elevation 517.48 ft. (NAVD88)

D. Surface seal, bottom 516.5 ft. (NAVD88) or 1.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☒ SP ☐
SM ☐ SC ☐ ML ☒ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Sonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☐

16. Drilling additives used? ☒ Yes ☐ No

Describe ____

17. Source of water (attach analysis, if required):
Potable water source from Newton Power Plant

E. Bentonite seal, top 489.5 ft. (NAVD88) or 28.0 ft.

F. Fine sand, top ____ ft. (NAVD88) or ____ ft.

G. Filter pack, top 487.5 ft. (NAVD88) or 30.0 ft.

H. Screen joint, top 485.5 ft. (NAVD88) or 32.0 ft.

I. Well bottom 475.5 ft. (NAVD88) or 42.0 ft.

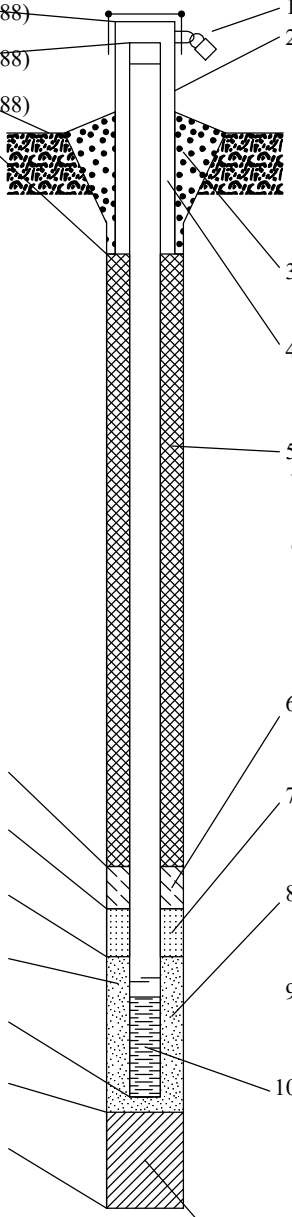
J. Filter pack, bottom 473.5 ft. (NAVD88) or 44.0 ft.

K. Borehole, bottom 469.5 ft. (NAVD88) or 48.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.38 in.

N. I.D. well casing 2.07 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: 4 steel bollards
3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐
4. Material between well casing and protective pipe: Bentonite ☒ Sand Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☐
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐
c. ____ Lbs/gal mud weight . . . Bentonite slurry ☐
d. 5 % Bentonite . . . Bentonite-cement grout ☒
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ Tremie pumped ☒ Gravity ☐
6. Bentonite seal: a. Bentonite granules ☐
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. ____
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. K&E Well Gravel
b. Volume added 3 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
10. Screen material: Schedule 40 PVC
a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
b. Manufacturer Johnson Screens
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☐ 3/8" bentonite chips Other ☒

I hereby certify that the information on this form is true and correct to the best of my knowledge. Date Modified: 10/24/2024

Signature: Michael Davie

Firm: Ramboll
234 W Florida Street, 5th Floor, Milwaukee, WI 53204
Tel: (414)837-3607
Fax: (414)837-3608

RAMBOLL

MONITORING WELL CONSTRUCTION

Facility/Project Name: Newton Power Plant	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: APW23S
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 38.926892 Long. -88.273474 or	
Facility ID	St. Plane 823,040 ft. N, 1,001,281 ft. E. Ⓔ/W	Date Well Installed: 06/19/2024
Type of Well: Well Code 11/mw	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W	Well Installed By: (Person's Name and Firm): Gavin Morgan
Distance from Waste/Source: ____ ft. State: IL	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ____ Cascade Drilling LP

A. Protective pipe, top elevation 519.81 ft. (NAVD88)

B. Well casing, top elevation 519.53 ft. (NAVD88)

C. Land surface elevation 515.79 ft. (NAVD88)

D. Surface seal, bottom 514.8 ft. (NAVD88) or 1.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☒ MH ☐ CL ☒ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ Hollow Stem Auger ☐ Sonic Other ☒

15. Drilling fluid used: Water ☐ 0 2 Air ☐ Drilling Mud ☐ 0 3 None ☒

16. Drilling additives used? ☐ Yes ☒ No

Describe ____

17. Source of water (attach analysis, if required):

E. Bentonite seal, top 513.8 ft. (NAVD88) or 2.0 ft.

F. Fine sand, top ____ ft. (NAVD88) or ____ ft.

G. Filter pack, top 509.8 ft. (NAVD88) or 6.0 ft.

H. Screen joint, top 507.8 ft. (NAVD88) or 8.0 ft.

I. Well bottom 497.8 ft. (NAVD88) or 18.0 ft.

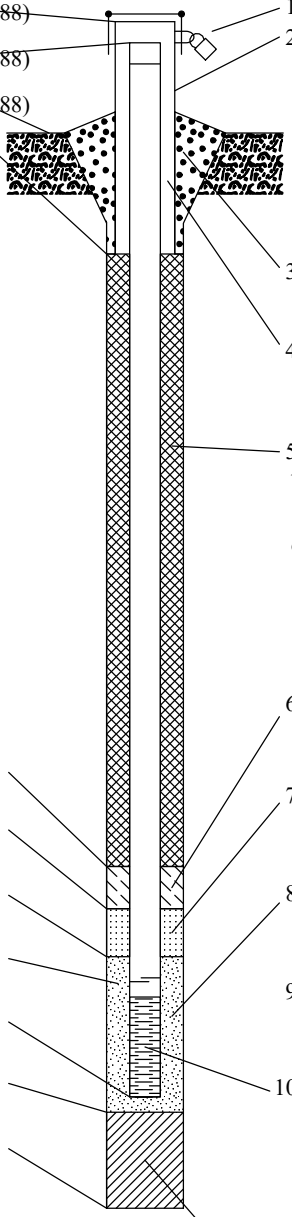
J. Filter pack, bottom 497.8 ft. (NAVD88) or 18.0 ft.

K. Borehole, bottom 497.8 ft. (NAVD88) or 18.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.38 in.

N. I.D. well casing 2.07 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
   a. Inside diameter: 4.0 in.
   b. Length: 5.0 ft.
   c. Material: Steel ☒ Other ☐
   d. Additional protection? ☒ Yes ☐ No
   If yes, describe: 4 steel bollards
3. Surface seal: Bentonite ☐ Concrete ☒ Other ☐
4. Material between well casing and protective pipe: Bentonite ☒ Sand Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☒
   b. ____Lbs/gal mud weight . . . Bentonite-sand slurry ☐
   c. ____Lbs/gal mud weight . . . Bentonite slurry ☐
   d. ____% Bentonite . . . Bentonite-cement grout ☐
   e. 0.5 Ft^3 volume added for any of the above
   f. How installed: Tremie ☐ Tremie pumped ☐ Gravity ☒
6. Bentonite seal: a. Bentonite granules ☐
   b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒
   c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
   a. ____
   b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
   a. K&E Well Gravel
   b. Volume added 2 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ Flush threaded PVC schedule 80 ☐ Other ☐
10. Screen material: Schedule 40 PVC
    a. Screen Type: Factory cut ☒ Continuous slot ☐ Other ☐
    b. Manufacturer Johnson Screens
    c. Slot size: 0.010 in.
    d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒ Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge. Date Modified: 10/24/2024

Signature: Michael Davie

Firm: Ramboll
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APPENDIX B
35 I.A.C. 845 Multi-Site Statistical Analysis Plan

Date
April 1, 2025

Project No.
1940110241

35 I.A.C. § 845 MULTI-SITE STATISTICAL ANALYSIS PLAN

RAMBOLL Bright ideas. Sustainable change.

35 I.A.C § 845 MULTI-SITE STATISTICAL ANALYSIS PLAN

Project no.	**1940110241**
Recipient	**Vistra Corp**
Document type	**Statistical Analysis Plan**
Revision	**FINAL**
Date	**April 1, 2025**
Prepared by	**Rachel Banoff and Alison O'Connor**
Checked by	**Eric J. Tlachac, PE**
Approved by	**Brian G. Hennings, PG**

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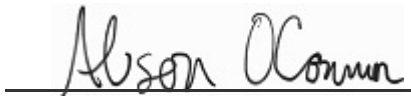

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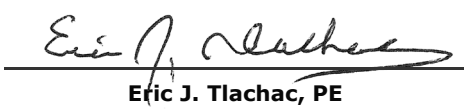
Senior Lead Consultant



Eric J. Tlachac, PE
Senior Managing Engineer

Brian G. Hennings, PG
Senior Managing Hydrogeologist

LICENSED PROFESSIONAL CERTIFICATIONS

This certification is based on the description of the statistical methods selected to evaluate groundwater as presented in the following 35 I.A.C. § 845 Multi-Site Statistical Analysis Plan. The procedures described in the plan will be used to establish background conditions and implement compliance and corrective action monitoring as necessary and required by 35 I.A.C. § 845.640, § 845.650, and § 845.680. The 35 I.A.C. § 845 Multi-Site Statistical Analysis Plan was prepared in accordance with the requirements of 35 I.A.C. § 845.640(f), with reference to the acceptable statistical procedures provided in the United States Environmental Protection Agency (USEPA)'s *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (*Unified Guidance,* USEPA 2009), and is intended to provide a logical process and framework for conducting the statistical analysis of the data obtained during groundwater monitoring. In accordance with 35 I.A.C. § 845.640(f)(1), the statistical method chosen for analysis of background groundwater quality is the tolerance interval procedure for each constituent listed in 35 I.A.C. § 845.600(a)(1) at this CCR unit per 35 I.A.C. § 845.640(f)(1)(C). Groundwater Protection Standards (GWPS) will be established in accordance with 35 I.A.C. § 845.600(a) (greater of the background concentration or numerical limit specified in 35 I.A.C. § 845.600(a)(1)). The GWPS will be compared to the appropriate confidence interval for the observed concentrations for each constituent in each compliance well. Consistent with the *Unified Guidance*, the same general statistical method of confidence interval testing against a fixed GWPS is recommended in compliance and corrective action programs. Confidence intervals provide a flexible and statistically accurate method to test how a parameter estimated from a single sample compares to a fixed numerical limit. Confidence intervals explicitly account for variation and uncertainty in the sample data used to construct them.

Description of the statistical methods chosen for analysis of groundwater monitoring data and application of these methods for determining exceedances of the GWPS identified in 35 I.A.C. § 845.600(a) is provided in this 35 I.A.C. § 845 Multi-Site Statistical Analysis Plan.

35 I.A.C. § 845.640 Statistical Analysis (PE)

I, Eric J. Tlachac, a qualified professional engineer in good standing in the State of Illinois, certify that the statistical methods summarized above and described in this document (35 I.A.C. § 845 Multi-Site Statistical Analysis Plan) are appropriate for evaluating the groundwater monitoring data collected as described in the attached document and are in substantial compliance with 35 I.A.C. § 845.640.

Eric J. Tlachac
Qualified Professional Engineer
062-063091
Illinois
Date: April 1, 2025

35 I.A.C. § 845.640 Statistical Analysis (PG)

I, Brian G. Hennings, a qualified professional geologist in good standing in the State of Illinois, certify that the statistical methods described in this document (35 I.A.C. § 845 Multi-Site Statistical Analysis Plan) are appropriate for evaluating the groundwater monitoring data collected as described in the attached document and are in substantial compliance with 35 I.A.C. § 845.640.

Brian G. Hennings
Professional Geologist
196.001482
Illinois
Date: April 1, 2025

35 I.A.C. § 845.640 Statistical Analysis

I, Rachel A. Banoff, a qualified professional, certify that the statistical methods described in this document (35 I.A.C. § 845 Multi-Site Statistical Analysis Plan), are appropriate for evaluating the groundwater monitoring data collected as described in the attached document and are in substantial compliance with 35 I.A.C. § 845.640.

Rachel A. Banoff, EIT
Project Statistician
Date: April 1, 2025

DOCUMENT REVISION RECORD

Issue No.	Date	Details of Revisions
Revision 0	April 1, 2025	• Original Document

DOCUMENT APPLICABILITY BY FACILITY OWNER

Table A. Document Applicability by Facility Owner

Facility & Owner	Unit ID	Unit Name
Baldwin Power Plant Dynegy Midwest Generation, LLC	601	Bottom Ash Pond
	605	Fly Ash Pond System
Coffeen Power Plant Illinois Power Generating Company	101	Ash Pond No. 1
	102	Ash Pond No. 2
	103	GMF Gypsum Stack Pond
	104	GMF Recycle Pond
Duck Creek Power Plant Illinois Power Resources Generating, LLC	201/202	Ash Pond No. 1 Ash Pond No. 2
	203	GMF Pond
	205	Bottom Ash Basin
Edwards Power Plant Illinois Power Resources Generating, LLC	301	Ash Pond
Hennepin Power Plant Dynegy Midwest Generation, LLC	802	Ash Pond No. 2
	803	East Ash Pond
	804	Old West Ash Pond
	802/805	Ash Pond No. 2 Ash Pond No. 4
Joppa Power Plant Electric Energy, Inc.	401	East Ash Pond
	403	West Ash Pond
Kincaid Power Plant Kincaid Generation, LLC	141	Ash Pond
Newton Power Plant Illinois Power Generating Company	501	Primary Ash Pond
Vermilion Power Plant Dynegy Midwest Generation, LLC	910	North Ash Pond
	911/912	Old East Ash Pond New East Ash Pond

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Figure 2	Flow chart illustrating the statistical methods used for calculating confidence intervals in Compliance Monitoring

ACRONYMS AND ABBREVIATIONS

%	percent
35 I.A.C.	Title 35 of the Illinois Administrative Code
CCR	coal combustion residuals
CI	confidence interval
DQR	Double Quantification Rule
GMP	Groundwater Monitoring Plan
GWPS	groundwater protection standard
IEPA	Illinois Environmental Protection Agency
LCL	lower confidence limit
LTL	lower tolerance limit
MDL	method detection limit
PQL	practical quantitation limit
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RL	reporting limit
SAP	Sampling and Analysis Plan
SI	surface impoundment
UCL	upper confidence limit
Unified Guidance	Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities: Unified Guidance (USEPA, 2009)
USEPA	United States Environmental Protection Agency
UTL	upper tolerance limit

1. INTRODUCTION

In April 2021, the Illinois Environmental Protection Agency (IEPA) issued a final rule for the regulation and management of coal combustion residuals (CCR) in surface impoundments (SIs) under the Standards for the Disposal of CCR in Surface Impoundments: Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845. Facilities regulated under 35 I.A.C. § 845 are required to develop and sample a groundwater monitoring well system to evaluate whether impounded CCR materials are impacting groundwater quality. The groundwater quality evaluation must include certification from a qualified professional engineer that the selected statistical method is appropriate for evaluating groundwater monitoring data for the CCR surface impoundment. The procedures described in the evaluation will be used to establish background conditions and implement Compliance and Corrective Action Monitoring as necessary and required by 35 I.A.C. § 845.640, § 845.650, § 845.680, and § 845.780. This Statistical Analysis Plan was prepared in accordance with the requirements of 35 I.A.C. § 845.640(f), with reference to the acceptable statistical procedures provided in United States Environmental Protection Agency's (USEPA's) Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance (Unified Guidance) (USEPA, 2009).[1]

1.1 Statistical Analysis Objectives

This Multi-Site Statistical Analysis Plan provides a framework for conducting the statistical analyses of groundwater data collected during operation, post-closure care, and corrective action monitoring (if required). This Multi-Site Statistical Analysis Plan does not include procedures for groundwater sample collection and analysis conducted in accordance with the Multi-Site Sampling and Analysis Plan (SAP; Ramboll, 2022) or data quality evaluation conducted in accordance with the Multi-Site Quality Assurance Project Plan (QAPP; Ramboll, 2022).[2]

1.2 Statistical Analysis Plan Approach

The analyses described in this document are intended to support monitoring programs described in detail in the CCR unit-specific Operating Permit Groundwater Monitoring Plans (GMPs), Closure Construction Permit GMPs, and Corrective Action GMPs. When necessary and contingent upon equivalent statistical power, an alternative test consistent with the performance standards in 35 I.A.C. § 845.640(g), not included in this Statistical Analysis Plan, may be chosen due to site-specific data requirements.

35 I.A.C. § 845 outlines three phases of groundwater monitoring:

- Baseline Monitoring in accordance with 35 I.A.C. § 845.650(b)(1)
- Compliance Monitoring in accordance with 35 I.A.C. § 845.650 and 35 I.A.C. § 845.780(b)
- Corrective Action Monitoring in accordance with 35 I.A.C. § 845.680(a)

Each phase of the groundwater monitoring program requires specific statistical procedures to accomplish the intended purpose. During the first phase, background groundwater quality will be established, utilizing upgradient and background wells. Compliance Monitoring, which

[1] Despite being currently archived on USEPA's website, the Unified Guidance remains a valid reference for developing a statistical analysis plan (personal communication with Alison O'Connor, February 11, 2025).

[2] The Multi-Site Sampling and Analysis Plan and Multi-Site Quality Assurance Project plan are living documents which are subject to routine evaluation and updates in accordance with USEPA recommended best practices (USEPA 2020; USEPA 2023).

encompasses data collection and statistical evaluation conducted during unit operation and the post-closure care period, will then evaluate whether exceedances occur for 20 required constituents (per 35 I.A.C. § 845.600(a)(1)) relative to the groundwater protection standard (GWPS) established by 35 I.A.C. § 845.600. Corrective Action Monitoring evaluates remedy progress and completion and will be initiated upon implementation of the Corrective Action GMP.

2. GROUNDWATER DATA EVALUATION AND STATISTICAL ASSUMPTIONS

The following subsections outline the statistical tests and procedures utilized to evaluate data collected for consistency with statistical assumptions and evaluate data distribution. These methods may be used in any phase of groundwater monitoring.

2.1 Sample Independence

Independence of sample results is a major assumption for most statistical analyses. To ensure physical independence of groundwater sampling results, the minimum time between sampling events must be longer than the time required for groundwater to move through the monitoring well. Therefore, the minimum time interval between sampling events is a function of the groundwater velocity and well bore volume (diameter of the well and surrounding filter pack). The sampling schedules for Baseline Monitoring, Compliance Monitoring, and Corrective Action Monitoring are specified in 35 I.A.C. § 845 and may conflict with the statistical assumption of independence of sample results.

2.2 Non-Detect Data Processing

Groundwater sample analysis results below the reporting limit (RL), also referred to as the practical quantitation limit (PQL), will not be used in statistical calculations due to the inherent uncertainty in results that are estimated between the method detection limit (MDL) and RL/PQL, and error assumptions inherent to the statistical calculations. Results below the RL/PQL will be considered non-detect data. For statistical characterization evaluations (*e.g.*, distribution testing, and trend analysis), non-detects were replaced with the half of the RL for the analysis. For statistical test procedures that involve the calculation of a mean and standard deviation (as described in **Section 3**):

- If the frequency of non-detect data are less than or equal to 15 percent (%), half of the RL will be substituted for these data.
- If the non-detect frequency is greater than 15% and less than or equal to 50% and the data are normally or log-normally distributed (**Section 2.3**), the Kaplan-Meier method will be used to estimate the mean and standard deviation adjusted for the presence of left-censored values.
- If the non-detect frequency is greater than 50% or data are not normally or log-normally distributed (**Section 2.3**), a non-parametric test or calculation will be used.

2.3 Testing for Normality

In accordance with 35 I.A.C. § 845.640(g)(1), "the statistical method used to evaluate groundwater monitoring data must be appropriate for the distribution of constituents". The Unified Guidance document recommends the Shapiro-Wilk normality test for sample sizes of 50 or less, and the Shapiro-Francia normality test for sample sizes greater than 50. Log-transformation of datasets to achieve normal distributions is preferred to using non-parametric methods. However, if data normality cannot be achieved through log transformation, a non-parametric method is used.

2.4 Outlier Evaluation and Management

Groundwater analytical data may be screened for the existence of outliers using methods described by the Unified Guidance. Outliers are extreme data points that may represent an anomaly or erroneous data point. To test for outliers, one or more of the following outlier tests will be utilized:

- Dixon's test, for well-constituent pairs with less than 25 samples, assumes normally distributed data.
- Rosner's test, for well-constituent pairs with more than 20 samples, assumes normally distributed data.
- Grubb's test for well-constituent pairs with seven or more samples, assumes normally distributed data.

In addition, time series, box-whisker plots, and probability plots will be used to provide visual tools to identify potential outliers, and evaluation of seasonal, spatial, or temporal variability for both normally and non-normally distributed data.

When necessary, a confirmatory sample will be collected to allow the facility to distinguish between an outlier and a true release from the facility (35 I.A.C. § 845.650(d)). If re-sampling is necessary, this sample will be collected within 60 days following outlier identification. Rigorous data validation and review is preferred to formal outlier testing and exclusion to ensure that all data used in statistical evaluations is representative of field conditions. Quality control/quality assurance data are collected and data verification is completed in accordance with the QAPP. Project staff familiar with the site and historical data will review the data generated each quarter and facilitate additional validation as needed. Data quality control, groundwater geochemistry, and sampling procedures will be evaluated as potential sources of error leading to an outlier result. Exclusion of potential outliers without an identified source of error may be considered only for data that could cause extremely elevated background concentrations.

2.5 Trend Analysis

Statistical analyses confirming the lack of trend are a fundamental step to confirm the assumption that groundwater quality values (*i.e.,* constituent means) are stationary or constant over time. These analyses allow for evaluation of variation in the background and compliance data for each constituent over time. A statistically significant increasing trend in the background data could indicate an existing release from the CCR unit or alternative source, requiring further investigation. In addition, statistically significant trending background data can result in increased standard deviation and, therefore, greater prediction or tolerance limits. Consequently, the increased prediction or tolerance limit will have less statistical power or ability to identify a release from a CCR unit.

A linear regression, coupled with a t-test for slope significance at a 95% confidence level (or 0.05 significance level), may be used on datasets for each constituent with few non-detects and a normally distributed variance of the mean to evaluate time trends. The Theil-Sen trend line, coupled with the Mann-Kendall test for slope significance at a 95% confidence level (or 0.05 significance level), may be used for datasets with frequent non-detects or non-normal variance. Similarly, trend analyses could also be used on compliance data to evaluate a possible release from the CCR unit.

2.6 Spatial Variation

Spatial trends and/or variation between background wells could indicate an existing release from a CCR unit. If the spatial variability is not due to an existing release, intrawell comparisons in compliance wells may be used to account for spatial variability and monitor for a future release. However, the CCR units being monitored have been placed into service prior to the start of groundwater monitoring and it is unknown whether a previous release has occurred. Accordingly, intrawell comparisons in compliance wells cannot be used to determine the occurrence of a future release, and interwell comparisons between compliance wells and background wells will be used.

2.7 Temporal Variation

Time series plots can be used to identify temporal dependence. Potentially significant temporal components of variability can be identified by graphing single constituent data from multiple wells together on a time series plot. With temporal dependence, the time series plot has a pattern of parallel traces, in which the individual wells will tend to rise and fall together across the sequence of sampling dates. Time series plots can be helpful by plotting multiple constituents over time for the same well, or averaging values for each constituent across wells on each sampling event and then plotting the averages over time. In either case, the plots can signify whether the general concentration pattern over time is simultaneously observed for different constituents. If so, it may indicate that a group of constituents is highly correlated in groundwater or that the same artifacts of sampling and/or lab analysis impacted the results of several monitoring parameters.

2.8 Updating Background

Updating the background dataset periodically by adding recent results to an existing background dataset can improve the statistical power and accuracy of the statistical analysis, especially for non-parametric prediction intervals. The Unified Guidance recommends updating statistical limits (background) when at least four to eight new measurements (every 2 to 4 years under a semiannual monitoring program or 1 to 2 years under a quarterly monitoring program) are available for comparison to historical data. Methods discussed in **Section 2.4** and professional judgement will be used to evaluate whether any individual data points appear to drive an anomalously high background level. A t-test for equal means (if normal data distribution) or a Mann-Whitney or Wilcoxon test for equal medians (if non-normal data distribution) will be conducted to verify that the two groups of background sample populations are statistically different prior to updating any background datasets. A 0.05 significance level will be utilized when evaluating the two populations, with the null hypothesis that the two populations have equal means or medians. In addition, time series graphs or other trend evaluation statistics (such as a Mann-Kendall test) will be conducted on the new background dataset to verify the absence of a release or changing groundwater quality. If the tests indicate that there are no statistical differences between the two background populations, the new data will be combined with the existing dataset. If the two populations are found to be different, the data will be reviewed to evaluate the cause of the difference. If the differences appear to be caused by a release (*i.e.,* if the new data are significantly higher, or lower for pH), then the previous background dataset may continue to be used. Furthermore, verified outliers will not be added to an existing background dataset. Spatial variability among background wells will also be assessed when background datasets are updated to determine whether pooling data is appropriate.

3. COMPLIANCE MONITORING PROGRAM

Compliance Monitoring encompasses data collection and statistical evaluation conducted during unit operation (35 I.A.C. § 845.640 and 845.650) and the post-closure care period (35 I.A.C. § 845.780). Compliance Monitoring is designed to evaluate whether concentrations of constituents listed in 35 I.A.C. § 845.600(a)(1) in compliance wells exceed GWPS or background in a statistically significant manner.

3.1 Monitoring Program Outline

3.1.1 Establish Background and GWPS

A site-specific GWPS will be established for constituents listed in 35 I.A.C. § 845.600(a)(1) for each CCR unit. The GWPS will be the concentration specified in 35 I.A.C. § 845.600(a)(1), unless the background concentration is greater. For this exception, background concentrations will be used to define the GWPS. Background concentrations will be calculated using a parametric or non-parametric upper tolerance limit (UTL), depending on the data distribution, consistent with 35 I.A.C. § 845.640(f)(1)(C). The procedure for calculating a UTL is outlined in **Figure 1** and described in **Section 3.2**. If only one background result is detected, that value will be used as the UTL.

3.1.2 Evaluate Background and GWPS Exceedances

Per 35 I.A.C. § 845.610(b)(3), groundwater monitoring data from compliance monitoring wells will be evaluated for statistically significant exceedances over background and the site-specific GWPS. In accordance with recommendation in the Unified Guidance for compliance monitoring, exceedances are evaluated by comparing a confidence interval (CI) to a fixed standard. The null hypothesis of this comparison is that compliance well groundwater concentrations do not exceed the standard unless the statistical test indicates otherwise.

GWPS exceedances will be determined by comparing the lower confidence limit (LCL) of the compliance well concentrations to the GWPS, except for pH where the LCL will be compared to the upper end of the GWPS range, and the upper confidence limit (UCL) compared to the low end of the GWPS range. A GWPS exceedance is determined if the LCL is greater than the GWPS, and, for pH, either the LCL is greater than the upper end of the GWPS range or the UCL is less than the low end of the GWPS range. The method of calculating the CI (outlined in **Figure 2** and described in **Section 3.3**) will be determined by sample size, trends in the data, and data normality. The significance level (alpha) for this calculation will be fixed at 0.01 (99% confidence) as recommended by Unified Guidance. If there are too few data points to calculate an LCL (a minimum of four data points is typically required), the most recent data point will be compared to the GWPS.

In the event that statistical analyses identify an exceedance of the GWPS for one or more parameters, the exceedance parameters and wells of concern may be immediately re-sampled. Compliance Monitoring statistics will be updated using the verification resample. If the Compliance Monitoring statistics using the compliance verification resample data result in an exceedance of the GWPS, the exceedance is confirmed.

Comparison of groundwater monitoring data to background is required by 35 I.A.C. § 845.610(3)(B), but these background "exceedances" do not carry any compliance implications.

Background exceedances will be determined by comparing the LCL of the compliance well concentrations to the background UTL, with the exception of pH where the UCL of the compliance well concentrations will also be compared to the background lower tolerance limit (LTL). A background exceedance is determined if the LCL is greater than the background UTL, or, for pH, either the LCL is greater than the UTL or the UCL is less than the LTL. If there are too few data points to calculate an LCL (a minimum of four data points is required), the most recent data point will be compared to the background UTL (and LTL for pH).

Additionally, an exceedance of either background or GWPS will be identified if the constituent monitored was not detected in all previous samples at a compliance well and the two most recent samples have both detections and exceed the GPWS (or are less than the low end of the GWPS range for pH) or background UTL (or are less than the LTL for pH).

3.2 Upper Tolerance Limit

The method for calculating a UTL depends primarily on the proportion of non-detects and the data distribution (**Figure 1**). A parametric UTL will be used to calculate the GWPS when the background data are normally distributed and have a non-detect frequency of 50% or less. The Unified Guidance recommends 95% confidence level and 95% coverage (95/95 tolerance interval). When the non-detect frequency is 15% or less, half the RL will be substituted for non-detects (simple substitution), and the normal mean and standard deviation will be calculated. The Kaplan-Meier method will be used when the detection frequency is between 15% and 50%. The Kaplan-Meier method assesses the linearity of a censored probability plot to determine whether the background sample can be approximately normalized. If so, then the Kaplan-Meier method will be used to compute estimates of the mean and standard deviation adjusted for the presence of left-censored values. The Kaplan-Meier estimate of the mean and standard deviation will be substituted for the sample mean and standard deviation.

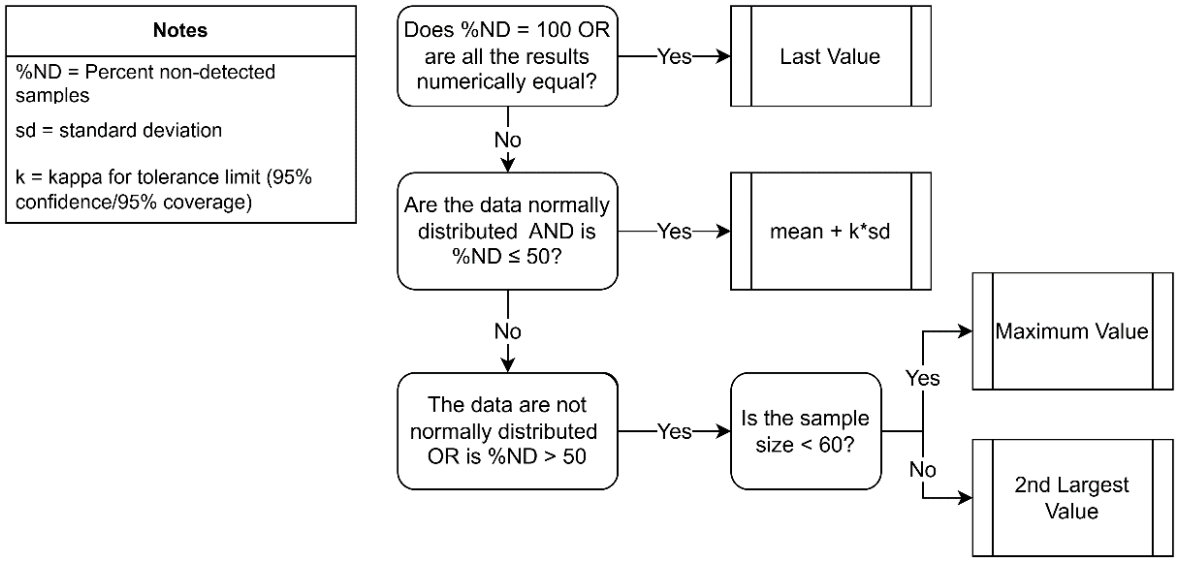

Figure 1. Flow chart illustrating the statistical methods used for calculating background under Compliance Monitoring.

The parametric UTL on a future mean will be calculated from the background dataset as follows:

$$UTL = \overline{x} + \kappa\,(n, \gamma, \alpha - 1) \cdot s$$

$\overline{x}$ = background sample mean

s = background sample standard deviation

$\kappa\,(n, \gamma, \alpha - 1)$ = one-sided normal tolerance factor based on the chosen coverage (γ) and confidence level (α -1) and the size of the background dataset (n). Values may be calculated per Millard (2013) or looked up in Table 17-3 in Appendix D of the Unified Guidance.

If the UTL is constructed on the logarithms of original observations to achieve normality, where $\overline{y}$ and s_y are the log-mean and log-standard deviation, the limit will be exponentiated for back-transformation to the concentration scale as follows:

$$TL = \exp\left[\overline{y} + \kappa\,(n, \gamma, \alpha - 1) \cdot s_y\right]$$

$\overline{y}$ = background sample log-mean

s_y = background sample log-standard deviation

If the background data set is non-parametric or has a non-detect frequency greater than 50%, a non-parametric UTL is used. The maximum concentration is used as the non-parametric UTL for sample sizes less than 60 and the second largest concentration is used as the non-parametric UTL for sample sizes greater than or equal to 60. As described in the Unified Guidance, the advantages include the resulting UTL reflecting actual concentration magnitudes, and the UTL more likely representing a detected concentration (unless all the data were non-detect).

3.3 Confidence Intervals

The method for calculating a CI depends on whether or not there is a trend in the data, the proportion of non-detects, and the data distribution (**Figure 2**). The following sections describe the procedure for calculating the CI in each case.

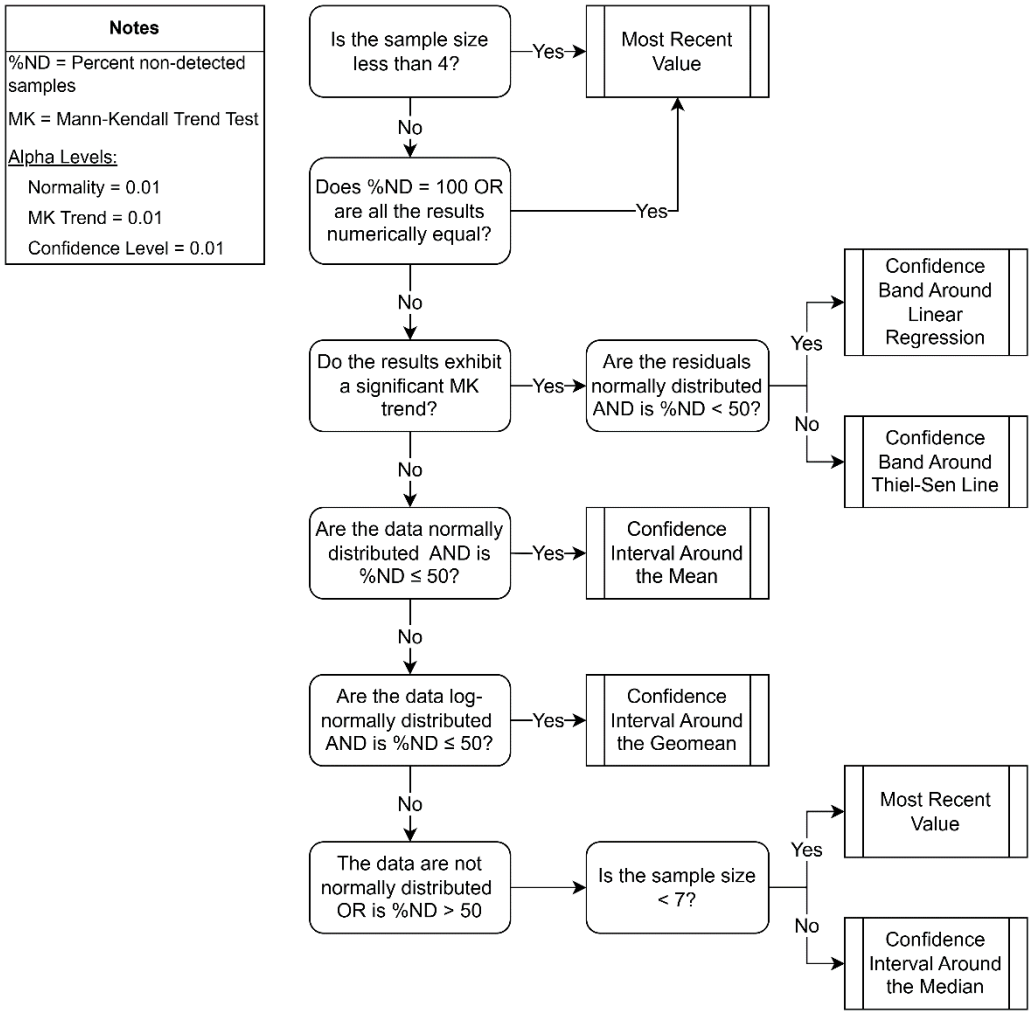

Figure 2. Flow chart illustrating the statistical methods used for calculating confidence intervals in Compliance Monitoring.

3.3.1 Confidence Intervals Around Trending Data

If compliance data exhibit a statistically significant trend based on results from a Mann-Kendall trend test and consists of a sufficient sample size (see below), CIs accounting for trends will be constructed to account for the trend-induced variation. If this is not accounted for, a wider CI will inevitably be calculated for a given confidence level and sample size (n). A wider CI will result in less statistical power, or ability to demonstrate an exceedance or return to compliance. When a linear trend line has been estimated, a series of CIs is estimated at each point along the trend. This creates a simultaneous confidence band that follows the trend line. As the underlying population mean increases or decreases, the confidence band also increases to reflect this change at that point in time.

Linear regression will be used when the compliance data set consists of at least eight samples, the frequency of non-detects is below 50%, and residuals around the trend line are normally distributed. The linear regression of concentration against sampling date (time) will be computed as follows:

$$\hat{b} = \sum_{i=1}^{n} (t_i - \overline{t}) \cdot x_i / (n-1) \cdot s_t^2$$

x_i = i^{th} concentration value and

t_i = i^{th} sampling date

$\overline{t}$ = sampling mean date

s_t^2 = variance of the sampling dates

This estimate leads to the following regression equation:

$$\hat{x} = \overline{x} + \hat{b} \cdot (t - \overline{t})$$

$\overline{x}$ = mean concentration level

$\hat{x}$ = estimated mean concentration at time t

The regression residuals will also be computed at each sampling event to ensure uniformity and lack of significant skewness. Regression residuals will be computed at each sampling event as follows:

$$r_i = x_i - \hat{x}_i$$

The estimated variance around the regression line, or mean squared error, will be computed as follows:

$$s_e^2 = \frac{1}{n-2} \sum_{i=1}^{n} r_i^2$$

The CI around a linear regression trend line given confidence level (1-α) and a point in time (t_0), will be computed as follows:

$$LCL_{1-\alpha} = \hat{x}_0 - \sqrt{2 s_e^2 \cdot F_{1-2\alpha,2,n-1} \cdot \left[\frac{1}{n} + \frac{(t_0 - \overline{t})^2}{(n-1) \cdot s_t^2}\right]}$$

$$UCL_{1-\alpha} = \hat{x}_0 - \sqrt{2 s_e^2 \cdot F_{1-2\alpha,2,n-2} \cdot \left[\frac{1}{n} + \frac{(t_0 - \overline{t})^2}{(n-1) \cdot s_t^2}\right]}$$

$\hat{x}_0$ = estimated mean concentration from the regression equation at time t_0

$F_{1-2\alpha,2,n-2}$ = upper (1-2α)th percentage point from an *F*-distribution with 2 and (*n*-2) degrees of freedom

If the compliance data set consists of at least seven samples but has a non-detect frequency greater than 50% or the residuals are not normally distributed, the Thiel-Sen trend line will be used as a non-parametric alternative to linear regression for calculation of the CI. The Thiel-Sen trend line estimates the median concentration over time by combining the median pairwise slope with the median concentration value and the median sample date. To compute the Thiel-Sen line,

the data will first be ordered by sampling event x_1, x_2, x_n. All possible distinct pairs of measurements (x_i, x_j) for $j > i$ will be considered and the simple pairwise slope estimate will be computed for each pair as follows:

$$m_{ij} = (x_j - x_i)/(j - i)$$

With a sample size of n, there will be a total of $N = n(n\text{-}1)/2$ pairwise estimates m_{ij}. If a given observation is a non-detect, half the RL will be substituted. The N pairwise slope estimates (m_{ij}) will be ordered from least to greatest (renamed $m_{(1)}$, $m_{(2)}$,..$m_{(N)}$). The Thiel-Sen estimate of slope (Q) will be calculated as the median value of the list depending on whether N is even or odd as follows:

$$Q = \begin{cases} m_{([N+1]/2)} \; if \; N \; is \; odd \\ (m_{(N/2)} + m_{([N+2]/2)})/2 \; if \; N \; is \; even \end{cases}$$

The sample concentration magnitude will be ordered from least to greatest, $x_{(1)}$, $x_{(2)}$, to $x_{(n)}$ and the median concentration will be calculated as follows:

$$\tilde{x} = \begin{cases} x_{([n+1]/2)} \; if \; n \; is \; odd \\ (x_{(n/2)} + x_{([n+2]/2)})/2 \; if \; n \; is \; even \end{cases}$$

The median sampling date ($\tilde{t}$) with ordered times ($t_{(1)}$, $t_{(2)}$, to $t_{(n)}$) will also be determined in this way. The Thiel-Sen trend line will then be computed for an estimate at any time (t) of the expected median concentration (x) as follows:

$$x = \tilde{x} + Q \cdot (\mathrm{t} - \tilde{t}) = (\tilde{x} - Q \cdot \tilde{t}) + Q \cdot \mathrm{t}$$

To construct a confidence band around the Thiel-Sen line, sample pairs (t_i, x_i) will be formed with a sample date (t_i) and the concentration measurement from that date (x_i). Bootstrap samples (B) will be formed by repeatedly sampling n pairs at random with replacement from the original sample pairs. This will be repeated 500 times. For each bootstrap sample, a Thiel-Sen trend line will be constructed using the equation above. A series of equally spaced t_j values will be identified along the range of sampling dates represented in the original sample, j=1 to m. The Thiel-Sen trend line associated with each bootstrap replicate will be used to compute an estimated concentration ($\hat{x}_j^B$). A CI will be constructed for the lower αth percentile $\hat{x}_j^{[\alpha]}$from the distribution of estimated concentrations at each time point (t_j). For a UCL, compute the upper (1-α)th percentile, $\hat{x}_j^{[1-\alpha]}$ at each t_j; for an LCL, compute the lower αth percentile, $\hat{x}_j^{[\alpha]}$ at each t_j.

3.3.2 Parametric Confidence Intervals around a Mean

If compliance data do not show a trend and are normal or log-normal, one-sided parametric CIs around a sample mean will be constructed for each constituent and well pair. The LCL will be calculated as:

$$LCL_{1-\alpha} = \overline{x} - t_{1-\alpha,n-1} \cdot \frac{s}{\sqrt{n}}$$

The UCL will be calculated as:

$$UCL_{1-\alpha} = \overline{x} + t_{1-\alpha,n-1} \cdot \frac{s}{\sqrt{n}}$$

$\overline{x}$ = compliance sample mean

s = compliance sample standard deviation

n = compliance sample size

$t_{1-\alpha,n-1}$ = obtained from a Student's t-table with (n–1) degrees of freedom at the chosen alpha level (0.01) (Table 16-1 in Appendix D of the Unified Guidance)

If compliance data are distributed lognormally, the LCL will be computed around the lognormal geometric mean as:

$$LCL_{1-\alpha} = \exp\left(\overline{y} - t_{1-\alpha,n-1} \cdot \frac{s_y}{\sqrt{n}}\right)$$

The UCL will be computed around the lognormal geometric mean as:

$$UCL_{1-\alpha} = \exp\left(\overline{y} + t_{1-\alpha,n-1} \cdot \frac{s_y}{\sqrt{n}}\right)$$

$\overline{y}$ = compliance sample log-mean

s_y = compliance sample log-standard deviation

3.3.3 Non-Parametric Confidence Intervals around a Median

Non-parametric confidence intervals around the median will be computed if the compliance data do not show a trend and contain greater than 50% non-detects or are non-normally distributed. The mathematical algorithm used to construct non-parametric CIs is based on the probability p that any randomly-selected measurement in a sample of n concentration measurements will be less than an unknown p x 100th percentile of interest (where P is between 0 and 1). Then the probability that the measurement will exceed the p x 100th percentile is (1–p). The number of sample values falling below the p x 100th percentile out of a set of n should follow a binomial distribution with parameters n and success probability p, where 'success' is defined as the event that a sample measurement is below the p x 100th percentile. The probability that the interval formed by a given pair of order statistics will contain the percentile of interest will then be determined by a cumulative binomial distribution *Bin(x;n,p)*, representing the probability of x or fewer successes occurring in n trials with success probability p. P will be set to 0.50 for an interval around the median. In accordance with the Unified Guidance, a confidence interval around the median will only be calculated if at least seven data points are available.

The sample size n will be ordered from least to greatest. Given p = 0.50, candidate interval endpoints will be chosen by ordered data values with ranks rounded upward to the next higher integers. The ranks of the endpoint will be denoted L^* and U* and are calculated using the following equations (Conover, 1999, p. 144):

$$L^* = np - Z_{1-\alpha}\sqrt{np(1-p)}$$

$$U^* = np + Z_{1-\alpha}\sqrt{np(1-p)}$$

4. CORRECTIVE ACTION MONITORING PROGRAM

Corrective Action Monitoring is performed after a corrective action remedy has been selected and implemented. 35 I.A.C. § 845.680(a)(1) specifies that the corrective action groundwater monitoring program must meet the requirements listed in 35 I.A.C. § 845.650 (*i.e.*, Compliance Monitoring), document the effectiveness of the selected remedy, and demonstrate compliance with the GWPS. Post-Closure Care monitoring as described in **Section 3** will operate concurrently with Corrective Action Monitoring, fulfilling the requirements of 35 I.A.C. § 845.650. This document describes the statistical methods used to document the progress of the selected remedy and demonstrate compliance with the GWPS.

Evaluation of corrective action remedy effectiveness will occur in three phases: remedy progress evaluation, stability evaluation, and attainment evaluation (USEPA, 1992).

1. Remedy progress evaluation occurs after implementation of corrective actions to assess if the remedy is functioning as anticipated.
2. The stability evaluation, which occurs after treatment has been concluded and a re-equilibration period has elapsed, assesses if a new post-treatment steady state in the groundwater has been reached.
3. Attainment evaluation occurs after a new steady state has been achieved and assesses if COC concentrations are below the GWPS.

In accordance with the Unified Guidance, these evaluations only apply to constituents which have previous exceedances of the GWPS. Constituents without previous GWPS exceedances continue to be evaluated according to Compliance Monitoring (per **Section 3**). The Corrective Action GMP for each unit describes the detailed approach to remedy effectiveness evaluation and reporting. Statistical evaluations used in each of these three phases are described below.

4.1 Remedy Progress Evaluation

The goal of remedy progress evaluation is to determine if a groundwater remedy is on track to achieve cleanup standards within the proposed time frame and to inform adaptive management decisions if performance metrics are not achieved. Evaluations of remedy effectiveness include:

- Comparison of the central tendency (*i.e.*, mean or median) of data from corrective action monitoring wells to the GWPS
- Trend analysis of average concentrations in individual wells and in a plume

Unlike Compliance Monitoring, remedy progress evaluation does not result in the determination of exceedances. Instead, the results from these analyses are used to evaluate performance metrics described in the site-specific Corrective Action GMP.

4.1.1 Central Tendency

The two most common central tendency measures of a data set are the sample mean and sample median. The sample mean best represents the central tendency of normally-distributed data; therefore, the mean will be used to represent the tendency if the data are approximately normally distributed and the frequency of non-detects is below 50%. The sample mean is given by the arithmetic average of each value in the sample:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

$\bar{x}$ = sample mean

n = sample count

x_i = i^{th} observation of x

The sample median is the 50th percentile of values in a sample and represents the midpoint of the ordered list of values. Because it is based on rank-order, the sample median is insensitive to data distribution; therefore, the median will be used if the data are not normally distributed or the frequency of non-detects is 50% or greater. The sample median is determined by arranging all values in order and selecting the middle value (or, if an even number of values exists, the mean of the two middle values).

4.1.2 Trend of Average Concentration in Individual Wells and in a Plume

Insight into remedy progress can be gained by evaluating changes in concentration at both the individual well and plume levels.

Trends at the individual well level are evaluated according to **Section 2.5**. To evaluate trends at the plume level, the trend on quarterly average concentrations is evaluated (per **Section 4.1.1**). Quarterly average concentrations in the plume are generated by calculating the mean or median as appropriate based on distribution (**Section 4.1.1**) of concentrations collected during a single sample event. Trend is then evaluated as described in **Section 2.5**. The magnitude of the trend (*i.e.*, slope) may be evaluated according to methods in **Section 3.3.1**.

4.2 Stability Evaluation

In order to evaluate ultimate effectiveness of the remedy, it is critical to evaluate if a new stable equilibrium has been reached after the implementation of corrective action (e.g., completion of source control or conclusion of groundwater extraction). Stability evaluation will be completed using trend analysis as described in **Section 2.5**.

4.3 Attainment Evaluation

Per 35 I.A.C. § 845.680(c), corrective action is considered complete when compliance with the GWPS has been demonstrated "at all points within the plume of contamination that lies beyond the waste boundary […] for a period of three consecutive years". Accordingly, attainment of the GWPS will be evaluated for well-constituent pairs previously determined to exceed the GWPS. This evaluation will include data collected after groundwater conditions have stabilized (**Section 4.2**).

The Unified Guidance recommends comparing a CI to the fixed GWPS to evaluate attainment of corrective action. The null hypothesis of this test is the reverse of that in Compliance Monitoring: corrective action well groundwater concentrations are assumed to exceed the GWPS unless the statistical test indicates otherwise. The CI will be calculated according to methods presented in **Section 3.3**. For pH, the only parameter with an upper and lower background and GWPS, the GWPS will be attained (*i.e.*, the null hypothesis rejected) when the CI falls within the range of the GWPS (*i.e.*, if the LCL of the CI is above the lower limit and the UCL is below the upper limit). For all other parameters, the GWPS will be attained when the UCL is below the GWPS. Once this

statistical evaluation indicates that GWPS has been met for three years (*i.e.*, that the null hypothesis is rejected), corrective action will be concluded.

5. REFERENCES

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