Intended for
Illinois Power Generating Company

Date
December 28, 2022

Project No.
1940103307

40 C.F.R. § 257 GROUNDWATER MONITORING PLAN

PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

RAMBOLL Bright ideas. Sustainable change.

40 C.F.R. § 257 GROUNDWATER MONITORING PLAN NEWTON POWER PLANT PRIMARY ASH POND

Project Name	**Newton Power Plant Primary Ash Pond**
Project No.	**1940103307**
Recipient	**Illinois Power Generating Company**
Document Type	**Groundwater Monitoring Plan**
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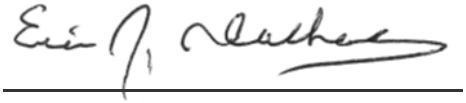
Ramboll
234 W. Florida Street
Fifth Floor
Milwaukee, WI 53204
USA

T 414-837-3607
F 414-837-3608
https://ramboll.com

Brian G. Hennings, PG
Senior Managing Hydrogeologist



Eric J. Tlachac, PE
Senior Managing Engineer

Chase J. Christenson, PG
Hydrogeologist

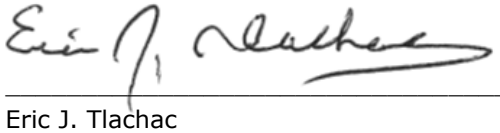
LICENSED PROFESSIONAL CERTIFICATIONS

40 C.F.R. § 257.91(f) Groundwater Monitoring System Certification

In accordance with Title 40 of the Code of Federal Regulations (40 C.F.R.), Part 257, Subpart D, Section (§) 257.91(f) the owner or operator of a coal combustion residuals (CCR) unit must obtain certification from a qualified professional engineer stating that the groundwater monitoring system at the CCR unit has been designed and constructed to meet the requirements of 40 C.F.R. § 257.91. If the groundwater monitoring system includes the minimum number of monitoring wells specified in 40 C.F.R. § 257.91(c)(1), the certification must document the basis supporting use of the minimum number of monitoring wells. Further, in accordance with 40 C.F.R. § 257.91(e)(1), when completing the groundwater monitoring system certification, the qualified professional engineer must be given access to documentation regarding the design, installation, development, and decommissioning of any monitoring wells, piezometers, and other measurement, sampling, and analytical devices.

The groundwater monitoring system designed and constructed for the Newton Power Plant (NPP) Primary Ash Pond (PAP) includes more than the minimum number of wells specified in 40 C.F.R. § 257.91(c)(1). The undersigned has been given access to documentation regarding the design, installation, development, and decommissioning of monitoring wells, piezometers and other measurement, sampling, and analytical devices concerning the NPP PAP.

I, Eric J. Tlachac, a qualified professional engineer in good standing in the State of Illinois, certify that the groundwater monitoring system at the NPP PAP has been designed and constructed to meet the requirements of 40 C.F.R. § 257.91.



Eric J. Tlachac
Qualified Professional Engineer
062-063091
Illinois
Date: December 28, 2022

I, Brian G. Hennings, a qualified professional geologist in good standing in the State of Illinois, certify that the groundwater monitoring system at the NPP PAP has been designed and constructed to meet the requirements of 40 C.F.R. § 257.91.

Brian G. Hennings
Professional Geologist
196-001482
Illinois
Date: December 28, 2022

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TABLES (IN TEXT)

TABLES (ATTACHED)

FIGURES (ATTACHED)

ACRONYMS AND ABBREVIATIONS

35 I.A.C.	Title 35 of the Illinois Administrative Code
40 C.F.R.	Title 40 of the Code of Federal Regulations
§	section
ASD	Alternate Source Demonstration
bgs	below ground surface
CCA	compliance commitment agreement
CCR	coal combustion residuals
CMA	Corrective Measures Assessment
CSM	conceptual site model
GMP	Groundwater Monitoring Plan
GWPS	groundwater protection standard
HBL	health-based level
HCR	Hydrogeologic Site Characterization Report
ID	identification
IEPA	Illinois Environmental Protection Agency
IPGC	Illinois Power Generating Company
LCL	lower confidence limit
LCU	Lower Confining Unit
LF 1	Phase 1 Landfill
LF 2	Phase 2 Landfill
LPL	lower prediction limit
LVW	low volume wastewater
MCL	maximum contaminant level
NA	not applicable
NAVD88	North American Vertical Datum of 1988
NID	National Inventory of Dams
No.	number
NPDES	National Pollutant Discharge Elimination System
NPP	Newton Power Plant
NRT/OBG	Natural Resource Technology, an OBG Company
PAP	Primary Ash Pond
PMP	potential migration pathway
QAPP	Multi-Site Quality Assurance Project Plan
QA/QC	quality assurance/quality control
Ramboll	Ramboll Americas Engineering Solutions, Inc.
RL	reporting limit
SAP	Multi-Site Sampling and Analysis Plan
SI	surface impoundment
SSI	statistically significant increase
SSL	statistically significant level
TDS	total dissolved solids
UA	Uppermost Aquifer
UCU	Upper Confining Unit
UD	Upper Drift
UPL	upper prediction limit

UTL	upper tolerance limit
USEPA	United States Environmental Protection Agency
WLO	water level only

1. INTRODUCTION

1.1 Overview

Ramboll Americas Engineering Solutions, Inc. (Ramboll) has prepared this Groundwater Monitoring Plan (GMP) on behalf of NPP, operated by Illinois Power Generating Company (IPGC) to align the 40 C.F.R. § 257 compliance groundwater monitoring program with the Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845 compliance groundwater monitoring program.

This GMP applies specifically to the CCR Unit referred to as the PAP, CCR unit identification (ID) number (No.) 501, Illinois Environmental Protection Agency (IEPA) ID No. W0798070001-01, and National Inventory of Dams (NID) No. IL50719. The PAP is an unlined, 404-acre surface impoundment (SI) used to manage CCR and non-CCR waste streams at the NPP. This GMP includes content requirements specific to 40 C.F.R. § 257.91 (Groundwater Monitoring Systems), 40 C.F.R. § 257.93 (Groundwater Sampling and Analysis Requirements), 40 C.F.R. § 257.94 (Detection Monitoring Program), and 40 C.F.R. § 257.95 (Assessment Monitoring Program) for the PAP at NPP.

1.2 Site Location and Background

The NPP is located in Jasper County in the southeastern part of central Illinois, approximately seven miles southwest of the town of Newton (**Figure 1-1**). The NPP operates as a coal-fired power plant with three CCR units present, including the PAP which is the subject of this GMP and two landfills: the Phase 1 Landfill (LF 1) located northwest and west of the PAP, and the Phase 2 Landfill (LF 2) located to the west of the PAP. The PAP is located within Section 26 and the west half of Section 25, Township 6 North, Range 8 East. The PAP is located south of the NPP and surrounded by Newton Lake to the south, east, and west (**Figure 1-2**).

The PAP was constructed in 1977 and has a design capacity of approximately 9,715 acre-feet. There is also a non-CCR 83.6 acre-feet Secondary Pond located immediately south of the PAP. The PAP has a surface area of 404 acres and the Secondary Pond has an area of 9.3 acres. The PAP currently receives stormwater runoff, bottom ash, fly ash, and low-volume wastewater (LVW) from the plant's two coal-fired boilers. The SI is operated per National Pollutant Discharge Elimination System (NPDES) Permit No. IL0049191, Outfall 001 (located at the Secondary Pond). Areas within the impoundment were excavated during construction for native materials used to build the containment berms.

1.3 Conceptual Site Model

Multiple site investigations have been completed at the NPP to characterize the geology, hydrogeology, and groundwater quality as required by 40 C.F.R. § 257.91 (Groundwater Monitoring Systems). The PAP has been well characterized and detailed in the Hydrogeologic Site Characterization Report (HCR) (Ramboll, 2021) [https://www.luminant.com/ccr/illinois-ccr/?dir=il-ccr%2FNewton%2F2021], that was included with the Operating Permit application submitted to the IEPA. The HCR was prepared to comply with the requirements specified in 35 I.A.C. § 845.620 and expands upon the Hydrogeologic Monitoring Plan (Natural Resource Technology, an OBG Company [NRT/OBG], 2017). A conceptual site model (CSM) has been developed and is discussed below.

In addition to the CCR present in the PAP, there are six layers of unlithified material present above the bedrock, which are categorized into the four hydrostratigraphic units below based on stratigraphic relationships and common hydrogeologic characteristics:

- **Upper Drift (UD)/Potential Migration Pathway (PMP):** The UD is composed of the low permeability silts and clays of the Peoria Silt and Sangamon Soil and the sandier soils of the Hagarstown Member (*i.e.,* PMP).
- **Hagarstown Member/PMP:** The Hagarstown Member consists of discontinuous sandier deposits of the UD, where present, and overlies the Vandalia Till.
- **Upper Confining Unit (UCU):** This unit consists of the low permeability clay and silt of the Vandalia Till Member (Vandalia Till).
- **Uppermost Aquifer (UA):** This unit is composed of the Mulberry Grove Formation, which onsite has been classified as poorly graded sand, silty sand, clayey sand, and gravel.
- **Lower Confining Unit (LCU):** This unit is comprised of low permeability silt and clay of the Smithboro Till Member (Smithboro Till) and the Banner Formation.

Groundwater migrates downward through the UD and UCU into the UA. Groundwater in the UA flows from north to south/southwest and converges near a former drainage feature located west of the PAP (**Figure 1-3**). Groundwater elevations vary seasonally, although generally less than one foot per year. The surface water elevation at Newton Lake (at location SG02) measured between February 15 and March 9, 2021, ranged from 504.42 to 504.84 feet North American Vertical Datum of 1988 (NAVD88). Groundwater elevations in the UA at downgradient wells were observed around 491 feet NAVD88 (approximately 15 feet lower than the lake elevation). The separation between measured groundwater elevations and lake elevations (and observed downward vertical gradients) indicates groundwater does not flow into Newton Lake from the UA.

2. GROUNDWATER MONITORING SYSTEMS

2.1 Existing Monitoring Well Network and Analysis

Three monitoring programs specific to the PAP exist, the IEPA monitoring program, the 40 C.F.R. § 257 monitoring program, and the 35 I.A.C. § 845 monitoring program. This GMP is being provided to expand the 40 C.F.R. § 257 groundwater monitoring network and monitoring program specific to the PAP to align with the monitoring network established for 35 I.A.C. § 845. Monitoring networks and programs that apply to other units are not discussed in this GMP. Consistent with the compliance commitment agreements (CCAs) entered into between other facility owners and IEPA on December 28, 2022, groundwater monitoring in accordance with the proposed GMP and sampling methodologies provided in the 35 I.A.C. § 845 operating permit application for the PAP is scheduled to commence no later than the second quarter of 2023. Following initiation of quarterly groundwater monitoring and identification of exceedances of the groundwater protection standards established in accordance with 35 I.A.C § 845.600(a), IPGC will conduct a confirmatory resample consistent with 35 I.A.C § 845.600(d). When the confirmatory resample suggests an exceedance of a groundwater protection standard, IPGC will commence with the other steps required under 35 I.A.C Sections 845.650(d), 845.650(e), 845.660, 845.670, and 845.680(a)(3), as necessary.

After the PAP has been issued an approved operating permit, groundwater monitoring shall be conducted in accordance with that operating permit. Groundwater sampling requirements that apply to the CCR SI under other existing state permit programs will become void upon issuance of an approved operating permit pursuant to 35 I.A.C. § 845 and a permit modification as required in Special Condition No. 19 of the facility's NPDES permit.

2.1.1 IEPA Monitoring Program

The current IEPA-required groundwater monitoring program associated with the PAP consists of four groundwater monitoring wells, including two background monitoring wells (G116 and APW02) and two compliance monitoring wells (APW03 and APW04) in accordance with the Special Condition No. 19 of the plant's NPDES Permit IL0049191. Groundwater samples are collected quarterly and analyzed for dissolved manganese, dissolved sulfate, dissolved zinc, total dissolved solids (TDS), and pH. The boring logs, well construction forms, and other related monitoring well forms for the well network are included in Appendix C of the HCR (Ramboll, 2021).

2.1.2 Existing 40 C.F.R. § 257 Monitoring Program

The 40 C.F.R. § 257 well network for the PAP consists of six monitoring wells screened in the UA, including two background monitoring wells (APW05 and APW06) and four compliance monitoring wells (APW07, APW08, APW09, and APW10). The boring logs, well construction forms, and other related monitoring well forms are available in the Operating Records as required by 40 C.F.R. § 257.91 for each monitored CCR Unit or CCR Multi-Unit and are included in Appendix C of the HCR (Ramboll, 2021).

Assessment monitoring in accordance with 40 C.F.R. § 257.95 was initiated on June 6, 2022. Details of the procedures and techniques used to fulfill the groundwater sampling and analysis program requirements are found in the Multi-Site Sampling and Analysis Plan (SAP) (Ramboll, 2022a).

Groundwater samples are collected semiannually and analyzed for the following laboratory and field parameters from Appendix III and Appendix IV of 40 C.F.R. § 257, summarized in **Table A** below.

Table A. 40 C.F.R. § 257 Groundwater Monitoring Program Parameters

Field Parameters[1]			
Groundwater Elevation	pH		
Appendix III Parameters (Total, except TDS)			
Boron	Chloride	Sulfate	
Calcium	Fluoride	TDS	
Appendix IV Parameters (Total)			
Antimony	Cadmium	Lead	Selenium
Arsenic	Chromium	Lithium	Thallium
Barium	Cobalt	Mercury	Radium 226 and 228 combined
Beryllium	Fluoride	Molybdenum	

[1]Dissolved oxygen, temperature, specific conductance, oxidation/reduction potential, and turbidity are recorded during sample collection.

TDS – total dissolved solids

Results and analysis of groundwater sampling are reported annually by January 31 of the following year and made available on the CCR public website as required by 40 C.F.R. § 257.

2.1.3 35 I.A.C. § 845 Well Installation and Monitoring

In 2021, nine additional monitoring wells (APW11, APW12, APW13, APW14, APW15, APW16, APW17, APW18, and APW5S) were installed along the perimeter of the PAP to assess the vertical and horizontal lithology, stratigraphy, chemical properties, and physical properties of geologic layers to a minimum of 100 feet below ground surface (bgs) as specified in 35 I.A.C. § 845.620(b). Additionally, four leachate monitoring wells (XPW01, XPW02, XPW03, and XPW04) were installed within the PAP to characterize CCR materials and leachate.

Prospective 35 I.A.C. § 845 monitoring wells were sampled for eight rounds from February to August 2021 and the results were assessed for selection of the PAP 35 I.A.C. § 845 monitoring well network. Groundwater samples were collected and analyzed for 35 I.A.C. § 845.600 parameters as summarized in **Table B** on the following page.

Table B. 35 I.A.C. § 845 Groundwater Monitoring Program Parameters

Field Parameters[1]			
Groundwater Elevation	pH	Turbidity	
Metals (Total)			
Antimony	Boron	Cobalt	Molybdenum
Arsenic	Cadmium	Lead	Selenium
Barium	Calcium	Lithium	Thallium
Beryllium	Chromium	Mercury	
Inorganics (Total)			
Fluoride	Sulfate	Chloride	TDS
Other (Total)			
Radium 226 and 228 combined			

[1] Dissolved oxygen, temperature, specific conductance, and oxidation/reduction potential were recorded during sample collection.

Data and results from the 35 I.A.C. § 845 background monitoring were included in the water quality discussion included in the HCR (Ramboll, 2021). The data collected from background locations during the 35 I.A.C. § 845 monitoring were used to evaluate and calculate background concentrations for the PAP.

2.2 Expansion of Existing 40 C.F.R. § 257 Monitoring Well Network

The existing 40 C.F.R. § 257 network is being expanded to include five monitoring wells screened in the UD (APW02[1], APW03[1], APW04[1], APW05S[1], and APW12[1]), 13 monitoring wells screened in the UA (APW05, APW06, APW07, APW08, APW09, APW10, APW11, APW13, APW14, APW15, APW16, APW17, and APW18), and two temporary water level only surface water staff gages (XSG01 and SG02). The proposed network is summarized in **Table C** on the following page and displayed on **Figure 2-1**. Eighteen wells (two background and 16 compliance) will be used to monitor groundwater concentrations within the hydrostratigraphic units.

The groundwater samples collected from the 18 wells will be used to monitor and evaluate groundwater quality and demonstrate compliance with the groundwater quality standards included in 40 C.F.R. § 257.94(e) and 40 C.F.R. § 257.95(h). The proposed monitoring wells will yield groundwater samples that accurately represent the quality of background groundwater that has not been affected by leakage from the PAP, as well as downgradient groundwater at the waste boundary of the PAP (as required in 40 C.F.R. § 257.91(a)(1) and (2)). Monitoring well depths and construction details are listed in **Table 2-1** and summarized in **Table C** on the following page.

Any future changes to the groundwater monitoring well network as approved by the IEPA under 35 I.A.C. § 845 will also be incorporated into the 40 C.F.R. § 257 network.

[1] Monitoring wells APW02, APW03, APW04, APW05S, and APW12 are wells screened in the UD that have been identified to monitor the PMP.

Table C. Expanded 40 C.F.R. § 257 Monitoring Well Network

Well ID	Monitored Unit	Well Screen Interval (feet bgs)	Well Type[3]
APW02*	UD	9.7 - 19.7	Compliance
APW03*	UD	9.7 - 19.7	Compliance
APW04*	UD	7.7 - 17.7	Compliance
APW05	UA	62.6 - 67.4	Background
APW05S*	UD	10.0 – 20.0	Compliance
APW06	UA	67.7 - 72.5	Background
APW07	UA	77.9 - 82.7	Compliance
APW08	UA	71.4 - 81.1	Compliance
APW09	UA	56.7 - 61.5	Compliance
APW10	UA	40.7 - 45.5	Compliance
APW11	UA	60.0 - 65.0	Compliance
APW12*	UD	20.0 - 30.0	Compliance
APW13	UA	58.5 - 63.5	Compliance
APW14	UA	50.0 - 55.0	Compliance
APW15	UA	98.0 - 103.0	Compliance
APW16	UA	80.5 - 85.5	Compliance
APW17	UA	87.0 - 92.0	Compliance
APW18	UA	75.0 - 80.0	Compliance
XSG01[1,2]	CCR	NA	WLO
SG02[1,2]	Surface Water	NA	WLO

[1] Surface water level measuring points.
[2] Location is temporary pending implementation of impoundment closure per an approved Construction Permit Application.
[3] Well type refers to the role of the well in the monitoring network.
* Well in the UD that has been identified to monitor the PMP
NA = not applicable
WLO = water level only

2.3 Well Abandonment

No wells are currently proposed for abandonment.

2.4 Groundwater Monitoring System Maintenance Plan

Maintenance procedures provided in the SAP will be performed as needed to assure that the monitoring wells provide representative groundwater samples (Ramboll, 2022a).

3. GROUNDWATER MONITORING PLAN

The GMP will monitor and evaluate groundwater quality to demonstrate compliance with the groundwater quality standards included in 40 C.F.R. § 257.94(e) and 40 C.F.R. § 257.95(h). The groundwater monitoring program will include sampling and analysis procedures that are consistent and that provide an accurate representation of groundwater quality at the background and downgradient wells as required by 40 C.F.R. § 257.91. As discussed in **Section 2**, three monitoring programs specific to the PAP exist, the IEPA monitoring program, the 40 C.F.R. § 257 monitoring program, and the 35 I.A.C. § 845 monitoring program. Groundwater sampling requirements that apply to the CCR SI under other existing state permit programs will become void upon issuance of an approved operating permit pursuant to 35 I.A.C § 845 and a permit modification as required in Special Condition No. 19 of the facility's NPDES permit.

3.1 Sampling Schedule

Groundwater sampling for the 40 C.F.R. § 257 monitoring well network was initially performed quarterly between 2015 and 2017 to establish baseline groundwater quality. Detection monitoring began in the first quarter of 2017 with semiannual sampling. Assessment monitoring began in the second quarter of 2022. The PAP is currently in assessment monitoring and sampling will continue in 2023 according to the schedule summarized in **Table D** on the following page.

Table D. 40 C.F.R. § 257 Sampling Schedule

Frequency	Duration
Quarterly (groundwater quality)	**Baseline** Began: monitoring began in 2015.
	Ended: monitoring was completed in 2017 to establish baseline groundwater quality for existing landfills and SIs.
At least Semi-annually (groundwater quality)	**Detection Monitoring** Begins: monitoring began no later than October 17, 2017, for existing landfills and SIs, following collection of a minimum of eight independent samples for constituents from Appendix III and Appendix IV from each background and downgradient well. At least semiannual sampling continues for Appendix III constituents throughout the active life of the CCR unit and the post-closure period. For new landfills and SIs, and lateral expansion of existing CCR units, a minimum of eight independent samples from each background well must be collected and analyzed for the constituents in Appendix III and Appendix IV during the first six months of sampling.
	Ends: Following 30-year post-closure care period or statistically significant increase (SSI) determination and unsuccessful Alternate Source Demonstration (ASD) evaluation within 90 days of SSI determination.
	Assessment Monitoring Begins: within 90 days of unsuccessful ASD evaluation for SSIs determined during Detection Monitoring; samples must be collected and analyzed for all constituents listed in Appendix IV. Within 90 days of obtaining the of the initial sample results, and on at least a semiannual basis thereafter, wells must be resampled for Appendix III and for those constituents in Appendix IV that have been detected during sampling.
	Ends: Following demonstration that concentrations of all constituents in Appendices III and IV are below background values for two consecutive sampling events.

Groundwater monitoring for the 40 C.F.R. § 257 well network will continue to follow a schedule in accordance with the requirements of 40 C.F.R. § 257.94 and 40 C.F.R. § 257.95. Upon United States Environmental Protection Agency (USEPA) approval of 35 I.A.C. § 845 as a State CCR Permit Program, the 40 C.F.R. § 257 monitoring will be discontinued and replaced by the 35 I.A.C. § 845 monitoring.

3.2 Groundwater Sample Collection

Groundwater sampling procedures have been developed in the SAP (Ramboll, 2022a) and the collection of groundwater samples is being implemented to meet the requirements of 40 C.F.R. § 257.93. In addition to groundwater well samples, quality assurance samples will be collected as described in the Multi-Site Quality Assurance Project Plan (QAPP) (Ramboll, 2022b).

3.3 Laboratory Analysis

Laboratory analysis will be performed consistent with the specifications of the QAPP. Laboratory methods may be modified based on laboratory equipment availability or procedures, but the Reporting Limit (RL) for all parameters analyzed, regardless of method, will be lower than the

applicable groundwater quality standard. Data reporting requirements and workflow are provided in the Multi-Site Data Management Plan (Ramboll, 2022c).

3.4 Quality Assurance Program

The QAPP includes procedures and techniques for laboratory quality assurance/quality control (QA/QC). Additionally, the SAP includes requirements for field data collection QA/QC.

3.5 Statistical Analysis

A Multi-Site Statistical Analysis Plan (Ramboll, 2022d) has been developed to describe procedures that will be used to establish background conditions and determine SSIs over background concentrations and statistically significant levels (SSLs) over groundwater protection standards (GWPSs) as required by 40 C.F.R. § 257.94 and 257.95. The Multi-Site Statistical Analysis Plan was prepared in accordance with the requirements of 40 C.F.R. § 257.93(f), with reference to the acceptable statistical procedures provided in *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (USEPA*,* 2009). The determination of SSIs over background concentrations and SSLs over GWPSs will be completed at least semiannually in accordance with the sampling schedule provided in **Section 3.1**.

3.6 Data Reporting

Data reporting for the 40 C.F.R. § 257 monitoring well network will be consistent with recordkeeping, notification, and internet posting requirements described in 40 C.F.R. § 257.105 through 257.107.

3.7 Compliance with Groundwater Quality Standards

Compliance with the groundwater quality standards for the detection monitoring program referenced in 40 C.F.R. § 257.94(e) and the assessment monitoring program referenced in 40 C.F.R. § 257.95(h) will be determined as described in the following sections.

3.7.1 SSI Determination in Detection Monitoring

One-sided upper prediction limits (UPL) will be calculated for each Appendix III constituent using the background samples, with the exception of pH, for which both upper and lower prediction limits will be calculated. A tabular summary of UPLs will be provided in the Annual Groundwater Monitoring and Corrective Action Reports. Individual sampling event concentrations for each constituent detected in the downgradient monitoring wells will then be compared to the background UPL. An exceedance of the UPL for any constituent measured at any downgradient well constitutes an SSI. For pH, a measurement above the UPL or below the lower prediction limit (LPL) constitutes an SSI. As required by 40 C.F.R. § 257.93(h)(2), SSI determination will be completed within 90 days of sampling and analysis.

3.7.2 GWPS and SSL Determination in Assessment Monitoring

A GWPS will be established for Appendix IV constituents. The GWPS will be either the USEPA maximum contaminant levels (MCLs) or the health-based levels (HBLs) established in 40 C.F.R. § 257.95(h)(2) for cobalt, lead, lithium, and molybdenum. The exception to this is when the background concentration is greater than the established MCL or HBL. For this exception, background concentrations will be used to define the GWPS. The background will be calculated using a parametric or non-parametric upper tolerance limit (UTL), depending on the data

distribution. A tabular summary of GWPSs will be provided in the Annual Groundwater Monitoring and Corrective Action Reports.

Compliance will be determined by comparing the lower confidence limit (LCL) of the downgradient concentrations to the GWPS. An SSL will be identified when the LCL exceeds the GWPS. The method of calculating the LCL is described in the Multi-Site Statistical Analysis Plan. If there are too few data points to calculate an LCL (a minimum of four data points is required), the most recent data point is compared to the GWPS. If all the downgradient samples for a well constituent pair are non-detect, the most recent RL is compared to the GWPS. Additionally, an SSL will be identified if all previous samples at a downgradient well were not-detect, and the two most recent samples have both detections and GWPS exceedances. SSL determination will be completed within 90 days of sampling and analysis.

3.8 Alternate Source Demonstrations

An ASD may be completed for a unit under the detection monitoring program in 40 C.F.R. § 257.94(e)(2) or assessment monitoring program in 40 C.F.R. § 257.95(g)(3)(ii) to provide lines of evidence that a source other than the monitored unit caused the SSI/SSL or that the SSI/SSL resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The ASD will include information and analysis that supports the conclusions and a certification of accuracy by a qualified professional engineer. ASDs will be completed within 90 days of SSI/SSL determination and be provided in the Annual Groundwater Monitoring and Corrective Action Reports as required by 40 C.F.R. § 257.94(e)(2) and 40 C.F.R. § 257.95(g)(3)(ii).

3.8.1 Detection Monitoring Program

As allowed in 40 C.F.R. § 257.94(e)(2), following the determination of an SSI over background for groundwater constituents listed in Appendix III of 40 C.F.R. § 257, an ASD will be evaluated, and if completed within 90 days of the SSI determination, detection monitoring will continue.

If an ASD has not been successfully completed within 90 days of the SSI determination, Assessment Monitoring in accordance with 40 C.F.R. § 257.95 will be initiated within 90 days and the associated notification will be made to the CCR unit operating record and state director (and/or appropriate tribal authority, if applicable).

3.8.2 Assessment Monitoring Program

As allowed in 40 C.F.R. § 257.95(g)(3)(ii), following the determination of an SSL over the GWPS of constituents listed in Appendix IV of 40 C.F.R. § 257, an ASD will be evaluated and, if completed within 90 days of the SSL determination, assessment monitoring will continue.

If an ASD has not been successfully completed within the 90 days of the SSL determination, a Corrective Measures Assessment (CMA) in accordance with 40 C.F.R. § 257.96 will be initiated and the associated notification will be made to the CCR unit operating record and state director (and/or appropriate tribal authority, if applicable).

3.9 Corrective Action

As described in 40 C.F.R. § 257.96, if the ASD summarized in **Section 3.8** has not been successfully completed, the CMA must be completed within 90 days, unless the owner or

operator demonstrates the need for up to an additional 60 days to complete the CMA due to site-specific conditions of circumstances.

Remedy selection will follow the CMA and be documented in a remedy selection report in accordance 40 C.F.R. § 257.97. A corrective action monitoring plan will be developed to monitor the performance of the selected remedy.

3.10 Annual Report

An Annual Groundwater Monitoring and Corrective Action Report will be completed and placed in the CCR unit operating record by January 31st of the following calendar year. At a minimum, the annual report must contain the following information, to the extent available:

1. A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit.
2. Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken.
3. In addition to all the monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs.
4. A narrative discussion of any transition between monitoring programs (*e.g.*, the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at an SSI relative to background levels).
5. Other information required to be included in the annual report as specified in 40 C.F.R. §§ 257.90 through 257.98.
6. A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:
    i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in 40 C.F.R. § 257.95.
    ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in 40 C.F.R. § 257.94 or the assessment monitoring program in 40 C.F.R. § 257.95.
    iii) If it was determined that there was an SSI over background for one or more constituents listed in Appendix III of 40 C.F.R. § 257 pursuant to 40 C.F.R. § 257.94(e):
        A. Identify those constituents listed in Appendix III of 40 C.F.R. § 257 and the names of the monitoring wells associated with such an increase.
        B. Provide the date when the assessment monitoring program was initiated for the CCR unit.

iv) If it was determined that there was an SSL above the groundwater protection standard for one or more constituents listed in Appendix IV of 40 C.F.R. § 257 pursuant to 40 C.F.R. § 257.95(g) include all of the following:

   A. Identify those constituents listed in Appendix IV of 40 C.F.R. § 257 and the names of the monitoring wells associated with such an increase.

   B. Provide the date when the CMA was initiated for the CCR unit.

   C. Provide the date when the public meeting was held for the CMA.

   D. Provide the date when the CMA was completed.

v) Whether a remedy was selected pursuant to 40 C.F.R. § 257.97 during the current annual reporting period, and if so, the date of remedy selection.

vi) Whether remedial activities were initiated or are ongoing pursuant to 40 C.F.R. § 257.98 during the current annual reporting period.

4. REFERENCES

Illinois Environmental Protection Agency, 2021. *Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Title 35 of the Illinois Administrative Code § 845.* April 15, 2021.

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Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2021. *Hydrogeologic Site Characterization Report. Newton Primary Ash Pond. Newton Power Plant. Newton, Illinois*. October 25, 2021.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2022a. *Multi-Site Sampling and Analysis Plan*. December 28, 2022.

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United States Environmental Protection Agency (USEPA), 2015. *Title 40 of the Code of Federal Regulations, Part 257*.

TABLES

TABLE 2-1. MONITORING WELL LOCATIONS AND CONSTRUCTION DETAILS
GROUNDWATER MONITORING PLAN
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

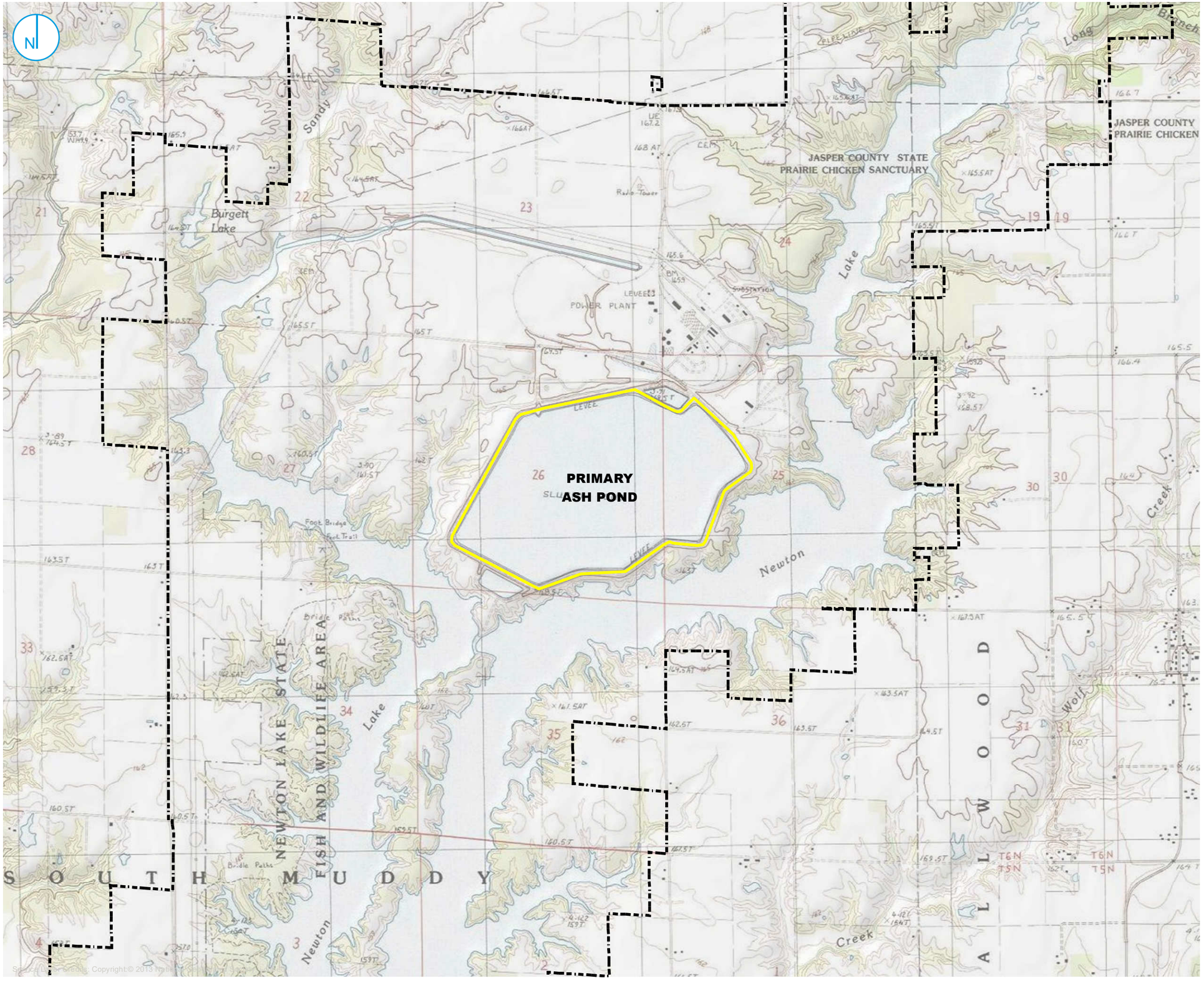
Well Number	Type	HSU	Date Constructed	Top of PVC Elevation (ft)	Measuring Point Elevation (ft)	Measuring Point Description	Ground Elevation (ft)	Screen Top Depth (ft BGS)	Screen Bottom Depth (ft BGS)	Screen Top Elevation (ft)	Screen Bottom Elevation (ft)	Well Depth (ft BGS)	Bottom of Boring Elevation (ft)	Screen Length (ft)	Screen Diameter (inches)	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)
APW02	C	UD	06/19/2010	533.61	533.61	Top of Riser	529.90	9.70	19.70	520.20	510.20	20.00	509.90	10	2	38.925918	-88.293907
APW03	C	UD	06/18/2010	532.41	532.41	Top of Riser	528.37	9.70	19.70	518.67	508.67	20.00	508.40	10	2	38.922322	-88.281567
APW04	C	UD	06/19/2010	525.06	525.06	Top of Riser	521.45	7.70	17.70	513.75	503.75	18.00	503.50	10	2	38.927444	-88.273113
APW05	B	UA	10/22/2015	544.07	544.07	Top of Riser	541.08	62.64	67.44	478.44	473.64	67.84	473.10	4.8	2	38.933958	-88.280983
APW05S	C	UD	01/19/2021	543.94	543.94	Top of PVC	541.05	10.00	20.00	531.05	521.05	20.00	518.10	10	2	38.933958	-88.281033
APW06	B	UA	10/21/2015	546.07	546.07	Top of Riser	542.89	67.67	72.48	475.22	470.41	72.88	468.90	4.8	2	38.933746	-88.286276
APW07	C	UA	11/05/2015	538.37	538.37	Top of Riser	535.72	77.89	82.70	457.83	453.02	83.10	452.60	4.8	2	38.928233	-88.292076
APW08	C	UA	10/28/2015	528.97	528.97	Top of Riser	526.26	71.40	81.06	454.86	445.20	81.53	444.30	9.7	2	38.923154	-88.292286
APW09	C	UA	11/03/2015	531.52	531.52	Top of Riser	528.33	56.66	61.46	471.67	466.87	61.85	466.30	4.8	2	38.922319	-88.281585
APW10	C	UA	11/06/2015	524.25	524.25	Top of Riser	521.49	40.74	45.54	480.75	475.95	45.94	475.60	4.8	2	38.927435	-88.273127
APW11	C	UA	01/23/2021	538.63	538.63	Top of PVC	536.05	60.00	65.00	476.05	471.05	65.00	436.10	5	2	38.932811	-88.27545
APW12	C	UD	02/21/2021	546.29	546.29	Top of PVC	543.33	20.00	30.00	523.33	513.33	30.00	456.30	10	2	38.92975	-88.272058
APW13	C	UA	01/22/2021	537.99	537.99	Top of PVC	535.16	58.50	63.50	476.66	471.66	63.50	445.20	5	2	38.92566	-88.274416
APW14	C	UA	01/23/2021	526.29	526.29	Top of PVC	523.85	50.00	55.00	473.85	468.85	55.00	428.90	5	2	38.924057	-88.277994
APW15	C	UA	01/22/2021	524.69	524.69	Top of PVC	522.06	98.00	103.00	424.06	419.06	103.00	412.10	5	2	38.921593	-88.285226
APW16	C	UA	01/20/2021	531.18	531.18	Top of PVC	529.16	80.50	85.50	448.66	443.66	85.50	419.20	5	2	38.920317	-88.291291
APW17	C	UA	01/22/2021	532.52	532.52	Top of PVC	529.84	87.00	92.00	442.84	437.84	92.00	429.80	5	2	38.925916	-88.293928
APW18	C	UA	01/21/2021	543.27	543.27	Top of PVC	540.55	75.00	80.00	465.55	460.55	80.00	433.60	5	2	38.930979	-88.290122
XSG01	WLO	CCR	--	--	536.17	Staff gauge	--	--	--	--	--	--	--	--	--	38.923218	-88.29067
SG02	WLO	SW	--	--	506.89	Staff gauge	--	--	--	--	--	--	--	--	--	38.921234	-88.292057

TABLE 2-1. MONITORING WELL LOCATIONS AND CONSTRUCTION DETAILS
GROUNDWATER MONITORING PLAN
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Notes:
All elevation data are presented relative to the North American Vertical Datum 1988 (NAVD88), GEOID 12A
Type refers to the role of the well in the monitoring network: background (B), compliance (C), or water level measurements only (WLO)
WLO wells are temporary pending implementation of impoundment closure per an approved Construction Permit application
-- = data not available
BGS = below ground surface
CCR = Coal Combustion Residual
ft = foot or feet
HSU = Hydrostratigraphic Unit
PVC = polyvinyl chloride
SW = surface water
UA = Uppermost Aquifer
UD = Upper Drift

generated 10/05/2021, 3:15:18 PM CDT

FIGURES



40 C.F.R. § 257 REGULATED UNIT (SUBJECT UNIT)

PROPERTY BOUNDARY

0 1,000 2,000 Feet

SITE LOCATION MAP

40 C.F.R. § 257 GROUNDWATER MONITORING PLAN
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 1-1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\22851\MXD\GMP\Newton\PAP_501\Figure 1-1. Site Location Map.mxd

PROJECT: 169000XXXX | DATED: 1/13/2023 | DESIGNER: galammc

40 C.F.R. § 257 REGULATED UNIT (SUBJECT UNIT)

SITE FEATURE

PROPERTY BOUNDARY

0 500 1,000
Feet

SITE MAP

40 C.F.R. § 257 GROUNDWATER MONITORING PLAN
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 1-2

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\2202285\MXD\845_Operating_Permit\Newton\GMP\Figure 1-2_Site Map.mxd

PROJECT: 169000XXXX | DATED: 10/19/2021 | DESIGNER: STOLZSD

- BACKGROUND WELL
- MONITORING WELL
- SOURCE SAMPLE LOCATION
- STAFF GAGE
- GROUNDWATER ELEVATION CONTOUR (5-FT CONTOUR INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- 40 C.F.R. § 257 REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE

NOTES:

1.ELEVATIONS IN PARENTHESIS WERE NOT USED FOR CONTOURING.

2. NM = NOT MEASURED

3. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988

0 400 800
Feet

UPPERMOST AQUIFER POTENTIOMETRIC SURFACE MAP APRIL 27, 2021

40 C.F.R. § 257 GROUNDWATER MONITORING PLAN
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 1-3

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

COMPLIANCE MONITORING WELL
BACKGROUND MONITORING WELL
STAFF GAGE, CCR UNIT
STAFF GAGE, LAKE
40 C.F.R. § 257 REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
PROPERTY BOUNDARY

0 500 1,000
Feet

EXPANDED 40 C.F.R. § 257 GROUNDWATER MONITORING WELL NETWORK

40 C.F.R. § 257 GROUNDWATER MONITORING PLAN
PRIMARY ASH POND
NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2-1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22285\MXD\GMP\Newton\PAP_501\Figure 2-1. Expanded Part 257 GW Monitoring Well Network.mxd

PROJECT: 169000XXXX | DATED: 1/19/2023 | DESIGNER: galammc