Prepared for
Zimmer Power Company, LLC

Date
January 31, 2024

Project No.
1940103649-016

2023 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

D BASIN

ZIMMER POWER PLANT

MOSCOW, OHIO

CCR UNIT 121

RAMBOLL Bright ideas. Sustainable change.

2023 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT ZIMMER POWER PLANT D BASIN

Project name	**Zimmer Power Plant D Basin**
Project no.	**1940103649-016**
Recipient	**Zimmer Power Company, LLC**
Document type	**Annual Groundwater Monitoring and Corrective Action Report**
Version	**FINAL**
Date	**January 31, 2024**
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Description	**Annual Report required by 40 C.F.R. § 257.90(e)**

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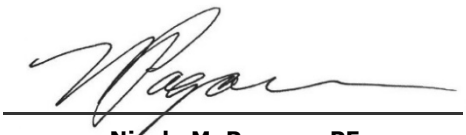

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ACRONYMS AND ABBREVIATIONS

40 C.F.R.	Title 40 of the Code of Federal Regulations
A6	Quarter 1, 2023 Assessment Monitoring sampling event
A6D	Quarter 3, 2023 Assessment Monitoring sampling event
ASD	Alternative Source Demonstration
CCR	coal combustion residuals
CMA	Corrective Measures Assessment
GWPS	groundwater protection standard
NA	not applicable
Ramboll	Ramboll Americas Engineering Solutions, Inc.
SAP	Sampling and Analysis Plan
SSI	statistically significant increase
SSL	statistically significant level
ZPP	Zimmer Power Plant

EXECUTIVE SUMMARY

This report has been prepared to provide the information required by Title 40 of the Code of Federal Regulations (40 C.F.R.) § 257.90(e) for the D Basin located at the Zimmer Power Plant (ZPP) near Moscow, Ohio.

Groundwater is being monitored at the D Basin in accordance with the Assessment Monitoring Program requirements specified in 40 C.F.R. § 257.95. Assessment Monitoring was initiated at the D Basin on April 9, 2018.

No changes were made to the monitoring system in 2023 (no wells were installed or decommissioned).

No Statistically Significant Levels (SSLs) of 40 C.F.R. § 257 Appendix IV parameters over groundwater protection standards (GWPSs) were determined in 2023. Since no SSLs of 40 C.F.R. § 257 Appendix IV parameters over GWPSs were determined in 2023, a Corrective Measures Assessment (CMA) is not required. Statistically significant increases (SSIs) of Appendix III parameters above background values were determined as discussed in **Section 3**.

Closure by removal construction was completed at the D Basin on August 11, 2023 and closure certification was completed on October 13, 2023. Post-closure groundwater concentrations do not exceed the GWPSs established pursuant to § 257.95(h) for constituents listed in Appendix IV. Accordingly, the groundwater component of the closure performance standard specified in 40 C.F.R. § 257.102(c) has been met and the D Basin is effectively removed from the Assessment Monitoring Program.

1. INTRODUCTION

This report has been prepared by Ramboll Americas Engineering Solutions, Inc. (Ramboll) on behalf of Zimmer Power Company, LLC, to provide the information required by 40 C.F.R. § 257.90(e) for the D Basin located at the ZPP near Moscow, Ohio.

In accordance with 40 C.F.R. § 257.90(e), the owner or operator of a coal combustion residuals (CCR) unit must prepare an Annual Groundwater Monitoring and Corrective Action Report for the preceding calendar year that documents the status of the Groundwater Monitoring and Corrective Action Program for the CCR unit (**Section 2**), summarizes key actions completed (**Section 3**), describes any problems encountered and actions to resolve the problems (**Section 4**), and projects key activities for the upcoming year (**Section 5**). 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 (**Figure 1**).
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 (**Section 3**, paragraph 1).
3. In addition to all the monitoring data obtained under §§ 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 (**Section 3, Table A**).
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 a statistically significant increase relative to background levels) (**Section 3**).
5. Other information required to be included in the annual report as specified in §§ 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 (see **Executive Summary**). 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 §257.95.
    ii. At the end 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 §257.95.
    iii. If it was determined that there was a statistically significant increase over background for one or more constituents listed in Appendix III of §257 pursuant to §257.94(e):
        A. Identify those constituents listed in Appendix III of §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 a statistically significant level above the groundwater protection standard [GWPS] for one or more constituents listed in Appendix IV of §257 pursuant to §257.95(g) include all of the following:

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

B. Provide the date when the assessment of corrective measures was initiated for the CCR unit.

C. Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit.

D. Provide the date when the assessment of corrective measures was completed for the CCR unit.

v. Whether a remedy was selected pursuant to §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 § 257.98 during the current annual reporting period.

This report provides the required information for the D Basin for calendar year 2023.

2. MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

Closure certification was completed on October 13, 2023 and the D Basin has been removed from the Assessment Monitoring Program.

3. KEY ACTIONS COMPLETED IN 2023

A summary of the samples collected from background and compliance monitoring wells in 2023 under the Assessment Monitoring Program is included in **Table A** on the following page. The groundwater monitoring system, including the CCR unit and all background and compliance monitoring wells, is presented in **Figure 1**. No changes were made to the monitoring system in 2023 (no wells were installed or decommissioned).

One groundwater sample was collected from each background and compliance well during each monitoring event. All samples were collected and analyzed in accordance with the Sampling and Analysis Plan (SAP) (AECOM, 2017).

Potentiometric surfaces are included in **Figures 2 and 3**. All monitoring data and analytical results obtained under 40 C.F.R. § 257.90 through 257.98 in 2023 are presented in **Tables 1 through 3**. All associated laboratory reports and field data sheets are included in **Appendix A**.

Analytical data were evaluated in accordance with the Multi-Site Statistical Analysis Plan (Ramboll, 2022a), the Multi-Site Quality Assurance Project Plan (Ramboll, 2022b), and the Multi-Site Data Management Plan (Ramboll, 2022c) to determine any SSLs of Appendix IV parameters over GWPSs and SSIs of Appendix III parameters above background values. SSL notifications were completed in accordance with 40 C.F.R. § 257.95(g). SSIs are highlighted in **Table 2**. Statistical background values are provided in **Table 4** and GWPSs in **Table 5**. A flow chart showing the statistical methodology for determination of background values is included as **Appendix B**. A summary of the determination of SSLs in included in **Table 6**. A flow chart showing the statistical methodology for determination of SSLs is included as **Appendix C**.

Closure by removal construction was completed at the D Basin on August 11, 2023 and closure certification was completed on October 13, 2023. Post-closure groundwater concentrations do not exceed the GWPSs established pursuant to § 257.95(h) for constituents listed in Appendix IV. Accordingly, the groundwater component of the closure performance standard specified in 40 C.F.R. § 257.102(c) has been met and the D Basin is effectively removed from the Assessment Monitoring Program.

Table A. 2023 Assessment Monitoring Program Summary

Event ID	Sampling Dates [1, 2, 3]	Analytical Data Receipt Date	SSL(s) Determination Date	SSL(s)	ASD Completion Date
A6	March 20, 2023	April 25, 2023	July 24, 2023	None	NA
A6D	September 18, 2023	October 6, 2023	January 4, 2024	None	NA

Notes:

ASD: Alternative Source Demonstration

NA: not applicable

SSL: Statistically Significant Level

[1] All samples were analyzed for Appendix III parameters listed in 40 C.F.R. § 257.94(e) and Appendix IV parameters listed in 40 C.F.R. § 257.95(g).

[2] The following background wells were sampled for each event: MW-1, MW-8, and MW-12

[3] The following compliance wells were sampled for each event: MW-9, MW-13, MW-14, and MW-15

4. PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

No problems were encountered with the Groundwater Monitoring Program during 2023. Groundwater samples were collected and analyzed in accordance with the SAP and all data were accepted.

5. KEY ACTIVITIES PLANNED FOR 2024

No activities are planned for 2024. Closure certification was completed on October 13, 2023 and the D Basin has been removed from the Assessment Monitoring Program.

6. REFERENCES

Code of Federal Regulations, Title 40, Chapter I, Subchapter I, Part 257, Subpart D, Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments, effective April 17, 2015. Accessed from URL https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-257/subpart-D#page-top

AECOM, 2017. Sampling and Analysis Plan, CCR Rule Groundwater Monitoring, Basin D, Unit 121, Zimmer Power Station, Moscow, Ohio, Job Number: 60442412, Revision 0. October 17, 2017.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2022a. Multi-Site Statistical Analysis Plan, 40 C.F.R. § 257. December 28, 2022.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2022b. Multi-Site Quality Assurance Project Plan. December 28, 2022.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2022c. Multi-Site Data Management Plan. December 28, 2022.

TABLES

TABLE 1
GROUNDWATER ELEVATION DATA
2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
ZIMMER POWER PLANT
D BASIN
MOSCOW, OH

Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
MW-1	Background	UA	03/20/2023	45.97	464.95
MW-1	Background	UA	09/18/2023	53.89	457.03
MW-8	Background	UA	03/20/2023	46.57	465.03
MW-8	Background	UA	09/18/2023	55.03	456.57
MW-9	Compliance	UA	03/20/2023	47.87	462.04
MW-9	Compliance	UA	09/18/2023	53.95	455.96
MW-12	Background	UA	03/20/2023	45.89	466.03
MW-12	Background	UA	09/18/2023	54.52	457.40
MW-13	Compliance	UA	03/20/2023	37.64	461.76
MW-13	Compliance	UA	09/18/2023	46.57	452.83
MW-14	Compliance	UA	03/20/2023	42.32	461.49
MW-14	Compliance	UA	09/18/2023	48.08	455.73
MW-15	Compliance	UA	03/20/2023	48.84	461.74
MW-15	Compliance	UA	09/18/2023	54.59	455.99

Notes:
Only wells with groundwater elevations measured are included.
BMP = below measuring point
NAVD88 = North American Vertical Datum of 1988
Monitored Unit Abbreviations:

UA = uppermost aquifer

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TABLE 2
ANALYTICAL RESULTS - APPENDIX III PARAMETERS
2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
ZIMMER POWER PLANT
D BASIN
MOSCOW, OH

Well ID	HSU	Well Type	Date	Event ID	Parameter	Unit	Result	Background	SSI Type
MW-1	UA	Background	03/21/2023	A6	Boron, total	mg/L	0.0408	NA	NA
MW-1	UA	Background	09/18/2023	A6D	Boron, total	mg/L	0.0677	NA	NA
MW-1	UA	Background	03/21/2023	A6	Calcium, total	mg/L	164	NA	NA
MW-1	UA	Background	09/18/2023	A6D	Calcium, total	mg/L	162	NA	NA
MW-1	UA	Background	03/21/2023	A6	Chloride, total	mg/L	74.8	NA	NA
MW-1	UA	Background	09/18/2023	A6D	Chloride, total	mg/L	83.1 J-	NA	NA
MW-1	UA	Background	03/21/2023	A6	Fluoride, total	mg/L	0.139 J	NA	NA
MW-1	UA	Background	09/18/2023	A6D	Fluoride, total	mg/L	0.144 J	NA	NA
MW-1	UA	Background	03/21/2023	A6	pH (field)	SU	6.9	NA	NA
MW-1	UA	Background	09/18/2023	A6D	pH (field)	SU	7.0	NA	NA
MW-1	UA	Background	03/21/2023	A6	Sulfate, total	mg/L	85.5	NA	NA
MW-1	UA	Background	09/18/2023	A6D	Sulfate, total	mg/L	79.3 J-	NA	NA
MW-1	UA	Background	03/21/2023	A6	Total Dissolved Solids	mg/L	580	NA	NA
MW-1	UA	Background	09/18/2023	A6D	Total Dissolved Solids	mg/L	585	NA	NA
MW-8	UA	Background	03/20/2023	A6	Boron, total	mg/L	0.335	NA	NA
MW-8	UA	Background	09/20/2023	A6D	Boron, total	mg/L	0.0526	NA	NA
MW-8	UA	Background	03/20/2023	A6	Calcium, total	mg/L	76.2	NA	NA
MW-8	UA	Background	09/20/2023	A6D	Calcium, total	mg/L	114	NA	NA
MW-8	UA	Background	03/20/2023	A6	Chloride, total	mg/L	10.2	NA	NA
MW-8	UA	Background	09/20/2023	A6D	Chloride, total	mg/L	14.5	NA	NA
MW-8	UA	Background	03/20/2023	A6	Fluoride, total	mg/L	0.097 J	NA	NA
MW-8	UA	Background	09/20/2023	A6D	Fluoride, total	mg/L	0.113 J	NA	NA
MW-8	UA	Background	03/20/2023	A6	pH (field)	SU	7.0	NA	NA
MW-8	UA	Background	09/20/2023	A6D	pH (field)	SU	7.0	NA	NA
MW-8	UA	Background	03/20/2023	A6	Sulfate, total	mg/L	58.6	NA	NA
MW-8	UA	Background	09/20/2023	A6D	Sulfate, total	mg/L	57.5	NA	NA
MW-8	UA	Background	03/20/2023	A6	Total Dissolved Solids	mg/L	423	NA	NA
MW-8	UA	Background	09/20/2023	A6D	Total Dissolved Solids	mg/L	428	NA	NA
MW-12	UA	Background	03/20/2023	A6	Boron, total	mg/L	0.138	NA	NA
MW-12	UA	Background	09/20/2023	A6D	Boron, total	mg/L	0.156	NA	NA
MW-12	UA	Background	03/20/2023	A6	Calcium, total	mg/L	149	NA	NA
MW-12	UA	Background	09/20/2023	A6D	Calcium, total	mg/L	134	NA	NA
MW-12	UA	Background	03/20/2023	A6	Chloride, total	mg/L	31.6	NA	NA
MW-12	UA	Background	09/20/2023	A6D	Chloride, total	mg/L	19.9	NA	NA
MW-12	UA	Background	03/20/2023	A6	Fluoride, total	mg/L	0.179 J+	NA	NA
MW-12	UA	Background	09/20/2023	A6D	Fluoride, total	mg/L	0.151	NA	NA
MW-12	UA	Background	03/20/2023	A6	pH (field)	SU	6.9	NA	NA
MW-12	UA	Background	09/20/2023	A6D	pH (field)	SU	6.9	NA	NA
MW-12	UA	Background	03/20/2023	A6	Sulfate, total	mg/L	91.1	NA	NA
MW-12	UA	Background	09/20/2023	A6D	Sulfate, total	mg/L	67.4	NA	NA
MW-12	UA	Background	03/20/2023	A6	Total Dissolved Solids	mg/L	547	NA	NA
MW-12	UA	Background	09/20/2023	A6D	Total Dissolved Solids	mg/L	488	NA	NA
MW-9	UA	Compliance	03/21/2023	A6	Boron, total	mg/L	0.0898	0.421	No Exceedance
MW-9	UA	Compliance	09/19/2023	A6D	Boron, total	mg/L	0.0560	0.421	No Exceedance
MW-9	UA	Compliance	03/21/2023	A6	Calcium, total	mg/L	216	203	Determined
MW-9	UA	Compliance	09/19/2023	A6D	Calcium, total	mg/L	164	203	No Exceedance

TABLE 2
ANALYTICAL RESULTS - APPENDIX III PARAMETERS
2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
ZIMMER POWER PLANT
D BASIN
MOSCOW, OH

Well ID	HSU	Well Type	Date	Event ID	Parameter	Unit	Result	Background	SSI Type
MW-9	UA	Compliance	03/21/2023	A6	Chloride, total	mg/L	30.4	74.9	No Exceedance
MW-9	UA	Compliance	09/19/2023	A6D	Chloride, total	mg/L	23.3	74.9	No Exceedance
MW-9	UA	Compliance	03/21/2023	A6	Fluoride, total	mg/L	0.153 J+	0.200	No Exceedance
MW-9	UA	Compliance	09/19/2023	A6D	Fluoride, total	mg/L	0.118 J	0.200	No Exceedance
MW-9	UA	Compliance	03/21/2023	A6	pH (field)	SU	7.0	6.8/8.6	No Exceedance
MW-9	UA	Compliance	09/19/2023	A6D	pH (field)	SU	7.0	6.8/8.6	No Exceedance
MW-9	UA	Compliance	03/21/2023	A6	Sulfate, total	mg/L	419	132	Determined
MW-9	UA	Compliance	09/19/2023	A6D	Sulfate, total	mg/L	218	132	Determined
MW-9	UA	Compliance	03/21/2023	A6	Total Dissolved Solids	mg/L	925	703	Determined
MW-9	UA	Compliance	09/19/2023	A6D	Total Dissolved Solids	mg/L	683	703	No Exceedance
MW-13	UA	Compliance	03/21/2023	A6	Boron, total	mg/L	0.0678	0.421	No Exceedance
MW-13	UA	Compliance	09/19/2023	A6D	Boron, total	mg/L	0.0711	0.421	No Exceedance
MW-13	UA	Compliance	03/21/2023	A6	Calcium, total	mg/L	136	203	No Exceedance
MW-13	UA	Compliance	09/19/2023	A6D	Calcium, total	mg/L	118	203	No Exceedance
MW-13	UA	Compliance	03/21/2023	A6	Chloride, total	mg/L	23.8	74.9	No Exceedance
MW-13	UA	Compliance	09/19/2023	A6D	Chloride, total	mg/L	17.2	74.9	No Exceedance
MW-13	UA	Compliance	03/21/2023	A6	Fluoride, total	mg/L	0.242 J+	0.200	Determined
MW-13	UA	Compliance	09/19/2023	A6D	Fluoride, total	mg/L	0.193	0.200	No Exceedance
MW-13	UA	Compliance	03/21/2023	A6	pH (field)	SU	7.0	6.8/8.6	No Exceedance
MW-13	UA	Compliance	09/19/2023	A6D	pH (field)	SU	7.0	6.8/8.6	No Exceedance
MW-13	UA	Compliance	03/21/2023	A6	Sulfate, total	mg/L	143	132	Determined
MW-13	UA	Compliance	09/19/2023	A6D	Sulfate, total	mg/L	75.7	132	No Exceedance
MW-13	UA	Compliance	03/21/2023	A6	Total Dissolved Solids	mg/L	559	703	No Exceedance
MW-13	UA	Compliance	09/19/2023	A6D	Total Dissolved Solids	mg/L	470	703	No Exceedance
MW-14	UA	Compliance	03/21/2023	A6	Boron, total	mg/L	0.338	0.421	No Exceedance
MW-14	UA	Compliance	09/19/2023	A6D	Boron, total	mg/L	0.260 J	0.421	No Exceedance
MW-14	UA	Compliance	03/21/2023	A6	Calcium, total	mg/L	169	203	No Exceedance
MW-14	UA	Compliance	09/19/2023	A6D	Calcium, total	mg/L	159	203	No Exceedance
MW-14	UA	Compliance	03/21/2023	A6	Chloride, total	mg/L	41.0	74.9	No Exceedance
MW-14	UA	Compliance	09/19/2023	A6D	Chloride, total	mg/L	39.7	74.9	No Exceedance
MW-14	UA	Compliance	03/21/2023	A6	Fluoride, total	mg/L	0.274 J+	0.200	Determined
MW-14	UA	Compliance	09/19/2023	A6D	Fluoride, total	mg/L	0.230	0.200	Determined
MW-14	UA	Compliance	03/21/2023	A6	pH (field)	SU	6.9	6.8/8.6	No Exceedance
MW-14	UA	Compliance	09/19/2023	A6D	pH (field)	SU	6.7	6.8/8.6	Determined
MW-14	UA	Compliance	03/21/2023	A6	Sulfate, total	mg/L	236	132	Determined
MW-14	UA	Compliance	09/19/2023	A6D	Sulfate, total	mg/L	186	132	Determined
MW-14	UA	Compliance	03/21/2023	A6	Total Dissolved Solids	mg/L	740	703	Determined
MW-14	UA	Compliance	09/19/2023	A6D	Total Dissolved Solids	mg/L	731	703	Determined
MW-15	UA	Compliance	03/21/2023	A6	Boron, total	mg/L	0.155	0.421	No Exceedance
MW-15	UA	Compliance	09/20/2023	A6D	Boron, total	mg/L	0.217	0.421	No Exceedance
MW-15	UA	Compliance	03/21/2023	A6	Calcium, total	mg/L	229	203	Determined
MW-15	UA	Compliance	09/20/2023	A6D	Calcium, total	mg/L	218	203	Determined
MW-15	UA	Compliance	03/21/2023	A6	Chloride, total	mg/L	48.2	74.9	No Exceedance
MW-15	UA	Compliance	09/20/2023	A6D	Chloride, total	mg/L	48.7	74.9	No Exceedance
MW-15	UA	Compliance	03/21/2023	A6	Fluoride, total	mg/L	0.264 J+	0.200	Determined
MW-15	UA	Compliance	09/20/2023	A6D	Fluoride, total	mg/L	0.211	0.200	Determined

TABLE 2
ANALYTICAL RESULTS - APPENDIX III PARAMETERS
2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
ZIMMER POWER PLANT
D BASIN
MOSCOW, OH

Well ID	HSU	Well Type	Date	Event ID	Parameter	Unit	Result	Background	SSI Type
MW-15	UA	Compliance	03/21/2023	A6	pH (field)	SU	6.9	6.8/8.6	No Exceedance
MW-15	UA	Compliance	09/20/2023	A6D	pH (field)	SU	6.9	6.8/8.6	No Exceedance
MW-15	UA	Compliance	03/21/2023	A6	Sulfate, total	mg/L	492	132	Determined
MW-15	UA	Compliance	09/20/2023	A6D	Sulfate, total	mg/L	440	132	Determined
MW-15	UA	Compliance	03/21/2023	A6	Total Dissolved Solids	mg/L	1,100	703	Determined
MW-15	UA	Compliance	09/20/2023	A6D	Total Dissolved Solids	mg/L	1,020	703	Determined

Notes:
HSU = hydrostratigraphic unit:

UA = Uppermost Aquifer

ID = identification
mg/L = milligrams per liter
NA = not applicable
Statistically Significant Increase (SSI) Type:

No Exceedance: No exceedance of the background.

Determined: An exceedance was determined without comparison to a resample.

SU = Standard Units
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J- = The result is an estimated quantity, but the result may be biased low.
J+ = The result is an estimated quantity, but the result may be biased high.

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TABLE 3
ANALYTICAL RESULTS - APPENDIX IV PARAMETERS
2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
ZIMMER POWER PLANT
D BASIN
MOSCOW, OH

Well ID	Well Type	Date	Event ID	Antimony, total (mg/L)	Arsenic, total (mg/L)	Barium, total (mg/L)	Beryllium, total (mg/L)	Cadmium, total (mg/L)	Chromium, total (mg/L)	Cobalt, total (mg/L)	Fluoride, total (mg/L)	Lead, total (mg/L)	Lithium, total (mg/L)	Mercury, total (mg/L)	Molybdenum, total (mg/L)	Radium 226 + 228 (pCi/L)	Selenium, total (mg/L)	Thallium, total (mg/L)
MW-1	B	03/21/2023	A6	0.00103 U	0.00018 U	0.0685	0.00019 U	0.00015 U	0.00124 U	0.0000596 U	0.139 J	0.000849 U	0.00693	0.0001 U	0.000348 U	0.153	0.000595 J	0.000121 U
MW-1	B	09/18/2023	A6D	--	0.00018 U	0.0739	0.00019 U	0.00015 U	0.00124 U	0.0000596 U	0.144 J	0.000849 U	0.00808	--	0.000348 U	1.38	0.000567 J	0.000121 U
MW-8	B	03/20/2023	A6	0.00103 U	0.00165 J	0.0381	0.00019 U	0.00015 U	0.00124 U	0.000776 J	0.097 J	0.000849 U	0.00502	0.0001 U	0.00743	1.34	0.00687	0.000121 U
MW-8	B	09/20/2023	A6D	--	0.00018 U	0.0451	0.00019 U	0.000394 J	0.00124 U	0.0000596 U	0.113 J	0.000849 U	0.00480	--	0.000348 U	0.0850	0.0003 U	0.000121 U
MW-12	B	03/20/2023	A6	0.00103 U	0.00018 U	0.0595	0.00019 U	0.00015 U	0.00124 U	0.0000596 U	0.179 J+	0.000849 U	0.00599	0.0001 U	0.000348 U	0.0347	0.000661 J	0.000121 U
MW-12	B	09/20/2023	A6D	--	0.000214 J	0.0544	0.00019 U	0.00015 U	0.00124 U	0.0000596 U	0.151	0.000849 U	0.00533	--	0.000408 J	1.35	0.0003 U	0.00016 J
MW-9	C	03/21/2023	A6	0.00103 U	0.0016 J	0.0182	0.00019 U	0.00015 U	0.00133 J	0.00204	0.153 J+	0.000849 U	0.00605	0.0001 U	0.00137 J	1.23	0.0003 U	0.000121 U
MW-9	C	09/19/2023	A6D	--	0.00106 J	0.0191	0.00019 U	0.00015 U	0.00124 U	0.00124 J	0.118 J	0.000849 U	0.00557	--	0.00146 J	0.522	0.0003 U	0.000207 J
MW-13	C	03/21/2023	A6	0.00103 U	0.00107 J	0.0391	0.00019 U	0.00015 U	0.00124 U	0.00291	0.242 J+	0.000849 U	0.00239	0.0001 U	0.000732 J	1.29	0.0003 U	0.000121 U
MW-13	C	09/19/2023	A6D	--	0.000775 J	0.0313	0.00019 U	0.00015 U	0.00124 U	0.00171 J	0.193	0.000849 U	0.00237	--	0.000662 J	1.26	0.0003 U	0.000121 U
MW-14	C	03/21/2023	A6	0.00103 U	0.000251 J	0.0461	0.00019 U	0.00015 U	0.00124 U	0.00171 J	0.274 J+	0.000849 U	0.00210	0.0001 U	0.00239 J	0.828	0.0003 U	0.000121 U
MW-14	C	09/19/2023	A6D	--	0.000396 J	0.0511	0.00019 U	0.00015 U	0.00124 U	0.00131 J	0.230	0.000849 U	0.00201	--	0.00245 J	1.21	0.0003 U	0.000121 U
MW-15	C	03/21/2023	A6	0.00103 U	0.000213 J	0.0551	0.00019 U	0.00015 U	0.00124 U	0.00277	0.264 J+	0.000849 U	0.00193 J	0.0001 U	0.00463 J	0.850	0.0003 U	0.000121 U
MW-15	C	09/20/2023	A6D	--	0.000182 J	0.0607	0.00019 U	0.00015 U	0.00124 U	0.00249	0.211	0.000849 U	0.00173 J	--	0.00449 J	1.39	0.0003 U	0.000121 U

Notes:
– = no data available
ID = identification
mg/L = milligrams per liter
pCi/L = picoCuries per liter
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity, but the result may be biased high.
U = The analyte was analyzed for, but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate.
Well Type:

B = Background

C = Compliance

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TABLE 4
STATISTICAL BACKGROUND VALUES
2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
ZIMMER POWER PLANT
D BASIN
MOSCOW, OH

Parameter	Date Range	Sample Count	Percent Non-Detects	Statistical Calculation	Statistical Background Value (LPL/UPL)
Boron (mg/L)	12/30/2015 - 07/13/2017	24	25	Parametric UPL (log-transformed)	0.421
Calcium (mg/L)	12/30/2015 - 07/13/2017	24	0	Parametric UPL	203
Chloride (mg/L)	12/30/2015 - 07/13/2017	24	0	Parametric UPL	74.9
Fluoride (mg/L)	12/30/2015 - 07/13/2017	24	75	Non-parametric UPL	0.200
pH (field) (SU)	12/30/2015 - 07/13/2017	24	0	Non-parametric LPL/UPL	6.8/8.6
Sulfate (mg/L)	12/30/2015 - 07/13/2017	24	0	Parametric UPL	132
Total Dissolved Solids (mg/L)	12/30/2015 - 07/13/2017	24	0	Parametric UPL	703

Notes:
LPL = lower prediction limit (applicable for pH only)
mg/L = milligrams per liter
SU = standard units
UPL = upper prediction limit

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TABLE 5
GROUNDWATER PROTECTION STANDARDS
2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
ZIMMER POWER PLANT
D BASIN
MOSCOW, OH

Parameter	Background					MCL/HBL	Groundwater Protection Standard*	Groundwater Protection Standard Source
	Date Range	Sample Count	Percent Non-Detects	Statistical Calculation	Value			
Antimony (mg/L)	12/30/2015 - 07/13/2017	24	100	All ND - Last Reporting Limit	0.002	0.006	0.006	MCL/HBL
Arsenic (mg/L)	12/30/2015 - 07/13/2017	24	88	Non-parametric UTL	0.00169	0.010	0.010	MCL/HBL
Barium (mg/L)	12/30/2015 - 07/13/2017	24	0	Parametric UTL	0.0859	2.0	2.0	MCL/HBL
Beryllium (mg/L)	12/30/2015 - 07/13/2017	24	100	All ND - Last Reporting Limit	0.001	0.004	0.004	MCL/HBL
Cadmium (mg/L)	12/30/2015 - 07/13/2017	24	100	All ND - Last Reporting Limit	0.001	0.005	0.005	MCL/HBL
Chromium (mg/L)	12/30/2015 - 07/13/2017	24	92	Non-parametric UTL	0.00191	0.1	0.1	MCL/HBL
Cobalt (mg/L)	12/30/2015 - 07/13/2017	24	100	All ND - Last Reporting Limit	0.0005	0.006	0.006	MCL/HBL
Fluoride (mg/L)	12/30/2015 - 07/13/2017	24	75	Non-parametric UTL	0.200	4.0	4.0	MCL/HBL
Lead (mg/L)	12/30/2015 - 07/13/2017	24	100	All ND - Last Reporting Limit	0.001	0.015	0.015	MCL/HBL
Lithium (mg/L)	12/30/2015 - 07/13/2017	24	79	Non-parametric UTL	0.0116	0.04	0.04	MCL/HBL
Mercury (mg/L)	12/30/2015 - 07/13/2017	24	100	All ND - Last Reporting Limit	0.0002	0.002	0.002	MCL/HBL
Molybdenum (mg/L)	12/30/2015 - 07/13/2017	24	100	All ND - Last Reporting Limit	0.005	0.1	0.1	MCL/HBL
Radium 226 + Radium 228 (pCi/L)	12/30/2015 - 07/13/2017	24	0	Parametric UTL	0.886	5	5	MCL/HBL
Selenium (mg/L)	12/30/2015 - 07/13/2017	24	96	Non-parametric UTL	0.00131	0.05	0.05	MCL/HBL
Thallium (mg/L)	12/30/2015 - 07/13/2017	24	100	All ND - Last Reporting Limit	0.001	0.002	0.002	MCL/HBL

Notes:
* Groundwater Protection Standard is the higher of the MCL/HBL or background.
MCL/HBL = maximum contaminant level/health-based level
mg/L = milligrams per liter
ND = non-detect
pCi/L = picoCuries per liter
UTL = upper tolerance limit

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TABLE 6
DETERMINATION OF STATISTICALLY SIGNIFICANT LEVELS
2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
ZIMMER POWER PLANT
D BASIN
MOSCOW, OH

Well ID	HSU	Event ID	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	SSL Type
MW-9	UA	A6	Antimony, total	mg/L	12/30/2015 - 03/21/2023	16	100	All ND - Last	0.004	0.006	MCL/HBL	No Exceedance
MW-9	UA	A6D	Antimony, total	mg/L	--	--	--	--	--	0.006	MCL/HBL	--
MW-9	UA	A6	Arsenic, total	mg/L	12/30/2015 - 03/21/2023	18	50	CI around median	0.00171	0.010	MCL/HBL	No Exceedance
MW-9	UA	A6D	Arsenic, total	mg/L	12/30/2015 - 09/19/2023	19	53	CI around median	0.00171	0.010	MCL/HBL	No Exceedance
MW-9	UA	A6	Barium, total	mg/L	12/30/2015 - 03/21/2023	18	11	CB around T-S line	-0.00124	2.0	MCL/HBL	No Exceedance
MW-9	UA	A6D	Barium, total	mg/L	12/30/2015 - 09/19/2023	19	11	CB around T-S line	-0.00269	2.0	MCL/HBL	No Exceedance
MW-9	UA	A6	Beryllium, total	mg/L	12/30/2015 - 03/21/2023	18	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-9	UA	A6D	Beryllium, total	mg/L	12/30/2015 - 09/19/2023	19	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-9	UA	A6	Cadmium, total	mg/L	12/30/2015 - 03/21/2023	16	94	CI around median	0.001	0.005	MCL/HBL	No Exceedance
MW-9	UA	A6D	Cadmium, total	mg/L	12/30/2015 - 09/19/2023	17	94	CI around median	0.001	0.005	MCL/HBL	No Exceedance
MW-9	UA	A6	Chromium, total	mg/L	12/30/2015 - 03/21/2023	18	89	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-9	UA	A6D	Chromium, total	mg/L	12/30/2015 - 09/19/2023	19	89	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-9	UA	A6	Cobalt, total	mg/L	12/30/2015 - 03/21/2023	18	22	CB around linear reg	0.00102	0.006	MCL/HBL	No Exceedance
MW-9	UA	A6D	Cobalt, total	mg/L	12/30/2015 - 09/19/2023	19	26	CB around linear reg	0.001	0.006	MCL/HBL	No Exceedance
MW-9	UA	A6	Fluoride, total	mg/L	12/30/2015 - 03/21/2023	20	85	CI around median	0.15	4.0	MCL/HBL	No Exceedance
MW-9	UA	A6D	Fluoride, total	mg/L	12/30/2015 - 09/19/2023	21	86	CI around median	0.15	4.0	MCL/HBL	No Exceedance
MW-9	UA	A6	Lead, total	mg/L	12/30/2015 - 03/21/2023	18	94	CB around T-S line	0.001	0.015	MCL/HBL	No Exceedance
MW-9	UA	A6D	Lead, total	mg/L	12/30/2015 - 09/19/2023	19	95	CB around T-S line	0.001	0.015	MCL/HBL	No Exceedance
MW-9	UA	A6	Lithium, total	mg/L	12/30/2015 - 03/21/2023	18	22	CB around T-S line	0.00381	0.04	MCL/HBL	No Exceedance
MW-9	UA	A6D	Lithium, total	mg/L	12/30/2015 - 09/19/2023	19	21	CB around T-S line	0.00363	0.04	MCL/HBL	No Exceedance
MW-9	UA	A6	Mercury, total	mg/L	12/30/2015 - 03/21/2023	16	100	All ND - Last	0.0002	0.002	MCL/HBL	No Exceedance
MW-9	UA	A6D	Mercury, total	mg/L	--	--	--	--	--	0.002	MCL/HBL	--
MW-9	UA	A6	Molybdenum, total	mg/L	12/30/2015 - 03/21/2023	18	94	CI around median	0.005	0.1	MCL/HBL	No Exceedance
MW-9	UA	A6D	Molybdenum, total	mg/L	12/30/2015 - 09/19/2023	19	95	CI around median	0.005	0.1	MCL/HBL	No Exceedance
MW-9	UA	A6	Radium 226 + Radium 228, total	pCi/L	12/30/2015 - 03/21/2023	19	0	CI around median	0.358	5	MCL/HBL	No Exceedance
MW-9	UA	A6D	Radium 226 + Radium 228, total	pCi/L	12/30/2015 - 09/19/2023	20	0	CI around median	0.358	5	MCL/HBL	No Exceedance
MW-9	UA	A6	Selenium, total	mg/L	12/30/2015 - 03/21/2023	18	100	All ND - Last	0.002	0.05	MCL/HBL	No Exceedance

TABLE 6
DETERMINATION OF STATISTICALLY SIGNIFICANT LEVELS
2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
ZIMMER POWER PLANT
D BASIN
MOSCOW, OH

Well ID	HSU	Event ID	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	SSL Type
MW-9	UA	A6D	Selenium, total	mg/L	12/30/2015 - 09/19/2023	19	100	All ND - Last	0.002	0.05	MCL/HBL	No Exceedance
MW-9	UA	A6	Thallium, total	mg/L	12/30/2015 - 03/21/2023	16	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance
MW-9	UA	A6D	Thallium, total	mg/L	12/30/2015 - 09/19/2023	17	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance
MW-13	UA	A6	Antimony, total	mg/L	12/29/2015 - 03/21/2023	16	94	CB around T-S line	0.002	0.006	MCL/HBL	No Exceedance
MW-13	UA	A6D	Antimony, total	mg/L	--	--	--	--	--	0.006	MCL/HBL	--
MW-13	UA	A6	Arsenic, total	mg/L	12/29/2015 - 03/21/2023	18	33	CI around median	0.002	0.010	MCL/HBL	No Exceedance
MW-13	UA	A6D	Arsenic, total	mg/L	12/29/2015 - 09/19/2023	19	37	CB around T-S line	0.00032	0.010	MCL/HBL	No Exceedance
MW-13	UA	A6	Barium, total	mg/L	12/29/2015 - 03/21/2023	18	5.6	CB around T-S line	0.0256	2.0	MCL/HBL	No Exceedance
MW-13	UA	A6D	Barium, total	mg/L	12/29/2015 - 09/19/2023	19	5.3	CB around T-S line	0.0241	2.0	MCL/HBL	No Exceedance
MW-13	UA	A6	Beryllium, total	mg/L	12/29/2015 - 03/21/2023	18	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-13	UA	A6D	Beryllium, total	mg/L	12/29/2015 - 09/19/2023	19	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-13	UA	A6	Cadmium, total	mg/L	12/29/2015 - 03/21/2023	16	100	All ND - Last	0.001	0.005	MCL/HBL	No Exceedance
MW-13	UA	A6D	Cadmium, total	mg/L	12/29/2015 - 09/19/2023	17	100	All ND - Last	0.001	0.005	MCL/HBL	No Exceedance
MW-13	UA	A6	Chromium, total	mg/L	12/29/2015 - 03/21/2023	18	94	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-13	UA	A6D	Chromium, total	mg/L	12/29/2015 - 09/19/2023	19	95	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-13	UA	A6	Cobalt, total	mg/L	12/29/2015 - 03/21/2023	18	5.6	CI around geomean	0.00282	0.006	MCL/HBL	No Exceedance
MW-13	UA	A6D	Cobalt, total	mg/L	12/29/2015 - 09/19/2023	19	11	CB around linear reg	0.000377	0.006	MCL/HBL	No Exceedance
MW-13	UA	A6	Fluoride, total	mg/L	12/29/2015 - 03/21/2023	20	55	CI around median	0.229	4.0	MCL/HBL	No Exceedance
MW-13	UA	A6D	Fluoride, total	mg/L	12/29/2015 - 09/19/2023	21	52	CI around median	0.229	4.0	MCL/HBL	No Exceedance
MW-13	UA	A6	Lead, total	mg/L	12/29/2015 - 03/21/2023	18	100	All ND - Last	0.002	0.015	MCL/HBL	No Exceedance
MW-13	UA	A6D	Lead, total	mg/L	12/29/2015 - 09/19/2023	19	100	All ND - Last	0.002	0.015	MCL/HBL	No Exceedance
MW-13	UA	A6	Lithium, total	mg/L	12/29/2015 - 03/21/2023	18	50	CB around T-S line	-0.00133	0.04	MCL/HBL	No Exceedance
MW-13	UA	A6D	Lithium, total	mg/L	12/29/2015 - 09/19/2023	19	47	CB around T-S line	-0.00227	0.04	MCL/HBL	No Exceedance
MW-13	UA	A6	Mercury, total	mg/L	12/29/2015 - 03/21/2023	16	100	All ND - Last	0.0002	0.002	MCL/HBL	No Exceedance
MW-13	UA	A6D	Mercury, total	mg/L	--	--	--	--	--	0.002	MCL/HBL	--
MW-13	UA	A6	Molybdenum, total	mg/L	12/29/2015 - 03/21/2023	18	83	CI around median	0.005	0.1	MCL/HBL	No Exceedance
MW-13	UA	A6D	Molybdenum, total	mg/L	12/29/2015 - 09/19/2023	19	84	CI around median	0.005	0.1	MCL/HBL	No Exceedance

TABLE 6
DETERMINATION OF STATISTICALLY SIGNIFICANT LEVELS
2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
ZIMMER POWER PLANT
D BASIN
MOSCOW, OH

Well ID	HSU	Event ID	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	SSL Type
MW-13	UA	A6	Radium 226 + Radium 228, total	pCi/L	12/29/2015 - 03/21/2023	19	0	CI around geomean	0.3	5	MCL/HBL	No Exceedance
MW-13	UA	A6D	Radium 226 + Radium 228, total	pCi/L	12/29/2015 - 09/19/2023	20	0	CI around geomean	0.319	5	MCL/HBL	No Exceedance
MW-13	UA	A6	Selenium, total	mg/L	12/29/2015 - 03/21/2023	18	94	CI around median	0.002	0.05	MCL/HBL	No Exceedance
MW-13	UA	A6D	Selenium, total	mg/L	12/29/2015 - 09/19/2023	19	95	CI around median	0.002	0.05	MCL/HBL	No Exceedance
MW-13	UA	A6	Thallium, total	mg/L	12/29/2015 - 03/21/2023	16	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance
MW-13	UA	A6D	Thallium, total	mg/L	12/29/2015 - 09/19/2023	17	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance
MW-14	UA	A6	Antimony, total	mg/L	12/29/2015 - 03/21/2023	16	94	CB around T-S line	0.002	0.006	MCL/HBL	No Exceedance
MW-14	UA	A6D	Antimony, total	mg/L	--	--	--	--	--	0.006	MCL/HBL	--
MW-14	UA	A6	Arsenic, total	mg/L	12/29/2015 - 03/21/2023	18	56	CI around median	0.00163	0.010	MCL/HBL	No Exceedance
MW-14	UA	A6D	Arsenic, total	mg/L	12/29/2015 - 09/19/2023	19	58	CI around median	0.00163	0.010	MCL/HBL	No Exceedance
MW-14	UA	A6	Barium, total	mg/L	12/29/2015 - 03/21/2023	18	5.6	CI around median	0.0464	2.0	MCL/HBL	No Exceedance
MW-14	UA	A6D	Barium, total	mg/L	12/29/2015 - 09/19/2023	19	5.3	CI around median	0.0464	2.0	MCL/HBL	No Exceedance
MW-14	UA	A6	Beryllium, total	mg/L	12/29/2015 - 03/21/2023	18	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-14	UA	A6D	Beryllium, total	mg/L	12/29/2015 - 09/19/2023	19	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-14	UA	A6	Cadmium, total	mg/L	12/29/2015 - 03/21/2023	16	100	All ND - Last	0.001	0.005	MCL/HBL	No Exceedance
MW-14	UA	A6D	Cadmium, total	mg/L	12/29/2015 - 09/19/2023	17	100	All ND - Last	0.001	0.005	MCL/HBL	No Exceedance
MW-14	UA	A6	Chromium, total	mg/L	12/29/2015 - 03/21/2023	18	89	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-14	UA	A6D	Chromium, total	mg/L	12/29/2015 - 09/19/2023	19	89	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-14	UA	A6	Cobalt, total	mg/L	12/29/2015 - 03/21/2023	18	22	CB around linear reg	-0.000625	0.006	MCL/HBL	No Exceedance
MW-14	UA	A6D	Cobalt, total	mg/L	12/29/2015 - 09/19/2023	19	26	CB around linear reg	-0.000581	0.006	MCL/HBL	No Exceedance
MW-14	UA	A6	Fluoride, total	mg/L	12/29/2015 - 03/21/2023	20	60	CI around median	0.205	4.0	MCL/HBL	No Exceedance
MW-14	UA	A6D	Fluoride, total	mg/L	12/29/2015 - 09/19/2023	21	57	CI around median	0.225	4.0	MCL/HBL	No Exceedance
MW-14	UA	A6	Lead, total	mg/L	12/29/2015 - 03/21/2023	18	94	CB around T-S line	0.001	0.015	MCL/HBL	No Exceedance
MW-14	UA	A6D	Lead, total	mg/L	12/29/2015 - 09/19/2023	19	95	CB around T-S line	0.001	0.015	MCL/HBL	No Exceedance
MW-14	UA	A6	Lithium, total	mg/L	12/29/2015 - 03/21/2023	18	50	CB around T-S line	-0.00139	0.04	MCL/HBL	No Exceedance
MW-14	UA	A6D	Lithium, total	mg/L	12/29/2015 - 09/19/2023	19	47	CB around T-S line	-0.00265	0.04	MCL/HBL	No Exceedance
MW-14	UA	A6	Mercury, total	mg/L	12/29/2015 - 03/21/2023	16	100	All ND - Last	0.0002	0.002	MCL/HBL	No Exceedance

TABLE 6
DETERMINATION OF STATISTICALLY SIGNIFICANT LEVELS
2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
ZIMMER POWER PLANT
D BASIN
MOSCOW, OH

Well ID	HSU	Event ID	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	SSL Type
MW-14	UA	A6D	Mercury, total	mg/L	--	--	--	--	--	0.002	MCL/HBL	--
MW-14	UA	A6	Molybdenum, total	mg/L	12/29/2015 - 03/21/2023	18	89	CI around median	0.005	0.1	MCL/HBL	No Exceedance
MW-14	UA	A6D	Molybdenum, total	mg/L	12/29/2015 - 09/19/2023	19	89	CI around median	0.005	0.1	MCL/HBL	No Exceedance
MW-14	UA	A6	Radium 226 + Radium 228, total	pCi/L	12/29/2015 - 03/21/2023	19	0	CI around mean	0.535	5	MCL/HBL	No Exceedance
MW-14	UA	A6D	Radium 226 + Radium 228, total	pCi/L	12/29/2015 - 09/19/2023	20	0	CI around mean	0.565	5	MCL/HBL	No Exceedance
MW-14	UA	A6	Selenium, total	mg/L	12/29/2015 - 03/21/2023	18	100	All ND - Last	0.002	0.05	MCL/HBL	No Exceedance
MW-14	UA	A6D	Selenium, total	mg/L	12/29/2015 - 09/19/2023	19	100	All ND - Last	0.002	0.05	MCL/HBL	No Exceedance
MW-14	UA	A6	Thallium, total	mg/L	12/29/2015 - 03/21/2023	16	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance
MW-14	UA	A6D	Thallium, total	mg/L	12/29/2015 - 09/19/2023	17	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance
MW-15	UA	A6	Antimony, total	mg/L	12/30/2015 - 03/21/2023	16	94	CB around T-S line	0.002	0.006	MCL/HBL	No Exceedance
MW-15	UA	A6D	Antimony, total	mg/L	--	--	--	--	--	0.006	MCL/HBL	--
MW-15	UA	A6	Arsenic, total	mg/L	12/30/2015 - 03/21/2023	18	94	CI around median	0.001	0.010	MCL/HBL	No Exceedance
MW-15	UA	A6D	Arsenic, total	mg/L	12/30/2015 - 09/20/2023	19	95	CI around median	0.001	0.010	MCL/HBL	No Exceedance
MW-15	UA	A6	Barium, total	mg/L	12/30/2015 - 03/21/2023	18	5.6	CB around linear reg	0.0417	2.0	MCL/HBL	No Exceedance
MW-15	UA	A6D	Barium, total	mg/L	12/30/2015 - 09/20/2023	19	5.3	CB around linear reg	0.0422	2.0	MCL/HBL	No Exceedance
MW-15	UA	A6	Beryllium, total	mg/L	12/30/2015 - 03/21/2023	18	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-15	UA	A6D	Beryllium, total	mg/L	12/30/2015 - 09/20/2023	19	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-15	UA	A6	Cadmium, total	mg/L	12/30/2015 - 03/21/2023	16	100	All ND - Last	0.001	0.005	MCL/HBL	No Exceedance
MW-15	UA	A6D	Cadmium, total	mg/L	12/30/2015 - 09/20/2023	17	100	All ND - Last	0.001	0.005	MCL/HBL	No Exceedance
MW-15	UA	A6	Chromium, total	mg/L	12/30/2015 - 03/21/2023	18	94	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-15	UA	A6D	Chromium, total	mg/L	12/30/2015 - 09/20/2023	19	95	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-15	UA	A6	Cobalt, total	mg/L	12/30/2015 - 03/21/2023	18	5.6	CB around linear reg	-0.000732	0.006	MCL/HBL	No Exceedance
MW-15	UA	A6D	Cobalt, total	mg/L	12/30/2015 - 09/20/2023	19	5.3	CB around linear reg	-0.000725	0.006	MCL/HBL	No Exceedance
MW-15	UA	A6	Fluoride, total	mg/L	12/30/2015 - 03/21/2023	20	55	CI around median	0.224	4.0	MCL/HBL	No Exceedance
MW-15	UA	A6D	Fluoride, total	mg/L	12/30/2015 - 09/20/2023	21	52	CI around median	0.224	4.0	MCL/HBL	No Exceedance
MW-15	UA	A6	Lead, total	mg/L	12/30/2015 - 03/21/2023	18	100	All ND - Last	0.002	0.015	MCL/HBL	No Exceedance
MW-15	UA	A6D	Lead, total	mg/L	12/30/2015 - 09/20/2023	19	100	All ND - Last	0.002	0.015	MCL/HBL	No Exceedance

TABLE 6
DETERMINATION OF STATISTICALLY SIGNIFICANT LEVELS
2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
ZIMMER POWER PLANT
D BASIN
MOSCOW, OH

Well ID	HSU	Event ID	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	SSL Type
MW-15	UA	A6	Lithium, total	mg/L	12/30/2015 - 03/21/2023	18	72	CB around T-S line	-0.00175	0.04	MCL/HBL	No Exceedance
MW-15	UA	A6D	Lithium, total	mg/L	12/30/2015 - 09/20/2023	19	74	CB around T-S line	-0.00305	0.04	MCL/HBL	No Exceedance
MW-15	UA	A6	Mercury, total	mg/L	12/30/2015 - 03/21/2023	16	100	All ND - Last	0.0002	0.002	MCL/HBL	No Exceedance
MW-15	UA	A6D	Mercury, total	mg/L	--	--	--	--	--	0.002	MCL/HBL	--
MW-15	UA	A6	Molybdenum, total	mg/L	12/30/2015 - 03/21/2023	18	83	CI around median	0.005	0.1	MCL/HBL	No Exceedance
MW-15	UA	A6D	Molybdenum, total	mg/L	12/30/2015 - 09/20/2023	19	84	CI around median	0.005	0.1	MCL/HBL	No Exceedance
MW-15	UA	A6	Radium 226 + Radium 228, total	pCi/L	12/30/2015 - 03/21/2023	19	0	CI around geomean	0.583	5	MCL/HBL	No Exceedance
MW-15	UA	A6D	Radium 226 + Radium 228, total	pCi/L	12/30/2015 - 09/20/2023	20	0	CI around geomean	0.604	5	MCL/HBL	No Exceedance
MW-15	UA	A6	Selenium, total	mg/L	12/30/2015 - 03/21/2023	18	100	All ND - Last	0.002	0.05	MCL/HBL	No Exceedance
MW-15	UA	A6D	Selenium, total	mg/L	12/30/2015 - 09/20/2023	19	100	All ND - Last	0.002	0.05	MCL/HBL	No Exceedance
MW-15	UA	A6	Thallium, total	mg/L	12/30/2015 - 03/21/2023	16	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance
MW-15	UA	A6D	Thallium, total	mg/L	12/30/2015 - 09/20/2023	17	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance

Notes:
– = no data available
Statistically Significant Level (SSL) Type:

No Exceedance: No exceedance of the GWPS and no resample was collected.

GWPS = Groundwater Protection Standard
GWPS Source:

MCL/HBL = maximum contaminant level/health-based level

HSU = hydrostratigraphic unit:

UA = Uppermost Aquifer

ID = identification
mg/L = milligrams per liter
ND = non-detect
pCi/L = picocuries per liter
Sample Count = number of samples from Sampled Date Range used to calculate the Statistical Result
Statistical Calculation = method used to calculate the statistical result:

All ND - Last = All results were below the reporting limit, and the last determined reporting limit is shown

CB around T-S line = Confidence band around Thiel-Sen line

CB around linear reg = Confidence band around linear regression

CI around geomean = Confidence interval around the geometric mean

CI around mean = Confidence interval around the mean

CI around median = Confidence interval around the median

Statistical Result = calculated in accordance with Statistical Analysis Plan using constituent concentrations observed at monitoring well during all sampling events within the specified date range

Generated 2024-01-14 00:07:09.296643 by banoffra

FIGURES

BACKGROUND WELL
COMPLIANCE WELL
REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
PROPERTY BOUNDARY

0 150 300
Feet

MONITORING WELL LOCATION MAP

2023 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
D BASIN
ZIMMER POWER PLANT
MOSCOW, OHIO

FIGURE 1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\22851\MXD\2021_AnnualGWM_CAR\Zimmer\DB_121\Figure 1 ZIM DB MW Location Map.mxd

PROJECT: 169000XXXX | DATED: 1/5/2022 | DESIGNER: galarmmc

COMPLIANCE MONITORING WELL

BACKGROUND MONITORING WELL

MONITORING WELL

GROUNDWATER ELEVATION CONTOUR (1-FT CONTOUR INTERVAL, NAVD88)

INFERRED GROUNDWATER ELEVATION CONTOUR

GROUNDWATER FLOW DIRECTION

REGULATED UNIT (SUBJECT UNIT)

SITE FEATURE

PROPERTY BOUNDARY

NOTES:
1. ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

0 150 300
Feet

POTENTIOMETRIC SURFACE MAP MARCH 20, 2023

2023 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
D BASIN
ZIMMER POWER PLANT
MOSCOW, OHIO

FIGURE 2

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\220285MXD\GW_Contours\Round_2023\Zimmer\DB_121\2023_DB_121.aprx

PROJECT: 1690000XXXX | DATED: 6/15/2023 | DESIGNER: egreaves

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- MONITORING WELL
- GROUNDWATER ELEVATION CONTOUR (0.5-FT CONTOUR INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE

NOTES:
1. PARENTHESES INDICATES WELL NOT USED FOR CONTOURING.
2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

0 150 300 Feet

POTENTIOMETRIC SURFACE MAP SEPTEMBER 18, 2023

2023 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
D BASIN
ZIMMER POWER PLANT
MOSCOW, OHIO

FIGURE 3

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

APPENDICES

APPENDIX A
LABORATORY REPORTS AND FIELD DATA SHEETS

Pace Analytical®

ANALYTICAL REPORT

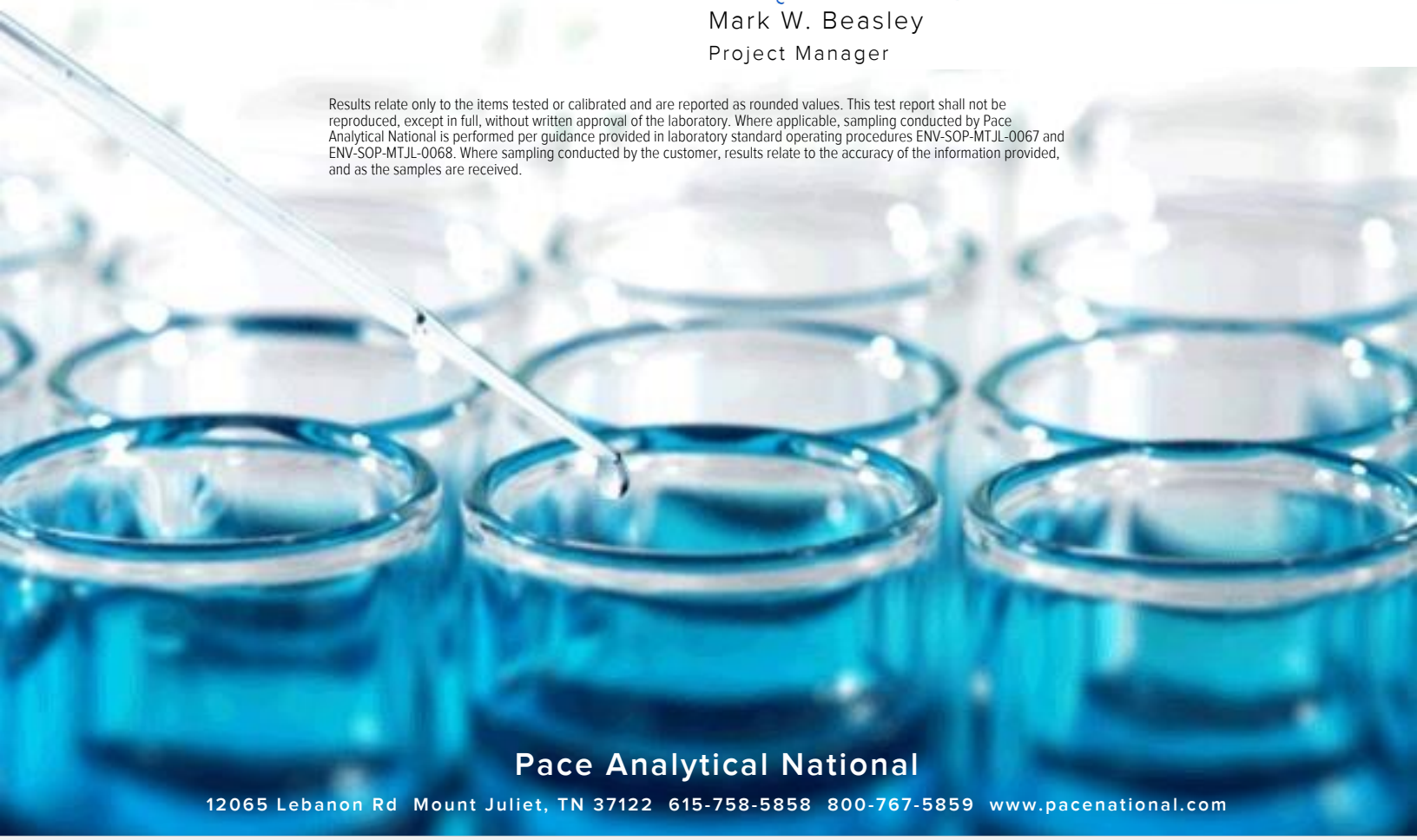
March 30, 2023

S&ME - Nashville, TN

Sample Delivery Group:	L1597558
Samples Received:	03/23/2023
Project Number:	7217-17-001D
Description:	Zimmer Station
Site:	BG WELLS
Report To:	Vince Epps 862 East Crescentville Road Cincinnati, OH 45246

Entire Report Reviewed By:

Mark W. Beasley
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

MW-01 L1597558-01 GW

Collected by: Carter H
Collected date/time: 03/21/23 09:10
Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2030515	1	03/27/23 11:03	03/27/23 14:41	AS	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2030548	1	03/27/23 15:38	03/27/23 15:38	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031404	1	03/29/23 01:05	03/29/23 01:05	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2029442	1	03/26/23 17:11	03/27/23 08:24	SRT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2029245	1	03/24/23 13:37	03/27/23 19:33	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2031519	1	03/28/23 15:44	03/29/23 12:15	JPD	Mt. Juliet, TN

MW-08 L1597558-02 GW

Collected by: Carter H
Collected date/time: 03/20/23 13:45
Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2029488	1	03/25/23 09:17	03/25/23 10:02	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2030548	1	03/27/23 15:56	03/27/23 15:56	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031404	1	03/29/23 01:31	03/29/23 01:31	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2029442	1	03/26/23 17:11	03/27/23 08:26	SRT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2029245	1	03/24/23 13:37	03/27/23 19:36	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2031519	1	03/28/23 15:44	03/29/23 12:19	JPD	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	580000		13300	1	03/27/2023 14:41	WG2030515

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	380000		8450	20000	1	03/27/2023 15:38	WG2030548
Alkalinity,Carbonate	U		8450	20000	1	03/27/2023 15:38	WG2030548

Sample Narrative:

L1597558-01 WG2030548: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	74800		379	1000	1	03/29/2023 01:05	WG2031404
Fluoride	139	J	64.0	150	1	03/29/2023 01:05	WG2031404
Sulfate	85500		594	5000	1	03/29/2023 01:05	WG2031404

Mercury by Method 7470A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Mercury	U		0.100	0.200	1	03/27/2023 08:24	WG2029442

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Antimony	U		1.03	4.00	1	03/27/2023 19:33	WG2029245
Arsenic	U		0.180	2.00	1	03/27/2023 19:33	WG2029245
Barium	68.5		0.381	2.00	1	03/27/2023 19:33	WG2029245
Beryllium	U		0.190	2.00	1	03/27/2023 19:33	WG2029245
Boron	40.8		9.63	30.0	1	03/27/2023 19:33	WG2029245
Cadmium	U		0.150	1.00	1	03/27/2023 19:33	WG2029245
Calcium	164000		93.6	1000	1	03/27/2023 19:33	WG2029245
Chromium	U		1.24	2.00	1	03/27/2023 19:33	WG2029245
Cobalt	U		0.0596	2.00	1	03/27/2023 19:33	WG2029245
Lead	U		0.849	2.00	1	03/27/2023 19:33	WG2029245
Magnesium	21600		73.5	1000	1	03/27/2023 19:33	WG2029245
Molybdenum	U		0.348	5.00	1	03/27/2023 19:33	WG2029245
Potassium	1870	J	108	2000	1	03/27/2023 19:33	WG2029245
Selenium	0.595	J	0.300	2.00	1	03/27/2023 19:33	WG2029245
Sodium	22300		376	2000	1	03/27/2023 19:33	WG2029245
Thallium	U		0.121	2.00	1	03/27/2023 19:33	WG2029245
Lithium	6.93		0.695	2.00	1	03/29/2023 12:15	WG2031519

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	423000		10000	1	03/25/2023 10:02	WG2029488

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	349000		8450	20000	1	03/27/2023 15:56	WG2030548
Alkalinity,Carbonate	U		8450	20000	1	03/27/2023 15:56	WG2030548

Sample Narrative:

L1597558-02 WG2030548: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	10200		379	1000	1	03/29/2023 01:31	WG2031404
Fluoride	97.0	J P1	64.0	150	1	03/29/2023 01:31	WG2031404
Sulfate	58600		594	5000	1	03/29/2023 01:31	WG2031404

Mercury by Method 7470A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Mercury	U		0.100	0.200	1	03/27/2023 08:26	WG2029442

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Antimony	U		1.03	4.00	1	03/27/2023 19:36	WG2029245
Arsenic	1.65	J	0.180	2.00	1	03/27/2023 19:36	WG2029245
Barium	38.1		0.381	2.00	1	03/27/2023 19:36	WG2029245
Beryllium	U		0.190	2.00	1	03/27/2023 19:36	WG2029245
Boron	335		9.63	30.0	1	03/27/2023 19:36	WG2029245
Cadmium	U		0.150	1.00	1	03/27/2023 19:36	WG2029245
Calcium	76200		93.6	1000	1	03/27/2023 19:36	WG2029245
Chromium	U		1.24	2.00	1	03/27/2023 19:36	WG2029245
Cobalt	0.776	J	0.0596	2.00	1	03/27/2023 19:36	WG2029245
Lead	U		0.849	2.00	1	03/27/2023 19:36	WG2029245
Magnesium	2360		73.5	1000	1	03/27/2023 19:36	WG2029245
Molybdenum	7.43		0.348	5.00	1	03/27/2023 19:36	WG2029245
Potassium	4290		108	2000	1	03/27/2023 19:36	WG2029245
Selenium	6.87		0.300	2.00	1	03/27/2023 19:36	WG2029245
Sodium	104000		376	2000	1	03/27/2023 19:36	WG2029245
Thallium	U		0.121	2.00	1	03/27/2023 19:36	WG2029245
Lithium	5.02		0.695	2.00	1	03/29/2023 12:19	WG2031519

Method Blank (MB)

(MB) R3906492-1 03/25/23 10:02

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Dissolved Solids	U		10000	10000

L1596618-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1596618-01 03/25/23 10:02 • (DUP) R3906492-3 03/25/23 10:02

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	796000	806000	1	1.25		5

L1596819-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1596819-01 03/25/23 10:02 • (DUP) R3906492-4 03/25/23 10:02

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	5570000	5960000	1	6.76	J3	5

Laboratory Control Sample (LCS)

(LCS) R3906492-2 03/25/23 10:02

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	6840000	77.7	77.3-123	

Method Blank (MB)

(MB) R3906565-1 03/27/23 14:41

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Dissolved Solids	U		10000	10000

L1597000-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597000-01 03/27/23 14:41 • (DUP) R3906565-3 03/27/23 14:41

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	753000	791000	1	4.84		5

L1597566-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597566-01 03/27/23 14:41 • (DUP) R3906565-4 03/27/23 14:41

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1120000	1130000	1	1.24		5

Laboratory Control Sample (LCS)

(LCS) R3906565-2 03/27/23 14:41

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	7030000	79.9	77.3-123	

Method Blank (MB)

(MB) R3906149-2 03/27/23 13:42

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Alkalinity,Bicarbonate	U		8450	20000
Alkalinity,Carbonate	U		8450	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

L1597477-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597477-01 03/27/23 14:01 • (DUP) R3906149-3 03/27/23 14:07

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity,Bicarbonate	89200	89500	1	0.385		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1597498-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1597498-10 03/27/23 15:24 • (DUP) R3906149-4 03/27/23 15:31

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity,Bicarbonate	535000	536000	1	0.222		20
Alkalinity,Carbonate	151000	151000	1	0.232		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Method Blank (MB)

(MB) R3907037-2 03/28/23 16:05

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	382	J	379	1000
Fluoride	U		64.0	150
Sulfate	U		594	5000

L1597477-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597477-01 03/28/23 17:34 • (DUP) R3907037-3 03/28/23 17:47

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	50900	50900	1	0.0462		15
Fluoride	U	U	1	0.000		15
Sulfate	12500	12500	1	0.614		15

L1597558-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1597558-02 03/29/23 01:31 • (DUP) R3907037-6 03/29/23 01:44

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	10200	10100	1	0.637		15
Fluoride	97.0	80.4	1	18.7	J P1	15
Sulfate	58600	58700	1	0.233		15

Laboratory Control Sample (LCS)

(LCS) R3907037-1 03/28/23 14:00

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	38800	97.1	80.0-120	
Fluoride	8000	8220	103	80.0-120	
Sulfate	40000	39100	97.6	80.0-120	

L1597477-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597477-01 03/28/23 17:34 • (MS) R3907037-4 03/28/23 18:00 • (MSD) R3907037-5 03/28/23 18:13

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	50900	97700	98000	93.6	94.2	1	80.0-120			0.293	15
Fluoride	5000	U	5120	5100	102	102	1	80.0-120			0.429	15
Sulfate	50000	12500	61300	61400	97.6	97.9	1	80.0-120			0.261	15

L1597558-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1597558-02 03/29/23 01:31 • (MS) R3907037-7 03/29/23 01:57

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	10200	57900	95.4	1	80.0-120	
Fluoride	5000	97.0	5050	99.2	1	80.0-120	
Sulfate	50000	58600	105000	92.1	1	80.0-120	

Method Blank (MB)

(MB) R3905637-1 03/27/23 07:47

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Mercury	U		0.100	0.200

Laboratory Control Sample (LCS)

(LCS) R3905637-2 03/27/23 07:49

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	3.00	2.93	97.6	80.0-120	

L1597201-53 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597201-53 03/27/23 07:51 • (MS) R3905637-3 03/27/23 07:53 • (MSD) R3905637-4 03/27/23 07:55

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	3.00	U	2.78	2.69	92.8	89.8	1	75.0-125			3.29	20

Method Blank (MB)

(MB) R3906007-1 03/27/23 18:42

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Antimony	U		1.03	4.00
Arsenic	U		0.180	2.00
Barium	0.507	J	0.381	2.00
Beryllium	U		0.190	2.00
Boron	U		9.63	30.0
Cadmium	U		0.150	1.00
Calcium	U		93.6	1000
Chromium	U		1.24	2.00
Cobalt	U		0.0596	2.00
Lead	U		0.849	2.00
Magnesium	U		73.5	1000
Molybdenum	U		0.348	5.00
Potassium	U		108	2000
Selenium	U		0.300	2.00
Sodium	U		376	2000
Thallium	U		0.121	2.00

Laboratory Control Sample (LCS)

(LCS) R3906007-2 03/27/23 18:45

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Antimony	50.0	46.3	92.6	80.0-120	
Arsenic	50.0	46.5	92.9	80.0-120	
Barium	50.0	47.1	94.1	80.0-120	
Beryllium	50.0	45.9	91.8	80.0-120	
Boron	50.0	47.2	94.4	80.0-120	
Cadmium	50.0	51.5	103	80.0-120	
Calcium	5000	5050	101	80.0-120	
Chromium	50.0	49.7	99.4	80.0-120	
Cobalt	50.0	49.8	99.6	80.0-120	
Lead	50.0	51.3	103	80.0-120	
Magnesium	5000	4990	99.8	80.0-120	
Molybdenum	50.0	46.8	93.6	80.0-120	
Potassium	5000	4810	96.3	80.0-120	
Selenium	50.0	50.5	101	80.0-120	
Sodium	5000	4670	93.4	80.0-120	
Thallium	50.0	50.4	101	80.0-120	

L1597411-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597411-13 03/27/23 18:48 • (MS) R3906007-4 03/27/23 18:55 • (MSD) R3906007-5 03/27/23 18:58

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	U	47.3	45.8	94.5	91.6	1	75.0-125			3.20	20
Arsenic	50.0	1.12	50.5	48.6	98.8	94.9	1	75.0-125			3.89	20
Barium	50.0	33.2	81.4	81.9	96.3	97.4	1	75.0-125			0.647	20
Beryllium	50.0	U	45.4	44.8	90.9	89.5	1	75.0-125			1.47	20
Boron	50.0	34.6	81.3	82.0	93.4	94.8	1	75.0-125			0.892	20
Cadmium	50.0	U	51.9	51.8	104	104	1	75.0-125			0.169	20
Calcium	5000	20200	25400	25300	103	101	1	75.0-125			0.465	20
Chromium	50.0	U	53.0	51.3	106	103	1	75.0-125			3.33	20
Cobalt	50.0	4.06	55.8	54.5	103	101	1	75.0-125			2.33	20
Lead	50.0	U	51.2	51.5	102	103	1	75.0-125			0.524	20
Magnesium	5000	11100	15800	15900	95.6	97.3	1	75.0-125			0.547	20
Molybdenum	50.0	0.414	48.4	48.1	96.0	95.5	1	75.0-125			0.567	20
Potassium	5000	2250	7050	7090	96.1	96.9	1	75.0-125			0.571	20
Selenium	50.0	U	49.6	50.4	99.1	101	1	75.0-125			1.72	20
Sodium	5000	8270	13700	13800	109	111	1	75.0-125			0.971	20
Thallium	50.0	U	50.9	51.0	102	102	1	75.0-125			0.232	20

APPENDIX A:
ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 1, 2023
ZIMMER POWER PLANT, D BASIN
ZM-257-121

Method Blank (MB)

(MB) R3906870-1 03/29/23 11:55

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Lithium	U		0.695	2.00

Laboratory Control Sample (LCS)

(LCS) R3906870-2 03/29/23 11:59

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Lithium	50.0	48.7	97.5	80.0-120	

L1597585-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597585-03 03/29/23 12:02 • (MS) R3906870-4 03/29/23 12:09 • (MSD) R3906870-5 03/29/23 12:12

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Lithium	50.0	6.89	55.9	53.5	98.1	93.2	1	75.0-125			4.46	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

APPENDIX A.
ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 1, 2023
ZIMMER POWER PLANT, D BASIN
ZIM-257-121

Company Name/Address: S&ME - Cincinnati
862 E. Crescentville Rd.
Cincinnati. OH 45246

Accounts Payable
AP@smeinc.com

Report to: Vince Epps
Email To: vepps@smeinc.com

Project Description: Zimmer Station
City/State Collected: Moscow, OH
Please Circle: PT MT CT ET

Phone: 513-771-8471
Client Project # 7217-17-001D
Lab Project # LITEGNTN-ZIMMER

Collected by (print): Carter Herbert
Site/Facility ID # BG Wells
P.O. #

Collected by (signature): Carter Herbert
Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day
Date Results Needed
Quote #

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Alk Bi/Ca, Cl, F, SO4 125mlHDPE-NonPres	CCR Metals+B, Li, K, Na, Mg 250mlHDPE H	RA-226/228COMB 1L-HPE-HNO3	TDS 250mlHDPE-NonPres	Remarks	Sample # (lab only)
MW-01	Grab	GW	NA	3/21/23	910	5	X	X	X	X		01
MW-08	Grab	GW	NA	3/20/23	1345	5	X	X	X	X		02

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

12065 Lebanon Rd Mount Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1597558
H069
Acctnum: LITEGNTN
Template:
Prelogin:
PM: 134
PB:
Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____
Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: Y __N
RAD Screen <0.5 mR/hr: Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Carter Herbert	3/22/23	1740	FedEx
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No HCL / MeoH TBR
Temp: °C Bottles Received: 10
Date: 3/23/23 Time: 0945

If preservation required by Login: Date/Time

Hold:
Condition: NCF / OK

Tracking Numbers	Temperature
6757 9911 4700	4.0 to = 4.0 NSA
4754	2.5 to = 2.5 NSA
4721	7.6 to = 7.6 NSA

Pace Analytical®

ANALYTICAL REPORT

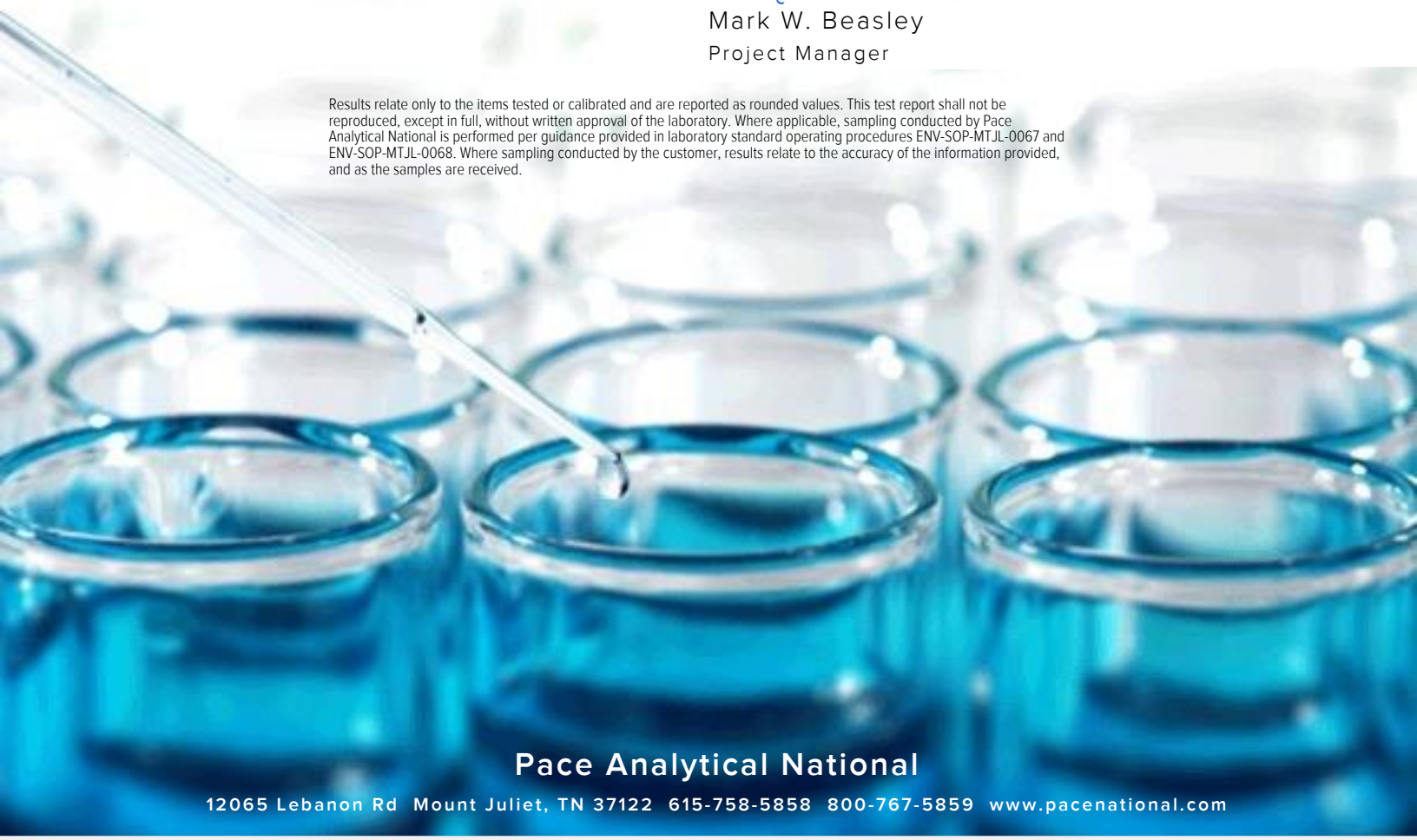
March 30, 2023

S&ME - Nashville, TN

Sample Delivery Group:	L1597575
Samples Received:	03/23/2023
Project Number:	7217-17-001D
Description:	Zimmer Station
Site:	WHZ UNIT 121 (D BASIN)
Report To:	Vince Epps
	862 East Crescentville Road
	Cincinnati, OH 45246

Entire Report Reviewed By:

Mark W. Beasley
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

MW-09 L1597575-01 GW

Collected by: Carter H | Collected date/time: 03/21/23 13:35 | Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2029579	1	03/25/23 05:12	03/25/23 06:22	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2031278	1	03/29/23 12:42	03/29/23 12:42	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	1	03/29/23 06:22	03/29/23 06:22	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	10	03/29/23 06:35	03/29/23 06:35	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2030401	1	03/28/23 17:37	03/29/23 09:54	SRT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2029251	1	03/24/23 10:39	03/27/23 19:13	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2031519	1	03/28/23 15:41	03/29/23 12:22	JPD	Mt. Juliet, TN

MW-12 L1597575-02 GW

Collected by: Carter H | Collected date/time: 03/20/23 15:05 | Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2029488	1	03/25/23 09:17	03/25/23 10:02	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2031278	1	03/29/23 12:47	03/29/23 12:47	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	1	03/29/23 07:15	03/29/23 07:15	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2030401	1	03/28/23 17:37	03/29/23 09:56	SRT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2029251	1	03/24/23 10:39	03/27/23 19:17	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2031519	1	03/28/23 15:41	03/29/23 12:25	JPD	Mt. Juliet, TN

MW-13 L1597575-03 GW

Collected by: Carter H | Collected date/time: 03/21/23 14:25 | Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2029579	1	03/25/23 05:12	03/25/23 06:22	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2031278	1	03/29/23 13:01	03/29/23 13:01	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	1	03/29/23 07:42	03/29/23 07:42	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2030401	1	03/28/23 17:37	03/29/23 09:58	SRT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2029251	1	03/24/23 10:39	03/27/23 19:20	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2031519	1	03/28/23 15:41	03/29/23 12:40	JPD	Mt. Juliet, TN

MW-14 L1597575-04 GW

Collected by: Carter H | Collected date/time: 03/21/23 15:20 | Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2029579	1	03/25/23 05:12	03/25/23 06:22	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2031278	1	03/29/23 13:07	03/29/23 13:07	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	1	03/29/23 08:09	03/29/23 08:09	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	10	03/29/23 08:23	03/29/23 08:23	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2030401	1	03/28/23 17:37	03/29/23 10:00	SRT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2029251	1	03/24/23 10:39	03/27/23 19:23	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2029251	5	03/24/23 10:39	03/27/23 20:04	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2031519	1	03/28/23 15:41	03/29/23 12:44	JPD	Mt. Juliet, TN

MW-15 L1597575-05 GW

Collected by: Carter H | Collected date/time: 03/21/23 16:10 | Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2029579	1	03/25/23 05:12	03/25/23 06:22	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2031278	1	03/29/23 13:11	03/29/23 13:11	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	1	03/29/23 08:36	03/29/23 08:36	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	10	03/29/23 08:49	03/29/23 08:49	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2030401	1	03/28/23 17:37	03/29/23 10:02	SRT	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

SAMPLE SUMMARY

MW-15 L1597575-05 GW

Collected by: Carter H
Collected date/time: 03/21/23 16:10
Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020	WG2029251	1	03/24/23 10:39	03/27/23 19:35	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2031519	1	03/28/23 15:41	03/29/23 12:47	JPD	Mt. Juliet, TN

DUP-2 L1597575-06 GW

Collected by: Carter H
Collected date/time: 03/21/23 00:00
Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2029579	1	03/25/23 05:12	03/25/23 06:22	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2031278	1	03/29/23 13:16	03/29/23 13:16	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	1	03/29/23 09:03	03/29/23 09:03	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2030401	1	03/28/23 17:37	03/29/23 10:04	SRT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2029251	1	03/24/23 10:39	03/27/23 19:38	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2031519	1	03/28/23 15:41	03/29/23 12:50	JPD	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	925000		13300	1	03/25/2023 06:22	WG2029579

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	306000		8450	20000	1	03/29/2023 12:42	WG2031278
Alkalinity,Carbonate	U		8450	20000	1	03/29/2023 12:42	WG2031278

Sample Narrative:

L1597575-01 WG2031278: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	30400		379	1000	1	03/29/2023 06:22	WG2031537
Fluoride	153	B	64.0	150	1	03/29/2023 06:22	WG2031537
Sulfate	419000		5940	50000	10	03/29/2023 06:35	WG2031537

Mercury by Method 7470A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Mercury	U		0.100	0.200	1	03/29/2023 09:54	WG2030401

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Antimony	U		1.03	4.00	1	03/27/2023 19:13	WG2029251
Arsenic	1.60	J	0.180	2.00	1	03/27/2023 19:13	WG2029251
Barium	18.2		0.381	2.00	1	03/27/2023 19:13	WG2029251
Beryllium	U		0.190	2.00	1	03/27/2023 19:13	WG2029251
Boron	89.8		9.63	30.0	1	03/27/2023 19:13	WG2029251
Cadmium	U		0.150	1.00	1	03/27/2023 19:13	WG2029251
Calcium	216000		93.6	1000	1	03/27/2023 19:13	WG2029251
Chromium	1.33	J	1.24	2.00	1	03/27/2023 19:13	WG2029251
Cobalt	2.04		0.0596	2.00	1	03/27/2023 19:13	WG2029251
Lead	U		0.849	2.00	1	03/27/2023 19:13	WG2029251
Magnesium	38600		73.5	1000	1	03/27/2023 19:13	WG2029251
Molybdenum	1.37	J	0.348	5.00	1	03/27/2023 19:13	WG2029251
Potassium	2840		108	2000	1	03/27/2023 19:13	WG2029251
Selenium	U		0.300	2.00	1	03/27/2023 19:13	WG2029251
Sodium	18300		376	2000	1	03/27/2023 19:13	WG2029251
Thallium	U		0.121	2.00	1	03/27/2023 19:13	WG2029251
Lithium	6.05		0.695	2.00	1	03/29/2023 12:22	WG2031519

MW-12 SAMPLE RESULTS - 02

Client Sample ID: MW-12 Matrix: Groundwater L1597575-02

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	547000		10000	1	03/25/2023 10:02	WG2029488

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	363000		8450	20000	1	03/29/2023 12:47	WG2031278
Alkalinity,Carbonate	U		8450	20000	1	03/29/2023 12:47	WG2031278

Sample Narrative:

L1597575-02 WG2031278: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	31600		379	1000	1	03/29/2023 07:15	WG2031537
Fluoride	179	B	64.0	150	1	03/29/2023 07:15	WG2031537
Sulfate	91100		594	5000	1	03/29/2023 07:15	WG2031537

Mercury by Method 7470A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Mercury	U		0.100	0.200	1	03/29/2023 09:56	WG2030401

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Antimony	U		1.03	4.00	1	03/27/2023 19:17	WG2029251
Arsenic	U		0.180	2.00	1	03/27/2023 19:17	WG2029251
Barium	59.5		0.381	2.00	1	03/27/2023 19:17	WG2029251
Beryllium	U		0.190	2.00	1	03/27/2023 19:17	WG2029251
Boron	138		9.63	30.0	1	03/27/2023 19:17	WG2029251
Cadmium	U		0.150	1.00	1	03/27/2023 19:17	WG2029251
Calcium	149000		93.6	1000	1	03/27/2023 19:17	WG2029251
Chromium	U		1.24	2.00	1	03/27/2023 19:17	WG2029251
Cobalt	U		0.0596	2.00	1	03/27/2023 19:17	WG2029251
Lead	U		0.849	2.00	1	03/27/2023 19:17	WG2029251
Magnesium	19700		73.5	1000	1	03/27/2023 19:17	WG2029251
Molybdenum	U		0.348	5.00	1	03/27/2023 19:17	WG2029251
Potassium	1240	J	108	2000	1	03/27/2023 19:17	WG2029251
Selenium	0.661	J	0.300	2.00	1	03/27/2023 19:17	WG2029251
Sodium	16600		376	2000	1	03/27/2023 19:17	WG2029251
Thallium	U		0.121	2.00	1	03/27/2023 19:17	WG2029251
Lithium	5.99		0.695	2.00	1	03/29/2023 12:25	WG2031519

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	559000		10000	1	03/25/2023 06:22	WG2029579

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	308000		8450	20000	1	03/29/2023 13:01	WG2031278
Alkalinity,Carbonate	U		8450	20000	1	03/29/2023 13:01	WG2031278

Sample Narrative:

L1597575-03 WG2031278: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	23800		379	1000	1	03/29/2023 07:42	WG2031537
Fluoride	242	B	64.0	150	1	03/29/2023 07:42	WG2031537
Sulfate	143000		594	5000	1	03/29/2023 07:42	WG2031537

Mercury by Method 7470A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Mercury	U		0.100	0.200	1	03/29/2023 09:58	WG2030401

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Antimony	U		1.03	4.00	1	03/27/2023 19:20	WG2029251
Arsenic	1.07	J	0.180	2.00	1	03/27/2023 19:20	WG2029251
Barium	39.1		0.381	2.00	1	03/27/2023 19:20	WG2029251
Beryllium	U		0.190	2.00	1	03/27/2023 19:20	WG2029251
Boron	67.8		9.63	30.0	1	03/27/2023 19:20	WG2029251
Cadmium	U		0.150	1.00	1	03/27/2023 19:20	WG2029251
Calcium	136000		93.6	1000	1	03/27/2023 19:20	WG2029251
Chromium	U		1.24	2.00	1	03/27/2023 19:20	WG2029251
Cobalt	2.91		0.0596	2.00	1	03/27/2023 19:20	WG2029251
Lead	U		0.849	2.00	1	03/27/2023 19:20	WG2029251
Magnesium	27300		73.5	1000	1	03/27/2023 19:20	WG2029251
Molybdenum	0.732	J	0.348	5.00	1	03/27/2023 19:20	WG2029251
Potassium	2560		108	2000	1	03/27/2023 19:20	WG2029251
Selenium	U		0.300	2.00	1	03/27/2023 19:20	WG2029251
Sodium	18000		376	2000	1	03/27/2023 19:20	WG2029251
Thallium	U		0.121	2.00	1	03/27/2023 19:20	WG2029251
Lithium	2.39		0.695	2.00	1	03/29/2023 12:40	WG2031519

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	740000		13300	1	03/25/2023 06:22	WG2029579

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	357000		8450	20000	1	03/29/2023 13:07	WG2031278
Alkalinity,Carbonate	U		8450	20000	1	03/29/2023 13:07	WG2031278

Sample Narrative:

L1597575-04 WG2031278: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	41000		379	1000	1	03/29/2023 08:09	WG2031537
Fluoride	274	B	64.0	150	1	03/29/2023 08:09	WG2031537
Sulfate	236000		5940	50000	10	03/29/2023 08:23	WG2031537

Mercury by Method 7470A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Mercury	U		0.100	0.200	1	03/29/2023 10:00	WG2030401

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Antimony	U		1.03	4.00	1	03/27/2023 19:23	WG2029251
Arsenic	0.251	J	0.180	2.00	1	03/27/2023 19:23	WG2029251
Barium	46.1		0.381	2.00	1	03/27/2023 19:23	WG2029251
Beryllium	U		0.190	2.00	1	03/27/2023 19:23	WG2029251
Boron	338		48.2	150	5	03/27/2023 20:04	WG2029251
Cadmium	U		0.150	1.00	1	03/27/2023 19:23	WG2029251
Calcium	169000		93.6	1000	1	03/27/2023 19:23	WG2029251
Chromium	U		1.24	2.00	1	03/27/2023 19:23	WG2029251
Cobalt	1.71	J	0.0596	2.00	1	03/27/2023 19:23	WG2029251
Lead	U		0.849	2.00	1	03/27/2023 19:23	WG2029251
Magnesium	38400		73.5	1000	1	03/27/2023 19:23	WG2029251
Molybdenum	2.39	J	0.348	5.00	1	03/27/2023 19:23	WG2029251
Potassium	3070		108	2000	1	03/27/2023 19:23	WG2029251
Selenium	U		0.300	2.00	1	03/27/2023 19:23	WG2029251
Sodium	25800		376	2000	1	03/27/2023 19:23	WG2029251
Thallium	U		0.121	2.00	1	03/27/2023 19:23	WG2029251
Lithium	2.10		0.695	2.00	1	03/29/2023 12:44	WG2031519

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1100000		20000	1	03/25/2023 06:22	WG2029579

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	383000		8450	20000	1	03/29/2023 13:11	WG2031278
Alkalinity,Carbonate	U		8450	20000	1	03/29/2023 13:11	WG2031278

Sample Narrative:

L1597575-05 WG2031278: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	48200		379	1000	1	03/29/2023 08:36	WG2031537
Fluoride	264	B	64.0	150	1	03/29/2023 08:36	WG2031537
Sulfate	492000		5940	50000	10	03/29/2023 08:49	WG2031537

Mercury by Method 7470A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Mercury	U		0.100	0.200	1	03/29/2023 10:02	WG2030401

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Antimony	U		1.03	4.00	1	03/27/2023 19:35	WG2029251
Arsenic	0.213	J	0.180	2.00	1	03/27/2023 19:35	WG2029251
Barium	55.1		0.381	2.00	1	03/27/2023 19:35	WG2029251
Beryllium	U		0.190	2.00	1	03/27/2023 19:35	WG2029251
Boron	155		9.63	30.0	1	03/27/2023 19:35	WG2029251
Cadmium	U		0.150	1.00	1	03/27/2023 19:35	WG2029251
Calcium	229000		93.6	1000	1	03/27/2023 19:35	WG2029251
Chromium	U		1.24	2.00	1	03/27/2023 19:35	WG2029251
Cobalt	2.77		0.0596	2.00	1	03/27/2023 19:35	WG2029251
Lead	U		0.849	2.00	1	03/27/2023 19:35	WG2029251
Magnesium	54600		73.5	1000	1	03/27/2023 19:35	WG2029251
Molybdenum	4.63	J	0.348	5.00	1	03/27/2023 19:35	WG2029251
Potassium	4110		108	2000	1	03/27/2023 19:35	WG2029251
Selenium	U		0.300	2.00	1	03/27/2023 19:35	WG2029251
Sodium	46400		376	2000	1	03/27/2023 19:35	WG2029251
Thallium	U		0.121	2.00	1	03/27/2023 19:35	WG2029251
Lithium	1.93	J	0.695	2.00	1	03/29/2023 12:47	WG2031519

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	564000		10000	1	03/25/2023 06:22	WG2029579

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	332000		8450	20000	1	03/29/2023 13:16	WG2031278
Alkalinity,Carbonate	U		8450	20000	1	03/29/2023 13:16	WG2031278

Sample Narrative:

L1597575-06 WG2031278: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	24200		379	1000	1	03/29/2023 09:03	WG2031537
Fluoride	251	B	64.0	150	1	03/29/2023 09:03	WG2031537
Sulfate	146000		594	5000	1	03/29/2023 09:03	WG2031537

Mercury by Method 7470A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Mercury	U		0.100	0.200	1	03/29/2023 10:04	WG2030401

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Antimony	U		1.03	4.00	1	03/27/2023 19:38	WG2029251
Arsenic	0.987	J	0.180	2.00	1	03/27/2023 19:38	WG2029251
Barium	38.8		0.381	2.00	1	03/27/2023 19:38	WG2029251
Beryllium	U		0.190	2.00	1	03/27/2023 19:38	WG2029251
Boron	71.8		9.63	30.0	1	03/27/2023 19:38	WG2029251
Cadmium	U		0.150	1.00	1	03/27/2023 19:38	WG2029251
Calcium	135000		93.6	1000	1	03/27/2023 19:38	WG2029251
Chromium	U		1.24	2.00	1	03/27/2023 19:38	WG2029251
Cobalt	2.91		0.0596	2.00	1	03/27/2023 19:38	WG2029251
Lead	U		0.849	2.00	1	03/27/2023 19:38	WG2029251
Magnesium	27500		73.5	1000	1	03/27/2023 19:38	WG2029251
Molybdenum	0.826	J	0.348	5.00	1	03/27/2023 19:38	WG2029251
Potassium	2530		108	2000	1	03/27/2023 19:38	WG2029251
Selenium	U		0.300	2.00	1	03/27/2023 19:38	WG2029251
Sodium	18300		376	2000	1	03/27/2023 19:38	WG2029251
Thallium	U		0.121	2.00	1	03/27/2023 19:38	WG2029251
Lithium	2.38		0.695	2.00	1	03/29/2023 12:50	WG2031519

APPENDIX A:
ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 1, 2023
ZIMMER POWER PLANT, D BASIN
ZIM-257-121

Method Blank (MB)

(MB) R3906492-1 03/25/23 10:02

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Dissolved Solids	U		10000	10000

L1596618-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1596618-01 03/25/23 10:02 • (DUP) R3906492-3 03/25/23 10:02

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	796000	806000	1	1.25		5

L1596819-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1596819-01 03/25/23 10:02 • (DUP) R3906492-4 03/25/23 10:02

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	5570000	5960000	1	6.76	J3	5

Laboratory Control Sample (LCS)

(LCS) R3906492-2 03/25/23 10:02

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	6840000	77.7	77.3-123	

Method Blank (MB)

(MB) R3906470-1 03/25/23 06:22

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Dissolved Solids	U		10000	10000

L1597500-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1597500-06 03/25/23 06:22 • (DUP) R3906470-3 03/25/23 06:22

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	669000	699000	1	4.29		5

L1597575-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597575-01 03/25/23 06:22 • (DUP) R3906470-4 03/25/23 06:22

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	925000	955000	1	3.12		5

Laboratory Control Sample (LCS)

(LCS) R3906470-2 03/25/23 06:22

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8500000	96.6	77.3-123	

Method Blank (MB)

(MB) R3907113-2 03/29/23 12:03

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Alkalinity,Bicarbonate	U		8450	20000
Alkalinity,Carbonate	U		8450	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

L1598041-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1598041-01 03/29/23 12:14 • (DUP) R3907113-3 03/29/23 12:18

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity,Bicarbonate	540000	534000	1	1.10		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1598041-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1598041-04 03/29/23 14:01 • (DUP) R3907113-4 03/29/23 14:05

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity,Bicarbonate	385000	386000	1	0.268		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Method Blank (MB)

(MB) R3907338-1 03/29/23 01:54

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	438	J	379	1000
Fluoride	80.8	J	64.0	150
Sulfate	U		594	5000

L1597585-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1597585-03 03/29/23 10:50 • (DUP) R3907338-3 03/29/23 11:03

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	5810	5790	1	0.412		15
Fluoride	292	270	1	7.86		15
Sulfate	11300	11200	1	0.913		15

L1597585-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1597585-04 03/29/23 11:44 • (DUP) R3907338-6 03/29/23 11:57

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	86200	87200	1	1.20		15
Fluoride	278	278	1	0.216		15
Sulfate	27300	27600	1	0.998		15

Laboratory Control Sample (LCS)

(LCS) R3907338-2 03/29/23 02:07

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	39900	99.7	80.0-120	
Fluoride	8000	8470	106	80.0-120	
Sulfate	40000	41500	104	80.0-120	

L1597585-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597585-03 03/29/23 10:50 • (MS) R3907338-4 03/29/23 11:17 • (MSD) R3907338-5 03/29/23 11:30

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	5810	54400	54200	97.2	96.8	1	80.0-120			0.341	15
Fluoride	5000	292	5270	5260	99.5	99.4	1	80.0-120			0.146	15
Sulfate	50000	11300	61000	60900	99.4	99.2	1	80.0-120			0.221	15

L1597585-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1597585-04 03/29/23 11:44 • (MS) R3907338-7 03/29/23 12:37

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	86200	131000	89.4	1	80.0-120	
Fluoride	5000	278	5290	100	1	80.0-120	
Sulfate	50000	27300	76300	98.1	1	80.0-120	

L1597575-01,02,03,04,05,06

Method Blank (MB)

(MB) R3906722-1 03/29/23 09:19

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Mercury	U		0.100	0.200

Laboratory Control Sample (LCS)

(LCS) R3906722-2 03/29/23 09:21

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	3.00	2.88	95.9	80.0-120	

L1597585-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597585-03 03/29/23 09:28 • (MS) R3906722-3 03/29/23 09:30 • (MSD) R3906722-4 03/29/23 09:32

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	3.00	U	2.96	2.97	98.6	99.2	1	75.0-125			0.556	20

Method Blank (MB)

(MB) R3906008-1 03/27/23 18:54

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Antimony	U		1.03	4.00
Arsenic	U		0.180	2.00
Barium	U		0.381	2.00
Beryllium	U		0.190	2.00
Boron	U		9.63	30.0
Cadmium	U		0.150	1.00
Calcium	U		93.6	1000
Chromium	U		1.24	2.00
Cobalt	U		0.0596	2.00
Lead	U		0.849	2.00
Magnesium	U		73.5	1000
Molybdenum	U		0.348	5.00
Potassium	U		108	2000
Selenium	U		0.300	2.00
Sodium	U		376	2000
Thallium	U		0.121	2.00

Laboratory Control Sample (LCS)

(LCS) R3906008-2 03/27/23 18:57

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Antimony	50.0	47.7	95.4	80.0-120	
Arsenic	50.0	47.8	95.7	80.0-120	
Barium	50.0	46.2	92.4	80.0-120	
Beryllium	50.0	45.0	90.1	80.0-120	
Boron	50.0	51.8	104	80.0-120	
Cadmium	50.0	52.2	104	80.0-120	
Calcium	5000	4880	97.5	80.0-120	
Chromium	50.0	50.3	101	80.0-120	
Cobalt	50.0	50.3	101	80.0-120	
Lead	50.0	48.1	96.2	80.0-120	
Magnesium	5000	4820	96.5	80.0-120	
Molybdenum	50.0	48.9	97.9	80.0-120	
Potassium	5000	4710	94.1	80.0-120	
Selenium	50.0	50.0	100	80.0-120	
Sodium	5000	5010	100	80.0-120	
Thallium	50.0	48.8	97.6	80.0-120	

L1597575-01,02,03,04,05,06

L1597585-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597585-03 03/27/23 19:00 • (MS) R3906008-4 03/27/23 19:07 • (MSD) R3906008-5 03/27/23 19:10

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	U	49.4	50.3	98.7	101	1	75.0-125			1.98	20
Arsenic	50.0	2.14	50.9	52.0	97.5	99.8	1	75.0-125			2.18	20
Barium	50.0	164	209	215	89.5	101	1	75.0-125			2.75	20
Beryllium	50.0	U	44.7	47.3	89.4	94.5	1	75.0-125			5.53	20
Boron	50.0	165	207	217	83.0	104	1	75.0-125	E	E	4.93	20
Cadmium	50.0	0.518	54.1	54.7	107	108	1	75.0-125			0.953	20
Calcium	5000	74600	78800	80800	85.3	124	1	75.0-125			2.44	20
Chromium	50.0	U	51.1	51.5	102	103	1	75.0-125			0.773	20
Cobalt	50.0	0.0726	49.4	51.1	98.7	102	1	75.0-125			3.39	20
Lead	50.0	U	51.8	51.8	104	104	1	75.0-125			0.0438	20
Magnesium	5000	34800	40000	41100	104	127	1	75.0-125		V	2.82	20
Molybdenum	50.0	0.485	51.0	51.7	101	102	1	75.0-125			1.32	20
Potassium	5000	880	5670	5830	95.8	99.0	1	75.0-125			2.77	20
Selenium	50.0	U	53.0	52.8	106	106	1	75.0-125			0.338	20
Sodium	5000	18900	23700	24200	97.9	107	1	75.0-125			1.88	20
Thallium	50.0	U	51.2	50.3	102	101	1	75.0-125			1.75	20

Method Blank (MB)

(MB) R3906870-1 03/29/23 11:55

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Lithium	U		0.695	2.00

Laboratory Control Sample (LCS)

(LCS) R3906870-2 03/29/23 11:59

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Lithium	50.0	48.7	97.5	80.0-120	

L1597585-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597585-03 03/29/23 12:02 • (MS) R3906870-4 03/29/23 12:09 • (MSD) R3906870-5 03/29/23 12:12

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Lithium	50.0	6.89	55.9	53.5	98.1	93.2	1	75.0-125			4.46	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

APPENDIX A.
ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 1, 2023
ZIMMER POWER PLANT, D-BASIN
ZIM-257-121

Company Name/Address: **S&ME - Cincinnati**
862 E. Crescentville Rd.
Cincinnati. OH 45246

Billing Information: **Accounts Payable**
AP@smeinc.com

Pres Chk

Report to: **Vince Epps**

Email To: **vepps@smeinc.com**

Project Description: **Zimmer Station**

City/State Collected: **Moscow, OH**

Please Circle: PT MT CT ET

Phone: **513-771-8471**

Client Project # **7217-17-001D**

Lab Project # **LITEGNTN-ZIMMER**

Collected by (print): **Carter Herden**

Site/Facility ID # **WHZ Unit 121 (D Basin)**

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Alk Bi/Ca, Cl, F, SO4 125mlHDPE-NonPres	CCR Metals+B, Li, K, Na, Mg 250mlHDPE-HNO3	RA-226/228COMB 1L-HPE-HNO3	TDS 250mlHDPE-NonPres	Remarks	Sample # (lab only)
MW-09	Grab	GW	NA	3/21/23	~~1505~~ 1335	5	X	X	X	X		01
MW-12	Grab	GW	NA	3/20/23	1505		X	X	X	X		02
MW-13	Grab	GW	NA	3/21/23	1425		X	X	X	X		03
MW-14	Grab	GW	NA	3/21/23	1520		X	X	X	X		04
MW-15	Grab	GW	NA	3/21/23	1610		X	X	X	X		05
DUP-2	Grab	GW	NA	3/21/23	—		X	X		X		06

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

12065 Lebanon Rd Mount Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1597575

H068

Acctnum: LITEGNTN

Template:

Prelogin:

PM: 134

PB:

Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Carter Herden	3/22/23	1740	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: °C Bottles Received: 28

Date: 3/23/23 Time: 0915

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Tracking Numbers	Temperature
6351 9911 4700	4.0 to -4.0 NSAT
4754	2.5 to -2.5 NSAT

Pace Analytical®

ANALYTICAL REPORT

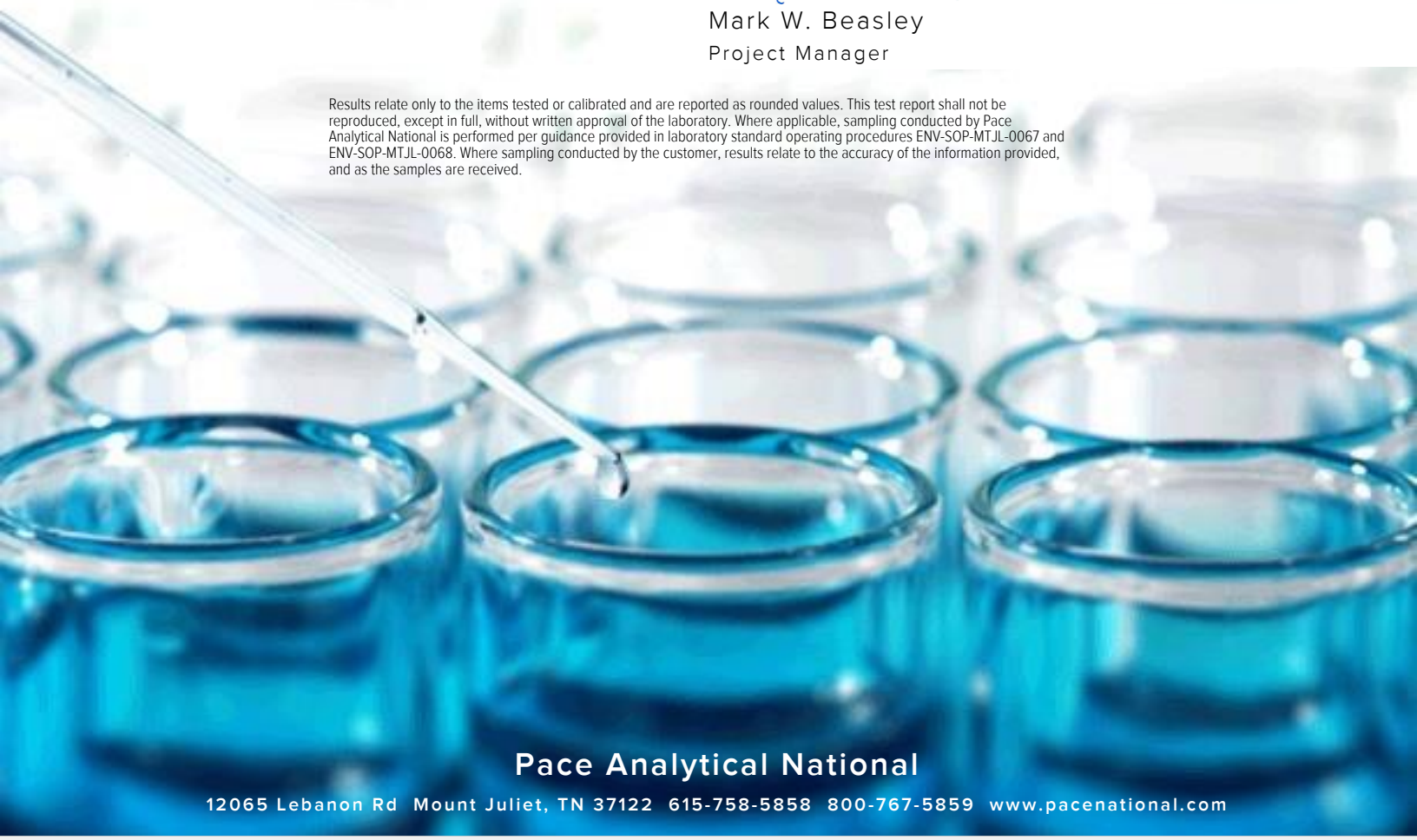
April 24, 2023

S&ME - Nashville, TN

Sample Delivery Group:	L1597592
Samples Received:	03/23/2023
Project Number:	7217-17-001D
Description:	Zimmer Station
Site:	BG WELLS
Report To:	Vince Epps 862 East Crescentville Road Cincinnati, OH 45246

Entire Report Reviewed By:

Mark W. Beasley
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

MW-01 L1597592-01 Non-Potable Water

Collected by: Carter H.
Collected date/time: 03/21/23 09:10
Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2044320	1	04/19/23 12:37	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2034931	1	04/17/23 16:38	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2034931	1	04/17/23 16:38	04/19/23 19:09	RGT	Mt. Juliet, TN

MW-08 L1597592-02 Non-Potable Water

Collected by: Carter H.
Collected date/time: 03/20/23 13:45
Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2044320	1	04/19/23 12:37	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2034931	1	04/17/23 16:38	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2034931	1	04/17/23 16:38	04/19/23 19:09	RGT	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.153	U	0.280	0.519	04/21/2023 10:57	WG2044320
(T) Barium	*113*			*30.0-143*	*04/21/2023 10:57*	WG2044320
(T) Yttrium	*104*			*30.0-136*	*04/21/2023 10:57*	WG2044320

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.153	U	0.340	0.693	04/21/2023 10:57	WG2034931

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	-0.0567	U	0.192	0.459	04/19/2023 19:09	WG2034931
(T) Barium-133	*59.4*			*30.0-143*	*04/19/2023 19:09*	WG2034931

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.501	U	0.277	0.528	04/21/2023 10:57	WG2044320
(T) Barium	*108*			*30.0-143*	*04/21/2023 10:57*	WG2044320
(T) Yttrium	*103*			*30.0-136*	*04/21/2023 10:57*	WG2044320

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.34		0.560	0.620	04/21/2023 10:57	WG2034931

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.34		0.487	0.325	04/19/2023 19:09	WG2034931
(T) Barium-133	*86.6*			*30.0-143*	*04/19/2023 19:09*	WG2034931

Method Blank (MB)

(MB) R3916733-1 04/21/23 10:57

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-228	0.150	J	0.126	0.234
(T) Barium	*113*		*113*	
(T) Yttrium	*116*		*116*	

L1597559-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597559-01 04/21/23 10:57 • (DUP) R3916733-5 04/21/23 10:57

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.225	0.237	0.419	0.691	0.335	0.419	1	102	1.14		20	3
(T) Barium	*111*			*117*	*117*							
(T) Yttrium	*105*			*99.5*	*99.5*							

Laboratory Control Sample (LCS)

(LCS) R3916733-2 04/21/23 10:57

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.38	108	80.0-120	
(T) Barium			*113*		
(T) Yttrium			*109*		

L1597617-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597617-03 04/21/23 10:57 • (MS) R3916733-3 04/21/23 10:57 • (MSD) R3916733-4 04/21/23 10:57

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0	-0.0118	9.99	9.26	99.9	92.6	1	70.0-130			7.57		20
(T) Barium		*96.8*			*108*	*111*							
(T) Yttrium		*103*			*104*	*100*							

Method Blank (MB)

(MB) R3915555-1 04/19/23 18:51

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-226	0.00529	U	0.0319	0.0641
(T) Barium-133	*89.5*		*89.5*	

L1597703-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597703-01 04/19/23 22:38 • (DUP) R3915555-5 04/19/23 19:09

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	7.34	1.04	0.287	5.86	0.936	0.287	1	22.3	1.05		20	3
(T) Barium-133	*104*			*102*	*102*							

Laboratory Control Sample (LCS)

(LCS) R3915555-2 04/19/23 18:51

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.01	4.42	88.3	80.0-120	
(T) Barium-133			*62.5*		

L1597701-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597701-01 04/19/23 22:38 • (MS) R3915555-3 04/19/23 19:09 • (MSD) R3915555-4 04/19/23 19:09

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.0	12.0	36.1	35.2	121	116	1	75.0-125			2.61		20
(T) Barium-133		*109*			*111*	*113*							

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

ZM-2021-21

Company Name/Address:
S&ME - Cincinnati
862 E. Crescentville Rd.
Cincinnati. OH 45246

Billing Information:
Accounts Payable
AP@smeinc.com

Pres Chk

Report to: Vince Epps

Email To: vepps@smeinc.com

Project Description: Zimmer Station

City/State Collected: Moscow, OH

Please Circle: PT MT CT ET

Phone: 513-771-8471

Client Project # 7217-17-001D

Lab Project # LITEGNTN-ZIMMER

Collected by (print): Carter Herbon

Site/Facility ID # BG Wells

P.O. #

Collected by (signature): Carter Herbon

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Alk Bi/Ca, Cl, F, SO4 125mlHDPE-NonPres	CCR Metals+B, Li, K, Na, Mg 250mlHDPE H-	RA-226/228COMB 1L-HPE-HNO3	TDS 250mlHDPE-NonPres	Remarks	Sample # (lab only)
MW-01	Grab	GW	NA	3/21/23	910	5	X	X	X	X		01
MW-08	Grab	GW	NA	3/20/23	1345	5	X	X	X	X		02

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

12065 Lebanon Rd Mount Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L597592
H069

Acctnum: LITEGNTN
Template:
Prelogin:
PM: 134
PB:
Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: __Y __N

Relinquished by / (Signature)	Date:	Time:	Received by: (Signature)
Carter Herbon	3/22/23	1740	FedEx
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: °C Bottles Received: 10

Date: 3/23/23 Time: 0945

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Tracking Numbers	Temperature
6757 9911 4703	4.0 to = 4.0 NSA
4754	2.5 to = 2.5 NSA
4721	7.6 to = 7.6 NSA

Pace Analytical®

ANALYTICAL REPORT

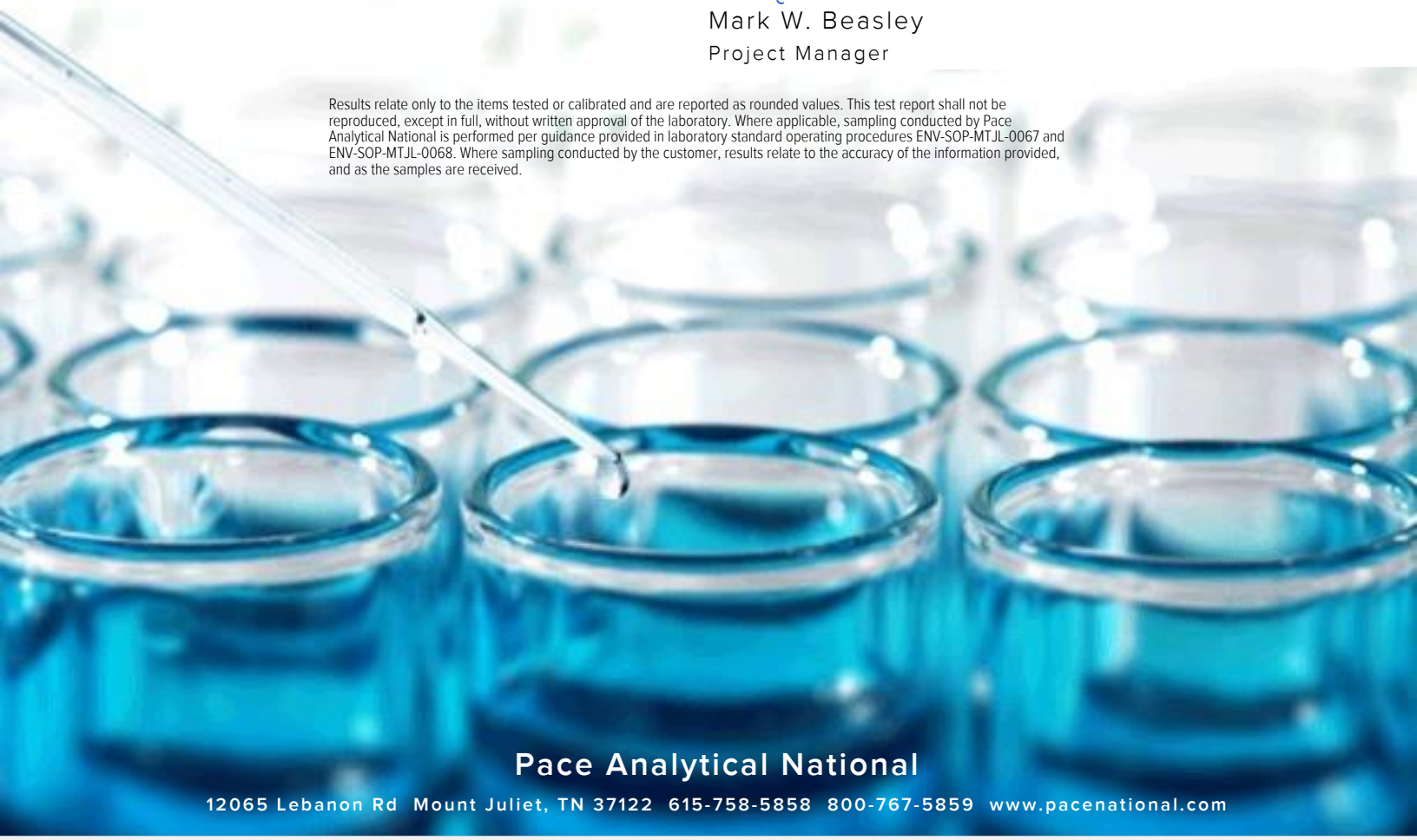
April 25, 2023

S&ME - Nashville, TN

Sample Delivery Group:	L1597599
Samples Received:	03/23/2023
Project Number:	7217-17-001D
Description:	Zimmer Station
Site:	WHZ UNIT 121 (D BASIN)
Report To:	Vince Epps
	862 East Crescentville Road
	Cincinnati, OH 45246

Entire Report Reviewed By:

Mark W. Beasley
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

MW-09 L1597599-01 Non-Potable Water

Collected by: Carter H.
Collected date/time: 03/21/23 13:35
Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2044320	1	04/19/23 12:37	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2034932	1	04/20/23 10:16	04/24/23 13:55	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2034932	1	04/20/23 10:16	04/24/23 13:55	RGT	Mt. Juliet, TN

MW-12 L1597599-02 Non-Potable Water

Collected by: Carter H.
Collected date/time: 03/20/23 15:05
Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2044320	1	04/19/23 12:37	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2034932	1	04/20/23 10:16	04/24/23 13:55	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2034932	1	04/20/23 10:16	04/24/23 13:55	RGT	Mt. Juliet, TN

MW-13 L1597599-03 Non-Potable Water

Collected by: Carter H.
Collected date/time: 03/21/23 14:25
Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2044320	1	04/19/23 12:37	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2034932	1	04/20/23 10:16	04/24/23 13:55	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2034932	1	04/20/23 10:16	04/24/23 13:55	RGT	Mt. Juliet, TN

MW-14 L1597599-04 Non-Potable Water

Collected by: Carter H.
Collected date/time: 03/21/23 15:20
Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2044320	1	04/19/23 12:37	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2034932	1	04/20/23 10:16	04/24/23 13:55	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2034932	1	04/20/23 10:16	04/24/23 13:55	RGT	Mt. Juliet, TN

MW-15 L1597599-05 Non-Potable Water

Collected by: Carter H.
Collected date/time: 03/21/23 16:10
Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2044320	1	04/19/23 12:37	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2034932	1	04/20/23 10:16	04/24/23 13:55	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2034932	1	04/20/23 10:16	04/24/23 13:55	RGT	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.221	J	0.226	0.418	04/21/2023 10:57	WG2044320
(T) Barium	*96.6*			*30.0-143*	*04/21/2023 10:57*	WG2044320
(T) Yttrium	*112*			*30.0-136*	*04/21/2023 10:57*	WG2044320

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.23		0.552	0.631	04/24/2023 13:55	WG2034932

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.01		0.504	0.473	04/24/2023 13:55	WG2034932
(T) Barium-133	*67.0*			*30.0-143*	*04/24/2023 13:55*	WG2034932

MW-12 SAMPLE RESULTS - 02

Collected date/time: 03/20/23 15:05 L1597599

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.0347	U	0.253	0.475	04/21/2023 10:57	WG2044320
(T) Barium	*106*			*30.0-143*	*04/21/2023 10:57*	WG2044320
(T) Yttrium	*106*			*30.0-136*	*04/21/2023 10:57*	WG2044320

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.0347	U	0.289	0.580	04/24/2023 13:55	WG2034932

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.000	U	0.139	0.332	04/24/2023 13:55	WG2034932
(T) Barium-133	*68.8*			*30.0-143*	*04/24/2023 13:55*	WG2034932

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

MW-13

Collected date/time: 03/21/23 14:25

SAMPLE RESULTS - 03

L1597599

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.887		0.260	0.461	04/21/2023 10:57	WG2044320
(T) Barium	*103*			*30.0-143*	*04/21/2023 10:57*	WG2044320
(T) Yttrium	*95.4*			*30.0-136*	*04/21/2023 10:57*	WG2044320

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.29		0.417	0.586	04/24/2023 13:55	WG2034932

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.406		0.326	0.362	04/24/2023 13:55	WG2034932
(T) Barium-133	*60.7*			*30.0-143*	*04/24/2023 13:55*	WG2034932

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	-0.0245	U	0.248	0.468	04/21/2023 10:57	WG2044320
(T) Barium	*94.3*			*30.0-143*	*04/21/2023 10:57*	WG2044320
(T) Yttrium	*98.5*			*30.0-136*	*04/21/2023 10:57*	WG2044320

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.828		0.595	0.728	04/24/2023 13:55	WG2034932

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.828		0.541	0.558	04/24/2023 13:55	WG2034932
(T) Barium-133	*51.0*			*30.0-143*	*04/24/2023 13:55*	WG2034932

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.151	U	0.205	0.383	04/21/2023 10:57	WG2044320
(T) Barium	*100*			*30.0-143*	*04/21/2023 10:57*	WG2044320
(T) Yttrium	*100*			*30.0-136*	*04/21/2023 10:57*	WG2044320

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.850		0.402	0.470	04/24/2023 13:55	WG2034932

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.699		0.346	0.273	04/24/2023 13:55	WG2034932
(T) Barium-133	*78.0*			*30.0-143*	*04/24/2023 13:55*	WG2034932

Method Blank (MB)

(MB) R3916733-1 04/21/23 10:57

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-228	0.150	J	0.126	0.234
(T) Barium	*113*		*113*	
(T) Yttrium	*116*		*116*	

L1597559-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597559-01 04/21/23 10:57 • (DUP) R3916733-5 04/21/23 10:57

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.225	0.237	0.419	0.691	0.335	0.419	1	102	1.14		20	3
(T) Barium	*111*			*117*	*117*							
(T) Yttrium	*105*			*99.5*	*99.5*							

Laboratory Control Sample (LCS)

(LCS) R3916733-2 04/21/23 10:57

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.38	108	80.0-120	
(T) Barium			*113*		
(T) Yttrium			*109*		

L1597617-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597617-03 04/21/23 10:57 • (MS) R3916733-3 04/21/23 10:57 • (MSD) R3916733-4 04/21/23 10:57

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0	-0.0118	9.99	9.26	99.9	92.6	1	70.0-130			7.57		20
(T) Barium		*96.8*			*108*	*111*							
(T) Yttrium		*103*			*104*	*100*							

Method Blank (MB)

(MB) R3916774-1 04/24/23 13:55

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-226	0.0833	J	0.0825	0.105
(T) Barium-133	*62.7*		*62.7*	

L1597598-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597598-01 04/24/23 13:55 • (DUP) R3916774-5 04/24/23 13:55

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.293	0.306	0.403	0.00738	0.248	0.403	1	190	0.725	U	20	3
(T) Barium-133	*71.3*			*80.2*	*80.2*							

Laboratory Control Sample (LCS)

(LCS) R3916774-2 04/24/23 13:55

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.01	5.42	108	80.0-120	
(T) Barium-133			*71.3*		

L1597599-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597599-05 04/24/23 13:55 • (MS) R3916774-3 04/24/23 13:55 • (MSD) R3916774-4 04/24/23 13:55

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.0	0.699	21.2	20.9	103	101	1	75.0-125			1.42		20
(T) Barium-133		*78.0*			*79.2*	*78.6*							

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
S&ME - Cincinnati
862 E. Crescentville Rd.
Cincinnati. OH 45246

Billing Information:
Accounts Payable
AP@smeinc.com

Report to: Vince Epps
Email To: vepps@smeinc.com

Project Description: Zimmer Station
City/State Collected: Moscow, OH
Please Circle: PT MT CT ET

Phone: 513-771-8471
Client Project # 7217-17-001D
Lab Project # LITEGNTN-ZIMMER

Collected by (print): Carter Herber
Site/Facility ID # WHZ Unit 121 (D Basin)
P.O. #

Collected by (signature):
Immediately Packed on Ice N ____ Y X

Rush? (Lab MUST Be Notified)
____ Same Day ____ Five Day
____ Next Day ____ 5 Day (Rad Only)
____ Two Day ____ 10 Day (Rad Only)
____ Three Day
Date Results Needed
Quote #

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Alk Bi/Ca, Cl, F, SO4 125mlHDPE-NonPres	CCR Metals+B, Li, K, Na, Mg 250mlHDPE-HNO3	RA-226/228COMB 1L-HPE-HNO3	TDS 250mlHDPE-NonPres	Remarks	Sample # (lab only)
MW-09	Grab	GW	NA	3/21/23	~~1335~~ 1345	5	X	X	X	X		01
MW-12	Grab	GW	NA	3/20/23	1505		X	X	X	X		02
MW-13	Grab	GW	NA	3/21/23	1425		X	X	X	X		03
MW-14	Grab	GW	NA	3/21/23	1520		X	X	X	X		04
MW-15	Grab	GW	NA	3/21/23	1610		X	X	X	X		05
DUP-2	Grab	GW	NA	3/21/23	—		X	X		X		

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE
12065 Lebanon Rd Mount Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1597599
H068

Acctnum: LITEGNTN
Template:
Prelogin:
PM: 134
PB:
Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:
pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____
Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Carter Herber	3/22/23	1740	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No
HCL / MeoH
TBR
Temp: °C Bottles Received: 28
Date: 3/23/23 Time: 0915

If preservation required by Login: Date/Time
Hold:
Condition: NCF / OK

Tracking Numbers	Temperature
6351 9911 4700	4.0 to -4.0 NSAT
4754	2.5 to -2.5 NSAT

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	March 21, 2023
Source Well:	MW-01	Purge Time:	25 Minutes
Locked?:	Yes	Sample Date:	March 21, 2023
Sampled By:	Carter Harlan	Sample Time:	9:10
Weather:	Sunny	Air Temp:	30F

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				46.20	ft-TOC
Total Well Depth:				86.40	ft-TOC
Height of Water Column:				40.20	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	6.6	Gal
3 * Well Volume	19.68	Gal
5 * Well Volume	32.80	Gal

Well Purging Information

Purge Method:		Bladder Pump	Start Time:	8:40	End Time:	9:05	
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:		psi
Pump Intake Depth from Top of Casing:			ft-TOC				
Water Column Above Pump Intake:			feet		Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:			ft-TOC	**Comments:**			
Final Volume Purged:		2.0	Gallons				
Final Volume Purge Rate:		300	mL/min				
Well Purged Dry?:			(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	08:40	0.0	---	---	---	---	---	---	---	---	Start Purging
	08:45	0.4	300	46.20	12.5	7.0	1.091	0.8	84	3.01	Clear, no odor
	08:50	0.8	300	46.18	13.2	6.9	1.128	0.6	84	0.63	Clear, no odor
	08:55	1.2	300	46.18	13.4	6.9	1.137	0.6	87	0.53	Clear, no odor
	09:00	1.6	300	46.18	13.5	6.9	1.136	0.7	89	0.67	Clear, no odor
	09:05	2.0	300	46.18	13.5	6.9	1.137	0.8	91	0.17	Clear, no odor
Final:	09:05	2.0	300	46.18	13.5	6.9	1.137	0.8	91	0.2	End of Purging

Sample Method: Bladder Pump Sample Start Time: 09:10 Sample End Time: 09:25

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	March 21, 2023
Source Well:	MW-03S	Purge Time:	25 Minutes
Locked?:	Yes	Sample Date:	March 21, 2023
Sampled By:	Carter Harlan	Sample Time:	11:55
Weather:	Sunny	Air Temp:	43F

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				48.68	ft-TOC
Total Well Depth:				68.60	ft-TOC
Height of Water Column:				19.92	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	13.0	Gal
3 * Well Volume	39.01	Gal
5 * Well Volume	65.01	Gal

Well Purging Information

Purge Method:		Bladder Pump		Start Time:	11:25	End Time:	11:50
(If Used)	Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:				ft-TOC			
Water Column Above Pump Intake:				feet	Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:				ft-TOC	**Comments:**		
Final Volume Purged:		1.3		Gallons			
Final Volume Purge Rate:		200		mL/min			
Well Purged Dry?:				(Yes/No)			

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	11:25	0.0	---	---	---	---	---	---	---	---	Start Purging
	11:30	0.3	200	48.63	15.1	6.8	1.481	0.3	91	2.27	Clear, no odor
	11:35	0.5	200	48.63	15.3	6.9	1.585	0.3	91	0.42	Clear, no odor
	11:40	0.8	200	48.63	15.6	6.9	1.594	0.3	91	0.23	Clear, no odor
	11:45	1.1	200	48.63	15.5	6.9	1.600	0.3	91	0.73	Clear, no odor
	11:50	1.3	200	48.63	15.6	6.9	1.601	0.3	91	0.19	Clear, no odor
Final:	11:50	1.3	200	48.63	15.6	6.9	1.601	0.3	91	0.2	End of Purging

Sample Method: Bladder Pump Sample Start Time: 11:55 Sample End Time: 12:10

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	March 20, 2023
Source Well:	MW-07	Purge Time:	35 Minutes
Locked?:	Yes	Sample Date:	March 20, 2023
Sampled By:	Carter Harlan	Sample Time:	11:55
Weather:	Sunny	Air Temp:	38F

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				47.55	ft-TOC
Total Well Depth:				64.24	ft-TOC
Height of Water Column:				16.69	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	10.9	Gal
3 * Well Volume	32.68	Gal
5 * Well Volume	54.47	Gal

Well Purging Information

Purge Method:		Bladder Pump		Start Time:	11:20	End Time:	11:55
(If Used)	Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:				ft-TOC			
Water Column Above Pump Intake:				feet	Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:				ft-TOC	**Comments:**		
Final Volume Purged:		1.6		Gallons			
Final Volume Purge Rate:		200		mL/min			
Well Purged Dry?:				(Yes/No)			

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	11:20	0.0	---	---	---	---	---	---	---	---	Start Purging
	11:25	0.3	200	47.55	12.3	7.3	0.943	4.1	85	5.82	Clear, no odor
	11:30	0.5	200	47.55	13.3	7.1	0.968	2.5	85	4.52	Clear, no odor
	11:35	0.8	200	47.55	13.6	7.0	0.993	0.7	86	3.66	Clear, no odor
	11:40	1.1	200	47.55	13.6	7.0	1.000	0.6	87	2.65	Clear, no odor
	11:45	1.3	200	47.55	13.8	7.0	1.002	0.5	87	2.22	Clear, no odor
	11:50	1.6	200	47.55	13.9	7.0	1.007	0.4	88	1.31	Clear, no odor
	11:55										
Final:	11:55	1.6	200	47.55	13.9	7.0	1.007	0.4	88	1.3	End of Purging

Sample Method: Bladder Pump Sample Start Time: 11:55 Sample End Time: 12:10

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	March 20, 2023
Source Well:	MW-08	Purge Time:	25 Minutes
Locked?:	Yes	Sample Date:	March 20, 2023
Sampled By:	Carter Harlan	Sample Time:	13:45
Weather:	Sunny	Air Temp:	42F

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				46.52	ft-TOC
Total Well Depth:				95.60	ft-TOC
Height of Water Column:				49.08	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	32.0	Gal
3 * Well Volume	96.11	Gal
5 * Well Volume	160.19	Gal

Well Purging Information

Purge Method:		Bladder Pump	Start Time:	13:15	End Time:	13:40	
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:		psi
Pump Intake Depth from Top of Casing:			ft-TOC				
Water Column Above Pump Intake:			feet		Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:			ft-TOC	**Comments:**			
Final Volume Purged:		1.5	Gallons				
Final Volume Purge Rate:		200	mL/min				
Well Purged Dry?:		No	(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	13:15	0.0	---	---	---	---	---	---	---	---	Start Purging
	13:20	0.3	250	46.55	13.1	7.3	0.637	2.5	88	0.49	Clear, no odor
	13:25	0.7	250	46.55	12.7	7.0	0.664	2.2	89	0.33	Clear, no odor
	13:30	0.9	200	46.55	11.9	7.0	0.665	2.3	90	0.65	Clear, no odor
	13:35	1.2	200	46.55	11.5	7.0	0.662	2.3	91	0.33	Clear, no odor
	13:40	1.5	200	46.55	11.8	7.0	0.661	2.2	90	0.31	Clear, no odor
Final:	13:40	1.5	200	46.55	11.8	7.0	0.661	2.2	90	0.3	End of Purging

Sample Method: Bladder Pump Sample Start Time: 13:45 Sample End Time: 14:00

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	March 21, 2023
Source Well:	MW-09	Purge Time:	23 Minutes
Locked?:	No	Sample Date:	March 21, 2023
Sampled By:	Carter Harlan	Sample Time:	13:35
Weather:	Sunny	Air Temp:	47F

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				47.65	ft-TOC
Total Well Depth:				93.50	ft-TOC
Height of Water Column:				45.85	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	29.9	Gal
3 * Well Volume	89.79	Gal
5 * Well Volume	149.64	Gal

Well Purging Information

Purge Method:		Bladder Pump	Start Time:	13:07	End Time:	13:30	
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:		psi
Pump Intake Depth from Top of Casing:			ft-TOC				
Water Column Above Pump Intake:			feet		Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:			ft-TOC	**Comments:**			
Final Volume Purged:		1.7	Gallons				
Final Volume Purge Rate:		300	mL/min				
Well Purged Dry?:			(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	13:07	0.0	---	---	---	---	---	---	---	---	Start Purging
	13:10	0.2	250	47.65	11.5	7.2	1.393	0.4	91	0.83	Clear, no odor
	13:15	0.5	250	47.65	14.7	7.1	1.406	0.2	89	0.75	Clear, no odor
	13:20	0.9	250	47.65	14.6	7.0	1.357	0.2	89	3.50	Clear, no odor
	13:25	1.3	300	47.65	14.5	7.0	1.367	0.2	89	4.08	Clear, no odor
	13:30	1.7	300	47.65	14.5	7.0	1.403	0.2	89	3.28	Clear, no odor
Final:	13:30	1.7	300	47.65	14.5	7.0	1.403	0.2	89	3.3	End of Purging

Sample Method: Bladder Pump Sample Start Time: 13:35 Sample End Time: 13:50

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	March 20, 2023
Source Well:	MW-10	Purge Time:	30 Minutes
Locked?:	Yes	Sample Date:	March 20, 2023
Sampled By:	Carter Harlan	Sample Time:	16:00
Weather:	Sunny	Air Temp:	47F

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				47.43	ft-TOC
Total Well Depth:				63.68	ft-TOC
Height of Water Column:				16.25	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	2.7	Gal
3 * Well Volume	7.96	Gal
5 * Well Volume	13.26	Gal

Well Purging Information

Purge Method:	Bladder Pump	Start Time:	15:25	End Time:	15:55		
(If Used) Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:		psi
Pump Intake Depth from Top of Casing:		ft-TOC					
Water Column Above Pump Intake:		feet	Flow Through Cell Vol:		200	mL	
DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	**Comments:**				
Final Volume Purged:	1.6	Gallons	Duplicate sample collected (DUP-1)				
Final Volume Purge Rate:	200	mL/min					
Well Purged Dry?:		(Yes/No)					

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	15:25	0.0	---	---	---	---	---	---	---	---	Start Purging
	15:30	0.3	200	47.45	13.2	7.2	1.338	2.2	87	12.5	Clear, no odor
	15:35	0.5	200	47.45	14.0	7.0	1.391	1.9	87	47.3	Cloudy, no odor
	15:40	0.8	200	47.45	13.9	7.0	1.379	1.1	87	23.2	Clear, no odor
	15:45	1.1	200	47.45	13.9	7.0	1.366	1.0	87	8.66	Clear, no odor
	15:50	1.3	200	47.45	13.9	7.0	1.354	0.9	87	5.19	Clear, no odor
	15:55	1.6	200	47.45	14.0	7.0	1.340	0.9	87	3.07	Clear, no odor
Final:	15:55	1.6	200	47.45	14.0	7.0	1.340	0.9	87	3.1	End of Purging

Sample Method: Bladder Pump Sample Start Time: 16:00 Sample End Time: 16:20

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes: Duplicate sample collected (DUP-1)

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	March 20, 2023
Source Well:	MW-11	Purge Time:	25 Minutes
Locked?:	No	Sample Date:	March 20, 2023
Sampled By:	Carter Harlan	Sample Time:	12:50
Weather:	Sunny	Air Temp:	40F

Water Level & Well Data

			Measuring Point:	Top of Casing	
			Depth to Water:	44.49	ft-TOC
			Total Well Depth:	64.31	ft-TOC
			Height of Water Column:	19.82	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	3.2	Gal
3 * Well Volume	9.70	Gal
5 * Well Volume	16.17	Gal

Well Purging Information

	Purge Method:	Bladder Pump	Start Time:	12:20	End Time:	12:45	
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:		psi
	Pump Intake Depth from Top of Casing:		ft-TOC				
	Water Column Above Pump Intake:		feet		Flow Through Cell Vol:	200	mL
	DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC		**Comments:**		
	Final Volume Purged:	1.3	Gallons				
	Final Volume Purge Rate:	200	mL/min				
	Well Purged Dry?:		(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	12:20	0.0	---	---	---	---	---	---	---	---	Start Purging
	12:25	0.3	200	44.49	14.2	7.1	0.726	2.4	89	8.58	Clear, no odor
	12:30	0.5	200	44.49	13.9	7.0	0.765	0.7	89	8.94	Clear, no odor
	12:35	0.8	200	44.49	13.8	7.0	0.765	0.5	89	5.17	Clear, no odor
	12:40	1.1	200	44.49	14.0	7.0	0.763	0.4	89	3.56	Clear, no odor
	12:45	1.3	200	44.49	14.0	7.0	0.765	0.4	90	2.49	Clear, no odor
Final:	12:45	1.3	200	44.49	14.0	7.0	0.765	0.4	90	2.5	End of Purging

Sample Method: Bladder Pump Sample Start Time: 12:50 Sample End Time: 13:05

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	March 20, 2023
Source Well:	MW-12	Purge Time:	30 Minutes
Locked?:	Yes	Sample Date:	March 20, 2023
Sampled By:	Carter Harlan	Sample Time:	15:05
Weather:	Sunny	Air Temp:	45F

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				45.85	ft-TOC
Total Well Depth:				62.92	ft-TOC
Height of Water Column:				17.07	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	11.1	Gal
3 * Well Volume	33.43	Gal
5 * Well Volume	55.71	Gal

Well Purging Information

Purge Method:		Bladder Pump	Start Time:	14:30	End Time:	15:00	
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:		psi
Pump Intake Depth from Top of Casing:			ft-TOC				
Water Column Above Pump Intake:			feet		Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:			ft-TOC		**Comments:**		
Final Volume Purged:		2.0	Gallons				
Final Volume Purge Rate:		250	mL/min				
Well Purged Dry?:			(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	14:30	0.0	---	---	---	---	---	---	---	---	Start Purging
	14:35	0.4	300	45.85	13.8	6.9	0.801	2.4	90	18.0	Clear, no odor
	14:40	0.7	250	45.85	13.8	6.9	0.891	2.3	90	19.3	Clear, no odor
	14:45	1.1	250	45.85	14.0	6.9	0.808	2.3	88	16.3	Clear, no odor
	14:50	1.4	250	45.85	14.1	6.9	0.808	1.9	88	9.81	Clear, no odor
	14:55	1.7	250	45.85	13.9	6.9	0.809	2.0	88	5.70	Clear, no odor
	15:00	2.0	250	45.85	14.1	6.9	0.809	2.0	88	3.09	Clear, no odor
Final:	15:00	2.0	250	45.85	14.1	6.9	0.809	2.0	88	3.1	End of Purging

Sample Method: Bladder Pump Sample Start Time: 15:05 Sample End Time: 15:20

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	March 21, 2023
Source Well:	MW-13	Purge Time:	23 Minutes
Locked?:	Yes	Sample Date:	March 21, 2023
Sampled By:	Carter Harlan	Sample Time:	14:25
Weather:	Sunny	Air Temp:	51F

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				37.42	ft-TOC
Total Well Depth:				54.31	ft-TOC
Height of Water Column:				16.89	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	11.0	Gal
3 * Well Volume	33.08	Gal
5 * Well Volume	55.13	Gal

Well Purging Information

Purge Method:		Bladder Pump	Start Time:	13:57	End Time:	14:20	
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:		psi
Pump Intake Depth from Top of Casing:			ft-TOC				
Water Column Above Pump Intake:			feet		Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:			ft-TOC	**Comments:**			
Final Volume Purged:		1.8	Gallons	Duplicate sample collected (DUP-2)			
Final Volume Purge Rate:		300	mL/min				
Well Purged Dry?:			(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	13:57	0.0	---	---	---	---	---	---	---	---	Start Purging
	14:00	0.2	300	37.42	15.3	7.0	0.885	0.1	90	22.3	Clear, no odor
	14:05	0.6	300	37.41	15.3	7.0	0.934	0.1	88	14.0	Clear, no odor
	14:10	1.0	300	37.41	15.3	7.0	0.948	0.1	88	4.94	Clear, no odor
	14:15	1.4	300	37.41	15.3	7.0	0.967	0.1	88	2.73	Clear, no odor
	14:20	1.8	300	37.41	15.2	7.0	0.977	0.2	88	2.34	Clear, no odor
Final:	14:20	1.8	300	37.41	15.2	7.0	0.977	0.2	88	2.3	End of Purging

Sample Method: Bladder Pump Sample Start Time: 14:25 Sample End Time: 14:40

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes: Duplicate sample collected (DUP-2)

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	March 21, 2023
Source Well:	MW-14	Purge Time:	30 Minutes
Locked?:	Yes	Sample Date:	March 21, 2023
Sampled By:	Carter Harlan	Sample Time:	15:20
Weather:	Sunny	Air Temp:	54 F

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				41.97	ft-TOC
Total Well Depth:				58.75	ft-TOC
Height of Water Column:				16.78	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	11.0	Gal
3 * Well Volume	32.86	Gal
5 * Well Volume	54.77	Gal

Well Purging Information

Purge Method:		Bladder Pump		Start Time:	14:45	End Time:	15:15
(If Used)	Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:				ft-TOC			
Water Column Above Pump Intake:				feet	Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:				ft-TOC	**Comments:**		
Final Volume Purged:		1.6		Gallons			
Final Volume Purge Rate:		200		mL/min			
Well Purged Dry?:				(Yes/No)			

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	14:45	0.0	---	---	---	---	---	---	---	---	Start Purging
	14:50	0.3	200	42.00	14.8	6.9	1.130	0.3	154	11.8	Clear, No odor
	14:55	0.5	200	42.00	15.0	6.8	1.230	0.3	164	10.8	Clear, No odor
	15:00	0.8	200	42.00	15.0	6.9	1.234	0.3	91	28.5	Clear, No odor
	15:05	1.1	200	42.00	15.0	6.9	1.239	0.3	88	9.64	Clear, No odor
	15:10	1.3	200	42.00	15.0	6.9	1.243	0.3	88	2.31	Clear, No odor
	15:15	1.6	200	42.00	15.1	6.9	1.248	0.2	88	1.39	Clear, No odor
Final:	15:15	1.6	200	42.00	15.1	6.9	1.248	0.2	88	1.4	End of Purging

Sample Method: Bladder Pump Sample Start Time: 15:20 Sample End Time: 15:35

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	March 21, 2023
Source Well:	MW-15	Purge Time:	25 Minutes
Locked?:	Yes	Sample Date:	March 21, 2023
Sampled By:	Carter Harlan	Sample Time:	16:10
Weather:	Sunny	Air Temp:	55F

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				48.50	ft-TOC
Total Well Depth:				61.96	ft-TOC
Height of Water Column:				13.46	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	8.8	Gal
3 * Well Volume	26.36	Gal
5 * Well Volume	43.93	Gal

Well Purging Information

Purge Method:		Bladder Pump		Start Time:	15:40	End Time:	16:05
(If Used)	Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:				ft-TOC			
Water Column Above Pump Intake:				feet	Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:				ft-TOC	**Comments:**		
Final Volume Purged:		2.0		Gallons			
Final Volume Purge Rate:		300		mL/min			
Well Purged Dry?:				(Yes/No)			

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	15:40	0.0	---	---	---	---	---	---	---	---	Start Purging
	15:45	0.4	300	48.54	15.1	6.8	1.718	0.2	88	4.34	Clear, no odor
	15:50	0.8	300	48.53	15.1	6.9	1.727	0.2	88	2.35	Clear, no odor
	15:55	1.2	300	48.55	15.1	6.9	1.725	0.2	88	1.34	Clear, no odor
	16:00	1.6	300	48.54	15.1	6.9	1.721	0.2	88	1.08	Clear, no odor
	16:05	2.0	300	48.54	15.0	6.9	1.708	0.2	88	0.61	Clear, no odor
Final:	16:05	2.0	300	48.54	15.0	6.9	1.708	0.2	88	0.6	End of Purging

Sample Method: Bladder Pump Sample Start Time: 16:10 Sample End Time: 16:25

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	March 21, 2023
Source Well:	MW-16	Purge Time:	25 Minutes
Locked?:	Yes	Sample Date:	March 21, 2023
Sampled By:	Carter Harlan	Sample Time:	10:10
Weather:	Sunny	Air Temp:	34F

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				49.89	ft-TOC
Total Well Depth:				69.78	ft-TOC
Height of Water Column:				19.89	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	13.0	Gal
3 * Well Volume	38.95	Gal
5 * Well Volume	64.92	Gal

Well Purging Information

Purge Method:	Bladder Pump	Start Time:	9:40	End Time:	10:05		
(If Used) Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:		psi
Pump Intake Depth from Top of Casing:		ft-TOC					
Water Column Above Pump Intake:		feet	Flow Through Cell Vol:		200	mL	
DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	**Comments:**				
Final Volume Purged:	2.0	Gallons					
Final Volume Purge Rate:	300	mL/min					
Well Purged Dry?:		(Yes/No)					

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	09:40	0.0	---	---	---	---	---	---	---	---	Start Purging
	09:45	0.4	300	49.89	14.1	6.9	1.306	0.4	88	1.25	Clear, no odor
	09:50	0.8	300	49.89	14.7	6.9	1.304	0.3	87	0.60	Clear, no odor
	09:55	1.2	300	49.89	14.9	6.9	1.303	0.2	87	0.69	Clear, no odor
	10:00	1.6	300	49.89	15.0	6.9	1.302	0.2	88	0.30	Clear, no odor
	10:05	2.0	300	49.89	14.6	6.9	1.313	0.3	89	0.18	Clear, no odor
Final:	10:05	2.0	300	49.89	14.6	6.9	1.313	0.3	89	0.2	End of Purging

Sample Method: Bladder Pump Sample Start Time: 10:10 Sample End Time: 10:25

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	March 21, 2023
Source Well:	MW-17	Purge Time:	25 Minutes
Locked?:	Yes	Sample Date:	March 21, 2023
Sampled By:	Carter Harlan	Sample Time:	11:00
Weather:	Sunny	Air Temp:	40F

Water Level & Well Data

			Measuring Point:	Top of Casing	
			Depth to Water:	49.49	ft-TOC
			Total Well Depth:	69.80	ft-TOC
			Height of Water Column:	20.31	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	13.3	Gal
3 * Well Volume	39.77	Gal
5 * Well Volume	66.29	Gal

Well Purging Information

	Purge Method:	Bladder Pump	Start Time:	10:30	End Time:	10:55	
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:		psi
	Pump Intake Depth from Top of Casing:		ft-TOC				
	Water Column Above Pump Intake:		feet		Flow Through Cell Vol:	200	mL
	DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC		**Comments:**		
	Final Volume Purged:	2.0	Gallons				
	Final Volume Purge Rate:	300	mL/min				
	Well Purged Dry?:		(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	10:30	0.0	---	---	---	---	---	---	---	---	Start Purging
	10:35	0.4	300	49.50	15.2	6.9	1.378	0.5	93	29.5	Clear, no odor
	10:40	0.8	300	49.50	15.5	6.9	1.395	0.3	92	22.3	Clear, no odor
	10:45	1.2	300	49.50	15.5	7.0	1.393	0.3	91	8.21	Clear, no odor
	10:50	1.6	300	49.50	15.2	7.0	1.396	0.2	91	4.11	Clear, no odor
	10:55	2.0	300	49.50	15.0	7.0	1.393	0.2	92	3.30	Clear, no odor
Final:	10:55	2.0	300	49.50	15.0	7.0	1.393	0.2	92	3.3	End of Purging

Sample Method: Bladder Pump Sample Start Time: 11:00 Sample End Time: 11:15

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	March 21, 2023
Source Well:	MW-18	Purge Time:	25 Minutes
Locked?:	Yes	Sample Date:	March 21, 2023
Sampled By:	Carter Harlan	Sample Time:	12:40
Weather:	Sunny	Air Temp:	45F

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				49.93	ft-TOC
Total Well Depth:				70.20	ft-TOC
Height of Water Column:				20.27	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	13.2	Gal
3 * Well Volume	39.69	Gal
5 * Well Volume	66.16	Gal

Well Purging Information

Purge Method:	Bladder Pump	Start Time:	12:10	End Time:	12:35		
(If Used) Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:		psi
Pump Intake Depth from Top of Casing:		ft-TOC					
Water Column Above Pump Intake:		feet	Flow Through Cell Vol:		200	mL	
DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	**Comments:**				
Final Volume Purged:	2.0	Gallons					
Final Volume Purge Rate:	300	mL/min					
Well Purged Dry?:		(Yes/No)					

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	12:10	0.0	---	---	---	---	---	---	---	---	Start Purging
	12:15	0.4	300	49.89	14.2	7.2	2.052	0.3	91	0.97	Clear, no odor
	12:20	0.8	300	49.89	15.6	7.1	2.034	0.2	89	0.82	Clear, no odor
	12:25	1.2	300	49.89	15.6	7.0	2.028	0.2	89	0.48	Clear, no odor
	12:30	1.6	300	49.89	15.6	7.0	2.026	0.1	89	0.38	Clear, no odor
	12:35	2.0	300	49.89	15.7	7.0	2.023	0.1	89	0.21	Clear, no odor
Final:	12:35	2.0	300	49.89	15.7	7.0	2.023	0.1	89	0.2	End of Purging

Sample Method: Bladder Pump Sample Start Time: 12:40 Sample End Time: 12:55

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

APPENDIX A.
ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 1, 2023
ZIMMER POWER PLANT, D BASIN
ZIM-257-121

Zimmer Station			
Well ID	**Date**	**Time**	**Depth to Water**
D Basin - Unit 121			
MW-01	3/20/2023	10:37	45.97
MW-08	3/20/2023	8:41	46.57
MW-09	3/20/2023	9:53	47.87
MW-12	3/20/2023	10:43	45.89
MW-13	3/20/2023	9:48	37.64
MW-14	3/20/2023	9:45	42.32
MW-15	3/20/2023	9:41	48.84
Gypsum Recycle Pond - Unit 124			
MW-07A	3/20/2023	8:55	46.63
MW-10	3/20/2023	15:23	47.43
MW-11	3/20/2023	9:03	44.54
Coal Pile Runoff Pond - Unit 125			
MW-03S	3/20/2023	10:12	48.76
MW-16	3/20/2023	10:19	50.06
MW-17	3/20/2023	10:15	49.68
MW-18	3/20/2023	10:00	50.15
Piezometers			
PZ-1	3/20/2023	9:24	46.55
PZ-2	3/20/2023	9:18	40.90
PZ-3	3/20/2023	9:30	48.02

APPENDIX A.
ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 1, 2023
ZIMMER POWER PLANT, D BASIN
ZIM-257-121

Well I.D.	Date	Time	Depth	Temp	pH	Spec. Cond.	Dissolved Oxygen	ORP*	Turbidity
MW-01	3/21/2023	9:10	45.97	13.52	6.88	1.137	0.81	90.8	0.17
MW-08	3/20/2023	13:45	46.57	11.8	7	0.661	2.22	90.2	0.31
MW-09	3/21/2023	13:35	47.87	14.5	7.01	1.403	0.16	88.9	3.28
MW-12	3/20/2023	15:05	45.89	14.1	6.91	0.809	2.02	87.8	3.09
MW-13	3/21/2023	14:25	37.64	15.2	7.01	0.977	0.16	88.1	2.34
MW-14	3/21/2023	9:10	42.32	15.1	6.89	1.248	0.21	87.9	1.39
MW-15	3/21/2023	16:10	48.84	15	6.9	1.708	0.17	88.3	0.61
MW-07A	3/20/2023	11:55	46.63	13.9	6.98	1.007	0.38	88.3	1.31
MW-10	3/20/2023	16:00	47.43	14.0	7.00	1.34	0.87	86.5	3.07
MW-11	3/20/2023	12:50	44.54	14	7.02	0.765	0.39	89.5	2.49
MW-03S	3/21/2023	11:55	48.76	15.6	6.86	1.601	0.25	90.6	0.19
MW-16	3/21/2023	10:10	50.06	14.6	6.87	1.313	0.27	88.6	0.18
MW-17	3/21/2023	11:00	49.68	15	6.95	1.393	0.22	91.9	3.3
MW-18	3/21/2023	12:40	50.15	15.7	7	2.023	0.12	88.6	0.21

Pace Analytical®

ANALYTICAL REPORT

October 06, 2023

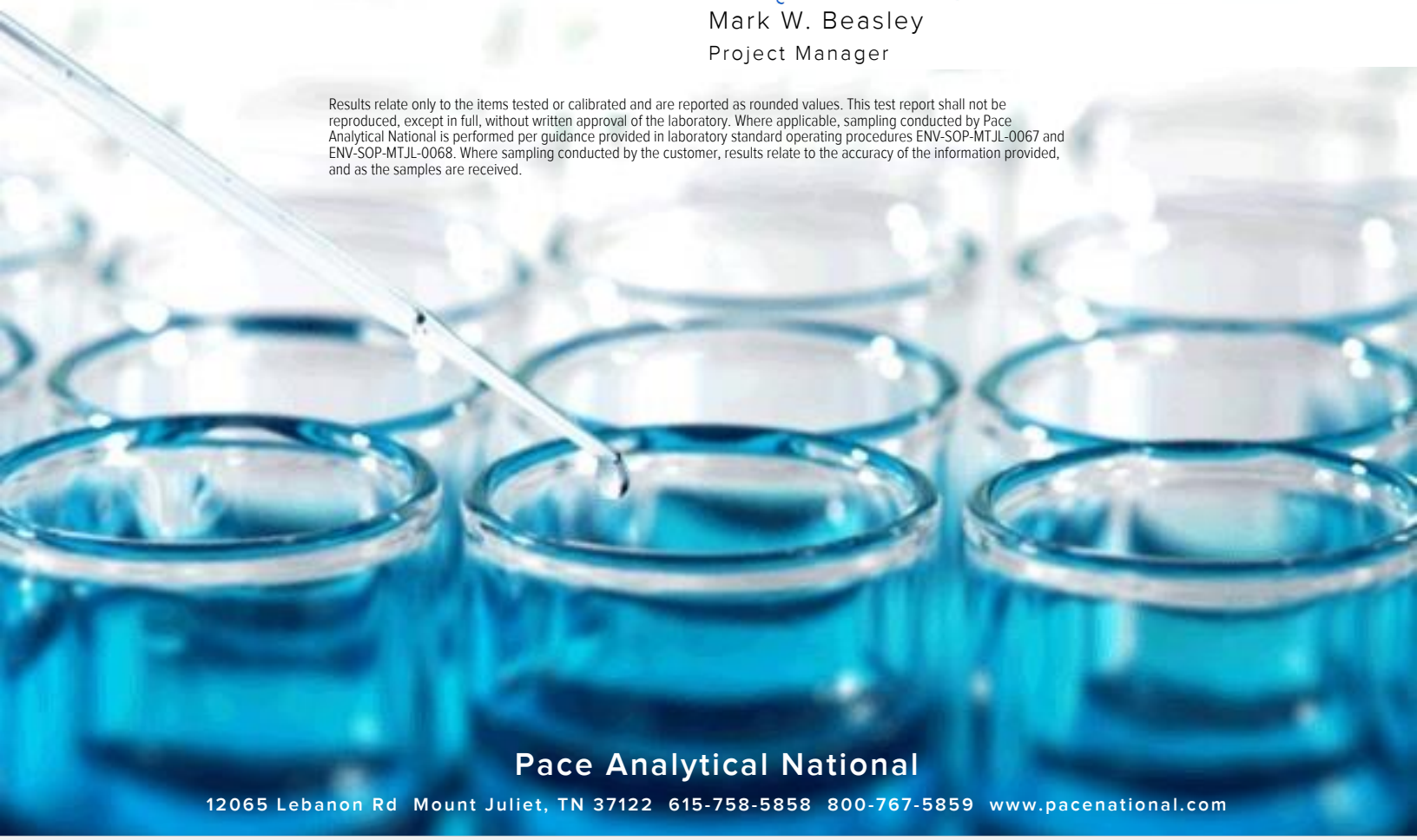
Revised Report

S&ME - Nashville, TN

Sample Delivery Group:	L1658192
Samples Received:	09/21/2023
Project Number:	7217-17-001D
Description:	
Site:	WHZ UNIT 121 (D BASIN)
Report To:	Vince Epps 862 East Crescentville Road Cincinnati, OH 45246

Entire Report Reviewed By:

Mark W. Beasley
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

MW-09 L1658192-01 GW

			Collected by	Collected date/time	Received date/time	
				09/19/23 13:15	09/21/23 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2137467	1	09/22/23 12:48	09/24/23 15:45	JAC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2137674	1	09/25/23 10:06	09/25/23 10:06	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	1	09/24/23 04:37	09/24/23 04:37	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	10	09/24/23 04:50	09/24/23 04:50	GEB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/25/23 13:04	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/26/23 13:02	JPD	Mt. Juliet, TN

MW-09 L1658192-02 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				09/19/23 13:15	09/21/23 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2140277	1	09/27/23 12:21	09/29/23 21:09	DDD	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2137491	1	09/25/23 12:34	09/29/23 21:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2137491	1	09/25/23 12:34	09/25/23 19:20	RGT	Mt. Juliet, TN

MW-12 L1658192-03 GW

			Collected by	Collected date/time	Received date/time	
				09/20/23 09:50	09/21/23 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2137467	1	09/22/23 12:48	09/24/23 15:45	JAC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2137674	1	09/25/23 12:01	09/25/23 12:01	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	1	09/24/23 05:02	09/24/23 05:02	GEB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/25/23 13:17	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/26/23 13:27	JPD	Mt. Juliet, TN

MW-12 L1658192-04 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				09/20/23 09:50	09/21/23 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2140277	1	09/27/23 12:21	09/29/23 21:09	DDD	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2137491	1	09/25/23 15:11	09/29/23 21:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2137491	1	09/25/23 15:11	09/26/23 15:47	RGT	Mt. Juliet, TN

MW-13 L1658192-05 GW

			Collected by	Collected date/time	Received date/time	
				09/19/23 15:30	09/21/23 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2137467	1	09/22/23 12:48	09/24/23 15:45	JAC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2137674	1	09/25/23 12:07	09/25/23 12:07	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	1	09/24/23 05:15	09/24/23 05:15	GEB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/25/23 13:20	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/26/23 13:30	JPD	Mt. Juliet, TN

MW-13 L1658192-06 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				09/19/23 15:30	09/21/23 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2140277	1	09/27/23 12:21	09/29/23 21:09	DDD	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2137491	1	09/25/23 15:11	09/29/23 21:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2137491	1	09/25/23 15:11	09/26/23 15:47	RGT	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

SAMPLE SUMMARY

MW-14 L1658192-07 GW

			Collected by	Collected date/time	Received date/time	
				09/19/23 16:40	09/21/23 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2137467	1	09/22/23 12:48	09/24/23 15:45	JAC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2137674	1	09/25/23 12:14	09/25/23 12:14	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	1	09/24/23 05:28	09/24/23 05:28	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	10	09/24/23 05:40	09/24/23 05:40	GEB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/25/23 13:24	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	5	09/24/23 10:58	09/26/23 13:45	JPD	Mt. Juliet, TN

MW-14 L1658192-08 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				09/19/23 16:40	09/21/23 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2140277	1	09/27/23 12:21	09/29/23 21:09	DDD	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2137491	1	09/25/23 15:11	09/29/23 21:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2137491	1	09/25/23 15:11	09/26/23 15:47	RGT	Mt. Juliet, TN

MW-15 L1658192-09 GW

			Collected by	Collected date/time	Received date/time	
				09/20/23 11:15	09/21/23 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2137467	1	09/22/23 12:48	09/24/23 15:45	JAC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2137674	1	09/25/23 12:19	09/25/23 12:19	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	1	09/24/23 05:53	09/24/23 05:53	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	10	09/24/23 06:05	09/24/23 06:05	GEB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/25/23 13:27	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	5	09/24/23 10:58	09/26/23 13:48	JPD	Mt. Juliet, TN

MW-15 L1658192-10 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				09/20/23 11:15	09/21/23 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2140277	1	09/27/23 12:21	09/29/23 21:09	DDD	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2137491	1	09/25/23 15:11	09/29/23 21:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2137491	1	09/25/23 15:11	09/26/23 15:47	RGT	Mt. Juliet, TN

DUP-2 L1658192-11 GW

			Collected by	Collected date/time	Received date/time	
				09/20/23 00:00	09/21/23 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2137489	1	09/22/23 09:57	09/22/23 16:06	JAC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2137674	1	09/25/23 12:26	09/25/23 12:26	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	1	09/24/23 06:18	09/24/23 06:18	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	10	09/24/23 06:31	09/24/23 06:31	GEB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/25/23 13:37	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	5	09/24/23 10:58	09/26/23 13:51	JPD	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

Report Revision History

Level II Report - Version 1: 10/02/23 16:41

Project Narrative

Prelim results

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	683000		13300	1	09/24/2023 15:45	WG2137467

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity	354000		8450	20000	1	09/25/2023 10:06	WG2137674
Alkalinity,Bicarbonate	354000		8450	20000	1	09/25/2023 10:06	WG2137674
Alkalinity,Carbonate	U		8450	20000	1	09/25/2023 10:06	WG2137674

Sample Narrative:

L1658192-01 WG2137674: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	23300		379	1000	1	09/24/2023 04:37	WG2138268
Fluoride	118	J	64.0	150	1	09/24/2023 04:37	WG2138268
Sulfate	218000		5940	50000	10	09/24/2023 04:50	WG2138268

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Arsenic	1.06	J	0.180	2.00	1	09/25/2023 13:04	WG2137818
Barium	19.1		0.381	2.00	1	09/25/2023 13:04	WG2137818
Beryllium	U		0.190	2.00	1	09/25/2023 13:04	WG2137818
Boron	56.0		9.63	30.0	1	09/26/2023 13:02	WG2137818
Cadmium	U		0.150	1.00	1	09/25/2023 13:04	WG2137818
Calcium	164000		93.6	1000	1	09/25/2023 13:04	WG2137818
Chromium	U		1.24	2.00	1	09/25/2023 13:04	WG2137818
Cobalt	1.24	J	0.0596	2.00	1	09/25/2023 13:04	WG2137818
Lead	U		0.849	2.00	1	09/25/2023 13:04	WG2137818
Magnesium	31400		73.5	1000	1	09/25/2023 13:04	WG2137818
Molybdenum	1.46	J	0.348	5.00	1	09/25/2023 13:04	WG2137818
Potassium	2590		108	2000	1	09/25/2023 13:04	WG2137818
Selenium	U		0.300	2.00	1	09/25/2023 13:04	WG2137818
Sodium	16100		376	2000	1	09/25/2023 13:04	WG2137818
Thallium	0.207	J	0.121	2.00	1	09/25/2023 13:04	WG2137818
Lithium	5.57		0.695	2.00	1	09/25/2023 13:04	WG2137818

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.284	J	0.232	0.428	09/29/2023 21:09	WG2140277
(T) Barium	*98.5*			*30.0-143*	*09/29/2023 21:09*	WG2140277
(T) Yttrium	*88.0*			*30.0-136*	*09/29/2023 21:09*	WG2140277

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.522	J	0.353	0.558	09/29/2023 21:09	WG2137491

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.238	J	0.266	0.358	09/25/2023 19:20	WG2137491
(T) Barium-133	*84.2*			*30.0-143*	*09/25/2023 19:20*	WG2137491

MW-12

SAMPLE RESULTS - 03

Collected date/time: 09/20/23 09:50

L1658192

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	488000		10000	1	09/24/2023 15:45	WG2137467

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity	351000		8450	20000	1	09/25/2023 12:01	WG2137674
Alkalinity,Bicarbonate	351000		8450	20000	1	09/25/2023 12:01	WG2137674
Alkalinity,Carbonate	U		8450	20000	1	09/25/2023 12:01	WG2137674

Sample Narrative:

L1658192-03 WG2137674: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	19900		379	1000	1	09/24/2023 05:02	WG2138268
Fluoride	151		64.0	150	1	09/24/2023 05:02	WG2138268
Sulfate	67400		594	5000	1	09/24/2023 05:02	WG2138268

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Arsenic	0.214	J	0.180	2.00	1	09/25/2023 13:17	WG2137818
Barium	54.4		0.381	2.00	1	09/25/2023 13:17	WG2137818
Beryllium	U		0.190	2.00	1	09/25/2023 13:17	WG2137818
Boron	156		9.63	30.0	1	09/26/2023 13:27	WG2137818
Cadmium	U		0.150	1.00	1	09/25/2023 13:17	WG2137818
Calcium	134000		93.6	1000	1	09/25/2023 13:17	WG2137818
Chromium	U		1.24	2.00	1	09/25/2023 13:17	WG2137818
Cobalt	U		0.0596	2.00	1	09/25/2023 13:17	WG2137818
Lead	U		0.849	2.00	1	09/25/2023 13:17	WG2137818
Magnesium	17500		73.5	1000	1	09/25/2023 13:17	WG2137818
Molybdenum	0.408	J	0.348	5.00	1	09/25/2023 13:17	WG2137818
Potassium	1230	J	108	2000	1	09/25/2023 13:17	WG2137818
Selenium	U		0.300	2.00	1	09/25/2023 13:17	WG2137818
Sodium	16300		376	2000	1	09/25/2023 13:17	WG2137818
Thallium	0.160	J	0.121	2.00	1	09/25/2023 13:17	WG2137818
Lithium	5.33		0.695	2.00	1	09/25/2023 13:17	WG2137818

MW-12 SAMPLE RESULTS - 04

Client Sample ID: MW-12 Collected: 09/25/2023 09:55 Project ID: L1658192

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.17		0.234	0.394	09/29/2023 21:09	WG2140277
(T) Barium	*115*			*30.0-143*	*09/29/2023 21:09*	WG2140277
(T) Yttrium	*82.8*			*30.0-136*	*09/29/2023 21:09*	WG2140277

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.35		0.330	0.515	09/29/2023 21:09	WG2137491

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.177	J	0.232	0.331	09/26/2023 15:47	WG2137491
(T) Barium-133	*89.4*			*30.0-143*	*09/26/2023 15:47*	WG2137491

MW-13 SAMPLE RESULTS - 05

Client Sample ID: MW-13 Matrix: Groundwater L1658192-05

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	470000		10000	1	09/24/2023 15:45	WG2137467

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity	363000		8450	20000	1	09/25/2023 12:07	WG2137674
Alkalinity,Bicarbonate	363000		8450	20000	1	09/25/2023 12:07	WG2137674
Alkalinity,Carbonate	U		8450	20000	1	09/25/2023 12:07	WG2137674

Sample Narrative:

L1658192-05 WG2137674: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	17200		379	1000	1	09/24/2023 05:15	WG2138268
Fluoride	193		64.0	150	1	09/24/2023 05:15	WG2138268
Sulfate	75700		594	5000	1	09/24/2023 05:15	WG2138268

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Arsenic	0.775	J	0.180	2.00	1	09/25/2023 13:20	WG2137818
Barium	31.3		0.381	2.00	1	09/25/2023 13:20	WG2137818
Beryllium	U		0.190	2.00	1	09/25/2023 13:20	WG2137818
Boron	71.1		9.63	30.0	1	09/26/2023 13:30	WG2137818
Cadmium	U		0.150	1.00	1	09/25/2023 13:20	WG2137818
Calcium	118000		93.6	1000	1	09/25/2023 13:20	WG2137818
Chromium	U		1.24	2.00	1	09/25/2023 13:20	WG2137818
Cobalt	1.71	J	0.0596	2.00	1	09/25/2023 13:20	WG2137818
Lead	U		0.849	2.00	1	09/25/2023 13:20	WG2137818
Magnesium	24100		73.5	1000	1	09/25/2023 13:20	WG2137818
Molybdenum	0.662	J	0.348	5.00	1	09/25/2023 13:20	WG2137818
Potassium	2620		108	2000	1	09/25/2023 13:20	WG2137818
Selenium	U		0.300	2.00	1	09/25/2023 13:20	WG2137818
Sodium	15500		376	2000	1	09/25/2023 13:20	WG2137818
Thallium	U		0.121	2.00	1	09/25/2023 13:20	WG2137818
Lithium	2.37		0.695	2.00	1	09/25/2023 13:20	WG2137818

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.925		0.229	0.398	09/29/2023 21:09	WG2140277
(T) Barium	*118*			*30.0-143*	*09/29/2023 21:09*	WG2140277
(T) Yttrium	*90.6*			*30.0-136*	*09/29/2023 21:09*	WG2140277

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.26		0.397	0.580	09/29/2023 21:09	WG2137491

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.331	J	0.324	0.422	09/26/2023 15:47	WG2137491
(T) Barium-133	*81.5*			*30.0-143*	*09/26/2023 15:47*	WG2137491

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	731000		13300	1	09/24/2023 15:45	WG2137467

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity	390000		8450	20000	1	09/25/2023 12:14	WG2137674
Alkalinity,Bicarbonate	390000		8450	20000	1	09/25/2023 12:14	WG2137674
Alkalinity,Carbonate	U		8450	20000	1	09/25/2023 12:14	WG2137674

Sample Narrative:

L1658192-07 WG2137674: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	39700		379	1000	1	09/24/2023 05:28	WG2138268
Fluoride	230		64.0	150	1	09/24/2023 05:28	WG2138268
Sulfate	186000		5940	50000	10	09/24/2023 05:40	WG2138268

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Arsenic	0.396	J	0.180	2.00	1	09/25/2023 13:24	WG2137818
Barium	51.1		0.381	2.00	1	09/25/2023 13:24	WG2137818
Beryllium	U		0.190	2.00	1	09/25/2023 13:24	WG2137818
Boron	260		48.2	150	5	09/26/2023 13:45	WG2137818
Cadmium	U		0.150	1.00	1	09/25/2023 13:24	WG2137818
Calcium	159000		93.6	1000	1	09/25/2023 13:24	WG2137818
Chromium	U		1.24	2.00	1	09/25/2023 13:24	WG2137818
Cobalt	1.31	J	0.0596	2.00	1	09/25/2023 13:24	WG2137818
Lead	U		0.849	2.00	1	09/25/2023 13:24	WG2137818
Magnesium	37900		73.5	1000	1	09/25/2023 13:24	WG2137818
Molybdenum	2.45	J	0.348	5.00	1	09/25/2023 13:24	WG2137818
Potassium	3160		108	2000	1	09/25/2023 13:24	WG2137818
Selenium	U		0.300	2.00	1	09/25/2023 13:24	WG2137818
Sodium	31000		376	2000	1	09/25/2023 13:24	WG2137818
Thallium	U		0.121	2.00	1	09/25/2023 13:24	WG2137818
Lithium	2.01		0.695	2.00	1	09/25/2023 13:24	WG2137818

MW-14 SAMPLE RESULTS - 08

Client Sample ID: MW-14 Project ID: L1658192

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.07		0.311	0.545	09/29/2023 21:09	WG2140277
(T) Barium	*104*			*30.0-143*	*09/29/2023 21:09*	WG2140277
(T) Yttrium	*86.3*			*30.0-136*	*09/29/2023 21:09*	WG2140277

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.21		0.389	0.653	09/29/2023 21:09	WG2137491

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.139	J	0.234	0.359	09/26/2023 15:47	WG2137491
(T) Barium-133	*81.4*			*30.0-143*	*09/26/2023 15:47*	WG2137491

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1020000		20000	1	09/24/2023 15:45	WG2137467

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity	414000		8450	20000	1	09/25/2023 12:19	WG2137674
Alkalinity,Bicarbonate	414000		8450	20000	1	09/25/2023 12:19	WG2137674
Alkalinity,Carbonate	U		8450	20000	1	09/25/2023 12:19	WG2137674

Sample Narrative:

L1658192-09 WG2137674: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	48700		379	1000	1	09/24/2023 05:53	WG2138268
Fluoride	211		64.0	150	1	09/24/2023 05:53	WG2138268
Sulfate	440000		5940	50000	10	09/24/2023 06:05	WG2138268

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Arsenic	0.182	J	0.180	2.00	1	09/25/2023 13:27	WG2137818
Barium	60.7		0.381	2.00	1	09/25/2023 13:27	WG2137818
Beryllium	U		0.190	2.00	1	09/25/2023 13:27	WG2137818
Boron	217		48.2	150	5	09/26/2023 13:48	WG2137818
Cadmium	U		0.150	1.00	1	09/25/2023 13:27	WG2137818
Calcium	218000		93.6	1000	1	09/25/2023 13:27	WG2137818
Chromium	U		1.24	2.00	1	09/25/2023 13:27	WG2137818
Cobalt	2.49		0.0596	2.00	1	09/25/2023 13:27	WG2137818
Lead	U		0.849	2.00	1	09/25/2023 13:27	WG2137818
Magnesium	56400		73.5	1000	1	09/25/2023 13:27	WG2137818
Molybdenum	4.49	J	0.348	5.00	1	09/25/2023 13:27	WG2137818
Potassium	4080		108	2000	1	09/25/2023 13:27	WG2137818
Selenium	U		0.300	2.00	1	09/25/2023 13:27	WG2137818
Sodium	50700		376	2000	1	09/25/2023 13:27	WG2137818
Thallium	U		0.121	2.00	1	09/25/2023 13:27	WG2137818
Lithium	1.73	J	0.695	2.00	1	09/25/2023 13:27	WG2137818

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.20		0.259	0.445	09/29/2023 21:09	WG2140277
(T) Barium	*101*			*30.0-143*	*09/29/2023 21:09*	WG2140277
(T) Yttrium	*81.2*			*30.0-136*	*09/29/2023 21:09*	WG2140277

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.39		0.384	0.614	09/29/2023 21:09	WG2137491

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.192	J	0.284	0.423	09/26/2023 15:47	WG2137491
(T) Barium-133	*72.0*			*30.0-143*	*09/26/2023 15:47*	WG2137491

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	641000		10000	1	09/22/2023 16:06	WG2137489

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity	228000		8450	20000	1	09/25/2023 12:26	WG2137674
Alkalinity,Bicarbonate	228000		8450	20000	1	09/25/2023 12:26	WG2137674
Alkalinity,Carbonate	U		8450	20000	1	09/25/2023 12:26	WG2137674

Sample Narrative:

L1658192-11 WG2137674: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	43000		379	1000	1	09/24/2023 06:18	WG2138268
Fluoride	186		64.0	150	1	09/24/2023 06:18	WG2138268
Sulfate	225000		5940	50000	10	09/24/2023 06:31	WG2138268

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Arsenic	0.290	J	0.180	2.00	1	09/25/2023 13:37	WG2137818
Barium	46.3		0.381	2.00	1	09/25/2023 13:37	WG2137818
Beryllium	U		0.190	2.00	1	09/25/2023 13:37	WG2137818
Boron	817		48.2	150	5	09/26/2023 13:51	WG2137818
Cadmium	0.361	J	0.150	1.00	1	09/25/2023 13:37	WG2137818
Calcium	139000		93.6	1000	1	09/25/2023 13:37	WG2137818
Chromium	U		1.24	2.00	1	09/25/2023 13:37	WG2137818
Cobalt	0.987	J	0.0596	2.00	1	09/25/2023 13:37	WG2137818
Lead	U		0.849	2.00	1	09/25/2023 13:37	WG2137818
Magnesium	30300		73.5	1000	1	09/25/2023 13:37	WG2137818
Molybdenum	3.38	J	0.348	5.00	1	09/25/2023 13:37	WG2137818
Potassium	3850		108	2000	1	09/25/2023 13:37	WG2137818
Selenium	14.3		0.300	2.00	1	09/25/2023 13:37	WG2137818
Sodium	18200		376	2000	1	09/25/2023 13:37	WG2137818
Thallium	U		0.121	2.00	1	09/25/2023 13:37	WG2137818
Lithium	1.44	J	0.695	2.00	1	09/25/2023 13:37	WG2137818

Method Blank (MB)

(MB) R3977901-1 09/24/23 15:45

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Dissolved Solids	U		10000	10000

L1657843-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1657843-01 09/24/23 15:45 • (DUP) R3977901-3 09/24/23 15:45

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	144000	158000	1	9.27	J3	5

L1657846-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1657846-01 09/24/23 15:45 • (DUP) R3977901-4 09/24/23 15:45

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	226000	237000	1	4.75		5

Laboratory Control Sample (LCS)

(LCS) R3977901-2 09/24/23 15:45

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8560000	97.3	77.3-123	

Method Blank (MB)

(MB) R3977878-1 09/22/23 16:06

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Dissolved Solids	U	J	10000	10000

L1658000-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658000-01 09/22/23 16:06 • (DUP) R3977878-3 09/22/23 16:06

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1100000	1130000	1	2.33		5

L1658010-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658010-01 09/22/23 16:06 • (DUP) R3977878-4 09/22/23 16:06

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	900000	936000	1	3.92		5

Laboratory Control Sample (LCS)

(LCS) R3977878-2 09/22/23 16:06

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8580000	97.5	77.3-123	

Method Blank (MB)

(MB) R3981388-1 09/29/23 21:09

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-228	0.377		0.172	0.312
(T) Barium	*111*		*111*	
(T) Yttrium	*99.5*		*99.5*	

L1658192-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1658192-08 09/29/23 21:09 • (DUP) R3981388-5 09/29/23 21:09

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	1.07	0.311	0.545	0.554	0.327	0.596	1	63.9	1.15	J	20	3
(T) Barium	*104*			*107*	*107*							
(T) Yttrium	*86.3*			*96.0*	*96.0*							

Laboratory Control Sample (LCS)

(LCS) R3981388-2 09/29/23 21:09

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.13	103	80.0-120	
(T) Barium			*121*		
(T) Yttrium			*92.4*		

L1659083-19 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1659083-19 09/29/23 21:09 • (MS) R3981388-3 09/29/23 21:09 • (MSD) R3981388-4 09/29/23 21:09

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	0.469	16.1	15.3	93.3	89.0	1	70.0-130			4.59		20
(T) Barium		*98.7*			*104*	*108*							
(T) Yttrium		*107*			*87.4*	*99.8*							

Method Blank (MB)

(MB) R3982569-1 09/25/23 19:20

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-226	0.0295	U	0.0634	0.105
(T) Barium-133	*72.4*		*72.4*	

L1658192-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1658192-02 09/25/23 19:20 • (DUP) R3982569-5 09/25/23 19:20

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.238	0.266	0.358	1.59	0.522	0.359	1	148	2.31		20	3
(T) Barium-133	*84.2*			*101*	*101*							

Laboratory Control Sample (LCS)

(LCS) R3982569-2 09/25/23 19:20

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.01	5.40	108	80.0-120	
(T) Barium-133			*71.8*		

L1658218-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1658218-24 09/25/23 19:20 • (MS) R3982569-3 09/25/23 19:20 • (MSD) R3982569-4 09/25/23 19:20

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.0	1.73	19.4	19.4	88.3	88.4	1	75.0-125			0.103		20
(T) Barium-133		*102*			*92.4*	*86.2*							

Method Blank (MB)

(MB) R3977409-2 09/25/23 09:51

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Alkalinity	U		8450	20000
Alkalinity,Bicarbonate	U		8450	20000
Alkalinity,Carbonate	U		8450	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

L1658192-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658192-01 09/25/23 10:06 • (DUP) R3977409-3 09/25/23 10:12

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	354000	353000	1	0.288		20
Alkalinity,Bicarbonate	354000	353000	1	0.288		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1658197-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658197-01 09/25/23 12:42 • (DUP) R3977409-4 09/25/23 12:48

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	378000	376000	1	0.568		20
Alkalinity,Bicarbonate	378000	376000	1	0.568		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

APPENDIX A:
ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 3 2023
ZIMMER POWER PLANT, D BASIN
ZIM-257-121

L1658192-01,03,05,07,09,11

Laboratory Control Sample (LCS)

(LCS) R3977409-1 09/25/23 09:45

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100000	100000	100	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

Method Blank (MB)

(MB) R3977734-1 09/24/23 02:06

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	U		379	1000
Fluoride	U		64.0	150
Sulfate	U		594	5000

L1657521-24 Original Sample (OS) • Duplicate (DUP)

(OS) L1657521-24 09/24/23 03:09 • (DUP) R3977734-3 09/24/23 03:22

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	5440	5230	1	3.80		15
Fluoride	96.1	67.5	1	35.0	J P1	15
Sulfate	8650	8610	1	0.449		15

L1658197-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658197-01 09/24/23 07:08 • (DUP) R3977734-6 09/24/23 07:21

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	83100	82800	1	0.367		15
Fluoride	144	199	1	32.1	P1	15
Sulfate	79300	79500	1	0.190		15

Laboratory Control Sample (LCS)

(LCS) R3977734-2 09/24/23 02:19

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	40200	101	80.0-120	
Fluoride	8000	8150	102	80.0-120	
Sulfate	40000	40000	99.9	80.0-120	

L1658192-01,03,05,07,09,11

L1657521-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1657521-24 09/24/23 03:09 • (MS) R3977734-4 09/24/23 03:34 • (MSD) R3977734-5 09/24/23 03:47

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	40000	5440	44800	44400	98.5	97.5	1	80.0-120			0.950	15
Fluoride	8000	96.1	8220	8260	102	102	1	80.0-120			0.506	15
Sulfate	40000	8650	47500	47400	97.0	96.9	1	80.0-120			0.0896	15

L1658197-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1658197-01 09/24/23 07:08 • (MS) R3977734-7 09/24/23 07:33

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	40000	83100	106000	57.7	1	80.0-120	J6
Fluoride	8000	144	8060	98.9	1	80.0-120	
Sulfate	40000	79300	104000	60.6	1	80.0-120	J6

Method Blank (MB)

(MB) R3977402-1 09/25/23 12:57

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Arsenic	U		0.180	2.00
Barium	0.414	J	0.381	2.00
Beryllium	U		0.190	2.00
Cadmium	U		0.150	1.00
Calcium	U		93.6	1000
Chromium	U		1.24	2.00
Cobalt	U		0.0596	2.00
Lead	U		0.849	2.00
Magnesium	U		73.5	1000
Molybdenum	U		0.348	5.00
Potassium	U		108	2000
Selenium	U		0.300	2.00
Sodium	U		376	2000
Thallium	U		0.121	2.00
Lithium	U		0.695	2.00

Method Blank (MB)

(MB) R3977815-1 09/26/23 12:56

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Boron	U		9.63	30.0

Laboratory Control Sample (LCS)

(LCS) R3977402-2 09/25/23 13:01

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	50.0	50.0	100	80.0-120	
Barium	50.0	49.4	98.7	80.0-120	
Beryllium	50.0	48.5	97.0	80.0-120	
Cadmium	50.0	52.1	104	80.0-120	
Calcium	5000	4910	98.3	80.0-120	
Chromium	50.0	49.1	98.2	80.0-120	
Cobalt	50.0	50.0	100	80.0-120	
Lead	50.0	50.7	101	80.0-120	
Magnesium	5000	5060	101	80.0-120	
Molybdenum	50.0	49.1	98.1	80.0-120	
Potassium	5000	4980	99.7	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3977402-2 09/25/23 13:01

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Selenium	50.0	52.7	105	80.0-120	
Sodium	5000	5110	102	80.0-120	
Thallium	50.0	49.9	99.9	80.0-120	
Lithium	50.0	49.2	98.4	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3977815-2 09/26/23 12:59

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	50.0	51.2	102	80.0-120	

L1658192-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1658192-01 09/25/23 13:04 • (MS) R3977402-4 09/25/23 13:11 • (MSD) R3977402-5 09/25/23 13:14

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	50.0	1.06	49.7	50.3	97.2	98.5	1	75.0-125			1.27	20
Barium	50.0	19.1	66.6	68.0	94.9	97.8	1	75.0-125			2.14	20
Beryllium	50.0	U	48.0	47.4	95.9	94.7	1	75.0-125			1.26	20
Cadmium	50.0	U	51.4	50.8	103	102	1	75.0-125			1.07	20
Calcium	5000	164000	167000	168000	58.4	71.3	1	75.0-125	V	V	0.385	20
Chromium	50.0	U	46.5	47.6	93.0	95.3	1	75.0-125			2.47	20
Cobalt	50.0	1.24	48.0	48.6	93.6	94.8	1	75.0-125			1.22	20
Lead	50.0	U	50.6	50.2	101	100	1	75.0-125			0.809	20
Magnesium	5000	31400	35700	35600	86.1	83.5	1	75.0-125			0.376	20
Molybdenum	50.0	1.46	53.5	53.0	104	103	1	75.0-125			0.927	20
Potassium	5000	2590	7410	7340	96.4	95.1	1	75.0-125			0.853	20
Selenium	50.0	U	54.8	54.0	110	108	1	75.0-125			1.54	20
Sodium	5000	16100	20700	20500	92.0	88.9	1	75.0-125			0.757	20
Thallium	50.0	0.207	49.6	49.3	98.8	98.2	1	75.0-125			0.674	20
Lithium	50.0	5.57	53.7	52.3	96.3	93.4	1	75.0-125			2.74	20

L1658192-01,03,05,07,09,11

L1658192-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1658192-01 09/26/23 13:02 • (MS) R3977815-4 09/26/23 13:09 • (MSD) R3977815-5 09/26/23 13:12

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	50.0	56.0	112	111	112	109	1	75.0-125			1.19	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
U	Below Detectable Limits: Indicates that the analyte was not detected.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
SMEME - Cincinnati
862 E. Crescentville Rd.
Cincinnati. OH 45246

Billing Information:
Accounts Payable
smeinc_invoice@concursolutions.com

Pres Chk

Report to: Vince Epps
Email To: vepps@smeinc.com

Project Description: Zimmer Station
City/State Collected: Moscow, OH
Please Circle: PT MT CT ET

Phone: 513-771-8471
Client Project # 7217-17-001D
Lab Project # LITEGNTN-ZIMMER

Collected by (print):
Site/Facility ID # WHZ Unit 121 (D Basin)
P.O. #

Collected by (signature):
Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day
Date Results Needed

Quote #

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Alk Bi/Ca, Cl, F, SO4 125mlHDPE-NonPres	CCR Metals+B, Li, K, Na, Mg 250mlHDPE H	RA-226/228COMB 1L-HPE-HNO3	TDS 250mlHDPE-NonPres
MW-09	Grab	GW	NA	9/19	13:15	5	X	X	X	X
MW-12	Grab	GW	NA	9/20	9:50	5	X	X	X	X
MW-13	Grab	GW	NA	9/19	15:30	5	X	X	X	X
MW-14	Grab	GW	NA	9/19	16:40	5	X	X	X	X
MW-15	Grab	GW	NA	9/20	11:15	5	X	X	X	X
DUP-2	Grab	GW	NA	9/20	—	2	X	X		X

PH-10BDH4321 TR
CRS-20221

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

12065 Lebanon Rd Mount Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L658192
A230
Acctnum: LITEGNTN
Template:
Prelogin:
PM: 134
PB:
Shipped Via:

Remarks | Sample # (lab only)
01
02
03
04
05
06
07
08
09
10
11

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks:
Log Rad to same SDG as different dash #s as EX 10 day TAT
CCR Metals: As, Ba, Be, B, Cd, Ca, Cr, Co, K, Pb, Li, Mg, Mo, Na, Se, Tl

pH ___ Temp ___
Flow ___ Other ___

Samples returned via:
__ UPS __ FedEx __ Courier __ ___
Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N
RAD Screen <0.5 mR/hr: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Cody Flynn	9/20/23	18:00	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No
HCL / MeoH
TBR
Temp: °C Bottles Received: 28
Date: 9/21/23 Time: 0900

If preservation required by Login: Date/Time

Hold: Condition: NCF / OK

Tracking Numbers	Tempature
7019 5685 2436	2.8
0503	0.9
2445	1.5
2458	2.3
2425	1.8
6643 4303 1133	1.5

Pace Analytical®

ANALYTICAL REPORT

October 06, 2023

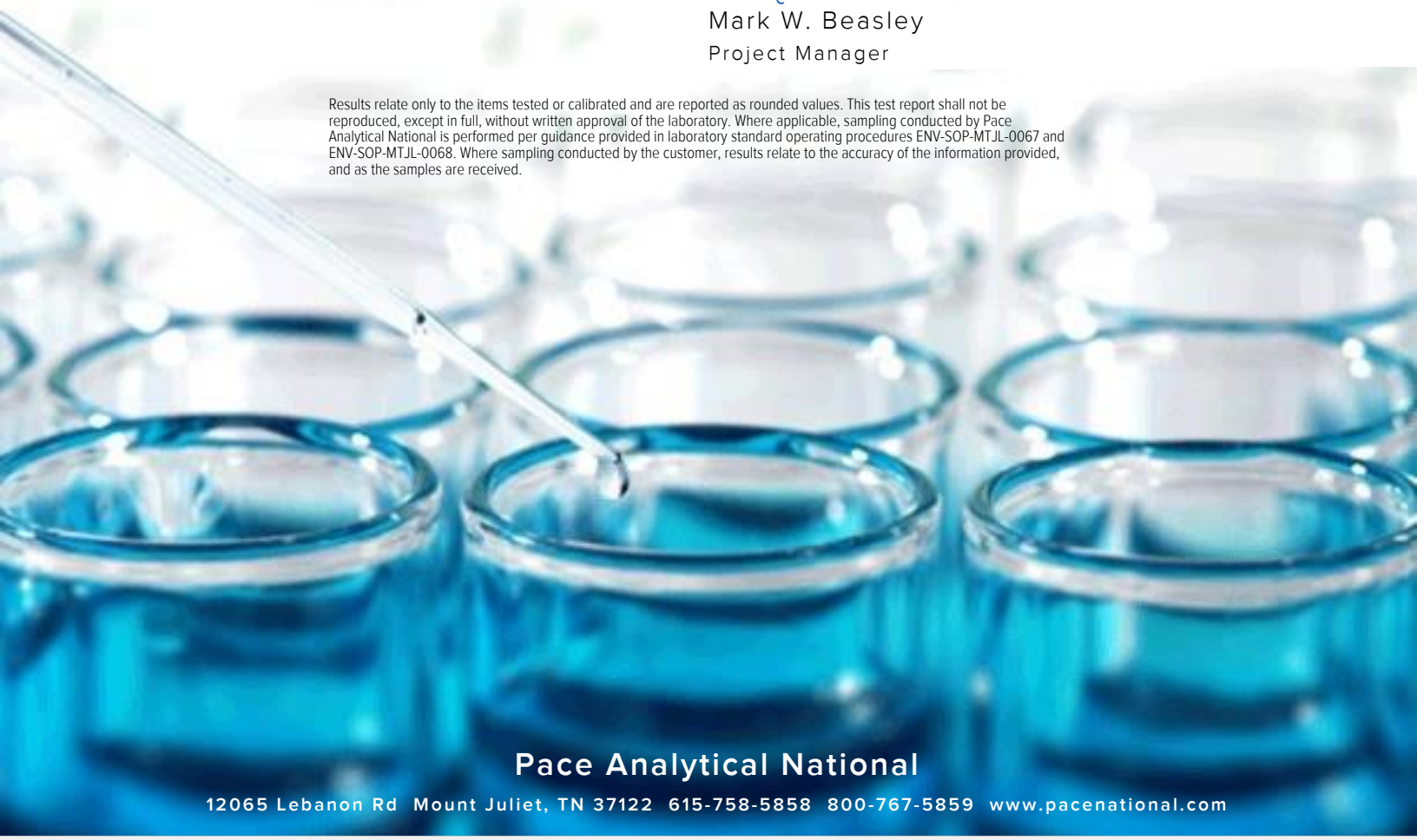
Revised Report

S&ME - Nashville, TN

Sample Delivery Group:	L1658197
Samples Received:	09/21/2023
Project Number:	7217-17-001D
Description:	
Site:	BG WELLS
Report To:	Vince Epps 862 East Crescentville Road Cincinnati, OH 45246

Entire Report Reviewed By:

Mark W. Beasley
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

MW-01 L1658197-01 GW

			Collected by	Collected date/time	Received date/time	
				09/18/23 12:15	09/21/23 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2137489	1	09/22/23 09:57	09/22/23 16:06	JAC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2137674	1	09/25/23 12:42	09/25/23 12:42	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	1	09/24/23 07:08	09/24/23 07:08	GEB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/25/23 13:40	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/26/23 13:55	JPD	Mt. Juliet, TN

MW-01 L1658197-02 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				09/18/23 12:15	09/21/23 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2140277	1	09/27/23 12:21	09/29/23 21:09	DDD	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2137491	1	09/25/23 15:11	09/29/23 21:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2137491	1	09/25/23 15:11	09/26/23 15:47	RGT	Mt. Juliet, TN

MW-08 L1658197-03 GW

			Collected by	Collected date/time	Received date/time	
				09/20/23 12:40	09/21/23 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2137489	1	09/22/23 09:57	09/22/23 16:06	JAC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2137674	1	09/25/23 12:54	09/25/23 12:54	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	1	09/24/23 07:46	09/24/23 07:46	GEB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/25/23 13:44	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/26/23 13:58	JPD	Mt. Juliet, TN

MW-08 L1658197-04 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				09/20/23 12:40	09/21/23 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2140277	1	09/27/23 12:21	09/29/23 21:09	DDD	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2137491	1	09/25/23 15:11	09/29/23 21:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2137491	1	09/25/23 15:11	09/26/23 15:47	RGT	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

Report Revision History

Level II Report - Version 1: 10/02/23 16:41

Project Narrative

Prelim results

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	585000		13300	1	09/22/2023 16:06	WG2137489

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity	378000		8450	20000	1	09/25/2023 12:42	WG2137674
Alkalinity,Bicarbonate	378000		8450	20000	1	09/25/2023 12:42	WG2137674
Alkalinity,Carbonate	U		8450	20000	1	09/25/2023 12:42	WG2137674

Sample Narrative:

L1658197-01 WG2137674: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	83100	J6	379	1000	1	09/24/2023 07:08	WG2138268
Fluoride	144	J P1	64.0	150	1	09/24/2023 07:08	WG2138268
Sulfate	79300	J6	594	5000	1	09/24/2023 07:08	WG2138268

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Arsenic	U		0.180	2.00	1	09/25/2023 13:40	WG2137818
Barium	73.9		0.381	2.00	1	09/25/2023 13:40	WG2137818
Beryllium	U		0.190	2.00	1	09/25/2023 13:40	WG2137818
Boron	67.7		9.63	30.0	1	09/26/2023 13:55	WG2137818
Cadmium	U		0.150	1.00	1	09/25/2023 13:40	WG2137818
Calcium	162000		93.6	1000	1	09/25/2023 13:40	WG2137818
Chromium	U		1.24	2.00	1	09/25/2023 13:40	WG2137818
Cobalt	U		0.0596	2.00	1	09/25/2023 13:40	WG2137818
Lead	U		0.849	2.00	1	09/25/2023 13:40	WG2137818
Magnesium	22100		73.5	1000	1	09/25/2023 13:40	WG2137818
Molybdenum	U		0.348	5.00	1	09/25/2023 13:40	WG2137818
Potassium	2270		108	2000	1	09/25/2023 13:40	WG2137818
Selenium	0.567	J	0.300	2.00	1	09/25/2023 13:40	WG2137818
Sodium	25800		376	2000	1	09/25/2023 13:40	WG2137818
Thallium	U		0.121	2.00	1	09/25/2023 13:40	WG2137818
Lithium	8.08		0.695	2.00	1	09/25/2023 13:40	WG2137818

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.35		0.265	0.455	09/29/2023 21:09	WG2140277
(T) Barium	*126*			*30.0-143*	*09/29/2023 21:09*	WG2140277
(T) Yttrium	*101*			*30.0-136*	*09/29/2023 21:09*	WG2140277

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.38		0.348	0.596	09/29/2023 21:09	WG2137491

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0348	U	0.226	0.385	09/26/2023 15:47	WG2137491
(T) Barium-133	*86.1*			*30.0-143*	*09/26/2023 15:47*	WG2137491

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	428000		10000	1	09/22/2023 16:06	WG2137489

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity	333000		8450	20000	1	09/25/2023 12:54	WG2137674
Alkalinity,Bicarbonate	333000		8450	20000	1	09/25/2023 12:54	WG2137674
Alkalinity,Carbonate	U		8450	20000	1	09/25/2023 12:54	WG2137674

Sample Narrative:

L1658197-03 WG2137674: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	14500		379	1000	1	09/24/2023 07:46	WG2138268
Fluoride	113	J	64.0	150	1	09/24/2023 07:46	WG2138268
Sulfate	57500		594	5000	1	09/24/2023 07:46	WG2138268

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Arsenic	U		0.180	2.00	1	09/25/2023 13:44	WG2137818
Barium	45.1		0.381	2.00	1	09/25/2023 13:44	WG2137818
Beryllium	U		0.190	2.00	1	09/25/2023 13:44	WG2137818
Boron	52.6		9.63	30.0	1	09/26/2023 13:58	WG2137818
Cadmium	0.394	J	0.150	1.00	1	09/25/2023 13:44	WG2137818
Calcium	114000		93.6	1000	1	09/25/2023 13:44	WG2137818
Chromium	U		1.24	2.00	1	09/25/2023 13:44	WG2137818
Cobalt	U		0.0596	2.00	1	09/25/2023 13:44	WG2137818
Lead	U		0.849	2.00	1	09/25/2023 13:44	WG2137818
Magnesium	21000		73.5	1000	1	09/25/2023 13:44	WG2137818
Molybdenum	U		0.348	5.00	1	09/25/2023 13:44	WG2137818
Potassium	1590	J	108	2000	1	09/25/2023 13:44	WG2137818
Selenium	U		0.300	2.00	1	09/25/2023 13:44	WG2137818
Sodium	9190		376	2000	1	09/25/2023 13:44	WG2137818
Thallium	U		0.121	2.00	1	09/25/2023 13:44	WG2137818
Lithium	4.80		0.695	2.00	1	09/25/2023 13:44	WG2137818

MW-08 SAMPLE RESULTS - 04

Collected date/time: 09/20/23 12:40 L1658197

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.0850	U	0.260	0.486	09/29/2023 21:09	WG2140277
(T) Barium	*116*			*30.0-143*	*09/29/2023 21:09*	WG2140277
(T) Yttrium	*85.8*			*30.0-136*	*09/29/2023 21:09*	WG2140277

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.0850	U	0.331	0.626	09/29/2023 21:09	WG2137491

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.000	U	0.205	0.395	09/26/2023 15:47	WG2137491
(T) Barium-133	*77.8*			*30.0-143*	*09/26/2023 15:47*	WG2137491

[1] Cp
[2] Tc
[3] Ss
[4] Cn
[5] Sr
[6] Qc
[7] Gl
[8] Al
[9] Sc

Method Blank (MB)

(MB) R3977878-1 09/22/23 16:06

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Dissolved Solids	U	J	10000	10000

L1658000-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658000-01 09/22/23 16:06 • (DUP) R3977878-3 09/22/23 16:06

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1100000	1130000	1	2.33		5

L1658010-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658010-01 09/22/23 16:06 • (DUP) R3977878-4 09/22/23 16:06

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	900000	936000	1	3.92		5

Laboratory Control Sample (LCS)

(LCS) R3977878-2 09/22/23 16:06

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8580000	97.5	77.3-123	

Method Blank (MB)

(MB) R3981388-1 09/29/23 21:09

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-228	0.377		0.172	0.312
(T) Barium	*111*		*111*	
(T) Yttrium	*99.5*		*99.5*	

L1658192-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1658192-08 09/29/23 21:09 • (DUP) R3981388-5 09/29/23 21:09

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	1.07	0.311	0.545	0.554	0.327	0.596	1	63.9	1.15	J	20	3
(T) Barium	*104*			*107*	*107*							
(T) Yttrium	*86.3*			*96.0*	*96.0*							

Laboratory Control Sample (LCS)

(LCS) R3981388-2 09/29/23 21:09

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.13	103	80.0-120	
(T) Barium			*121*		
(T) Yttrium			*92.4*		

L1659083-19 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1659083-19 09/29/23 21:09 • (MS) R3981388-3 09/29/23 21:09 • (MSD) R3981388-4 09/29/23 21:09

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	0.469	16.1	15.3	93.3	89.0	1	70.0-130			4.59		20
(T) Barium		*98.7*			*104*	*108*							
(T) Yttrium		*107*			*87.4*	*99.8*							

Method Blank (MB)

(MB) R3982569-1 09/25/23 19:20

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-226	0.0295	U	0.0634	0.105
(T) Barium-133	*72.4*		*72.4*	

L1658192-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1658192-02 09/25/23 19:20 • (DUP) R3982569-5 09/25/23 19:20

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.238	0.266	0.358	1.59	0.522	0.359	1	148	2.31		20	3
(T) Barium-133	*84.2*			*101*	*101*							

Laboratory Control Sample (LCS)

(LCS) R3982569-2 09/25/23 19:20

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.01	5.40	108	80.0-120	
(T) Barium-133			*71.8*		

L1658218-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1658218-24 09/25/23 19:20 • (MS) R3982569-3 09/25/23 19:20 • (MSD) R3982569-4 09/25/23 19:20

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.0	1.73	19.4	19.4	88.3	88.4	1	75.0-125			0.103		20
(T) Barium-133		*102*			*92.4*	*86.2*							

Method Blank (MB)

(MB) R3977409-2 09/25/23 09:51

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Alkalinity	U		8450	20000
Alkalinity,Bicarbonate	U		8450	20000
Alkalinity,Carbonate	U		8450	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

L1658192-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658192-01 09/25/23 10:06 • (DUP) R3977409-3 09/25/23 10:12

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	354000	353000	1	0.288		20
Alkalinity,Bicarbonate	354000	353000	1	0.288		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1658197-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658197-01 09/25/23 12:42 • (DUP) R3977409-4 09/25/23 12:48

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	378000	376000	1	0.568		20
Alkalinity,Bicarbonate	378000	376000	1	0.568		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

APPENDIX A:
ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 3, 2023
ZIMMER POWER PLANT, D BASIN
ZIM-257-121

L1658197-01,03

Laboratory Control Sample (LCS)

(LCS) R3977409-1 09/25/23 09:45

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100000	100000	100	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

Method Blank (MB)

(MB) R3977734-1 09/24/23 02:06

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	U		379	1000
Fluoride	U		64.0	150
Sulfate	U		594	5000

L1657521-24 Original Sample (OS) • Duplicate (DUP)

(OS) L1657521-24 09/24/23 03:09 • (DUP) R3977734-3 09/24/23 03:22

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	5440	5230	1	3.80		15
Fluoride	96.1	67.5	1	35.0	J P1	15
Sulfate	8650	8610	1	0.449		15

L1658197-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658197-01 09/24/23 07:08 • (DUP) R3977734-6 09/24/23 07:21

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	83100	82800	1	0.367		15
Fluoride	144	199	1	32.1	P1	15
Sulfate	79300	79500	1	0.190		15

Laboratory Control Sample (LCS)

(LCS) R3977734-2 09/24/23 02:19

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	40200	101	80.0-120	
Fluoride	8000	8150	102	80.0-120	
Sulfate	40000	40000	99.9	80.0-120	

L1657521-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1657521-24 09/24/23 03:09 • (MS) R3977734-4 09/24/23 03:34 • (MSD) R3977734-5 09/24/23 03:47

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	40000	5440	44800	44400	98.5	97.5	1	80.0-120			0.950	15
Fluoride	8000	96.1	8220	8260	102	102	1	80.0-120			0.506	15
Sulfate	40000	8650	47500	47400	97.0	96.9	1	80.0-120			0.0896	15

L1658197-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1658197-01 09/24/23 07:08 • (MS) R3977734-7 09/24/23 07:33

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	40000	83100	106000	57.7	1	80.0-120	J6
Fluoride	8000	144	8060	98.9	1	80.0-120	
Sulfate	40000	79300	104000	60.6	1	80.0-120	J6

Method Blank (MB)

(MB) R3977402-1 09/25/23 12:57

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Arsenic	U		0.180	2.00
Barium	0.414	J	0.381	2.00
Beryllium	U		0.190	2.00
Cadmium	U		0.150	1.00
Calcium	U		93.6	1000
Chromium	U		1.24	2.00
Cobalt	U		0.0596	2.00
Lead	U		0.849	2.00
Magnesium	U		73.5	1000
Molybdenum	U		0.348	5.00
Potassium	U		108	2000
Selenium	U		0.300	2.00
Sodium	U		376	2000
Thallium	U		0.121	2.00
Lithium	U		0.695	2.00

Method Blank (MB)

(MB) R3977815-1 09/26/23 12:56

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Boron	U		9.63	30.0

Laboratory Control Sample (LCS)

(LCS) R3977402-2 09/25/23 13:01

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	50.0	50.0	100	80.0-120	
Barium	50.0	49.4	98.7	80.0-120	
Beryllium	50.0	48.5	97.0	80.0-120	
Cadmium	50.0	52.1	104	80.0-120	
Calcium	5000	4910	98.3	80.0-120	
Chromium	50.0	49.1	98.2	80.0-120	
Cobalt	50.0	50.0	100	80.0-120	
Lead	50.0	50.7	101	80.0-120	
Magnesium	5000	5060	101	80.0-120	
Molybdenum	50.0	49.1	98.1	80.0-120	
Potassium	5000	4980	99.7	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3977402-2 09/25/23 13:01

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Selenium	50.0	52.7	105	80.0-120	
Sodium	5000	5110	102	80.0-120	
Thallium	50.0	49.9	99.9	80.0-120	
Lithium	50.0	49.2	98.4	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3977815-2 09/26/23 12:59

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	50.0	51.2	102	80.0-120	

L1658192-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1658192-01 09/25/23 13:04 • (MS) R3977402-4 09/25/23 13:11 • (MSD) R3977402-5 09/25/23 13:14

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	50.0	1.06	49.7	50.3	97.2	98.5	1	75.0-125			1.27	20
Barium	50.0	19.1	66.6	68.0	94.9	97.8	1	75.0-125			2.14	20
Beryllium	50.0	U	48.0	47.4	95.9	94.7	1	75.0-125			1.26	20
Cadmium	50.0	U	51.4	50.8	103	102	1	75.0-125			1.07	20
Calcium	5000	164000	167000	168000	58.4	71.3	1	75.0-125	V	V	0.385	20
Chromium	50.0	U	46.5	47.6	93.0	95.3	1	75.0-125			2.47	20
Cobalt	50.0	1.24	48.0	48.6	93.6	94.8	1	75.0-125			1.22	20
Lead	50.0	U	50.6	50.2	101	100	1	75.0-125			0.809	20
Magnesium	5000	31400	35700	35600	86.1	83.5	1	75.0-125			0.376	20
Molybdenum	50.0	1.46	53.5	53.0	104	103	1	75.0-125			0.927	20
Potassium	5000	2590	7410	7340	96.4	95.1	1	75.0-125			0.853	20
Selenium	50.0	U	54.8	54.0	110	108	1	75.0-125			1.54	20
Sodium	5000	16100	20700	20500	92.0	88.9	1	75.0-125			0.757	20
Thallium	50.0	0.207	49.6	49.3	98.8	98.2	1	75.0-125			0.674	20
Lithium	50.0	5.57	53.7	52.3	96.3	93.4	1	75.0-125			2.74	20

L1658192-01,03

L1658192-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1658192-01 09/26/23 13:02 • (MS) R3977815-4 09/26/23 13:09 • (MSD) R3977815-5 09/26/23 13:12

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	50.0	56.0	112	111	112	109	1	75.0-125			1.19	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
U	Below Detectable Limits: Indicates that the analyte was not detected.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
S&ME - Cincinnati
862 E. Crescentville Rd.
Cincinnati. OH 45246

Billing Information:
Accounts Payable
smeinc_invoice@concursolutions.com

Pres Chk

Report to: Vince Epps

Email To: vepps@smeinc.com

Project Description: Zimmer Station

City/State Collected: Moscow, OH

Please Circle: PT MT CT ET

Phone: 513-771-8471

Client Project # 7217-17-001D

Lab Project # LITEGNTN-ZIMMER

Collected by (print):

Site/Facility ID # BG Wells

P.O. #

Collected by (signature):

Immediately Packed on Ice N ____ Y X

Rush? (Lab MUST Be Notified)
____ Same Day ____ Five Day
____ Next Day ____ 5 Day (Rad Only)
____ Two Day ____ 10 Day (Rad Only)
____ Three Day

Quote #

Date Results Needed

No. of Cntrs

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Alk Bi/Ca, Cl, F, SO4 125mlHDPE-NonPres	CCR Metals+B, Li, K, Na, Mg 250mlHDPE H2	RA-226/228COMB 1L-HPE-HNO3 H2	TDS 250mlHDPE-NonPres	Remarks	Sample # (lab only)
MW-01	Grab	GW	NA	9/18	12:15	5	X	X	X	X		01
MW-08	Grab	GW	NA	9/20	12:405		X	X	X	X		03

PH-10BDH4321 TPR-226225
CR6-20221V

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

12065 Lebanon Rd Mount Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L658187
A231

Acctnum: LITEGNTN
Template:
Prelogin:
PM: 134
PB:
Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:
Log Rad to same SDG as different dash #s as EX 10 day TAT
CCR Metals: As, Ba, Be, B, Cd, Ca, Cr, Co, K, Pb, Li, Mg, Mo, Na, Se, Tl

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking #

Sample Receipt Checklist:
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
if Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Cody Flynn	9/21/23	18:00	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			M. Shuler

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: °C Bottles Received: 10

Date: 9/21/23 Time: 0900

If preservation required by Login: Date/Time

Hold: Condition: NCF / OK

Tracking Numbers	[redacted]	Tempature
7019 5168 5243 6		2.8
0503		0.9
2447		1.5
2458		2.3
2425		1.8
6643 4303 1133		1.5

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	September 18, 2023
Source Well:	MW-01	Purge Time:	50 Minutes
Locked?:	Yes	Sample Date:	September 18, 2023
Sampled By:	JEB/EF	Sample Time:	12:15
Weather:	Sunny; 75	Air Temp:	

Water Level & Well Data

			Measuring Point:	Top of Casing	
			Depth to Water:	53.89	ft-TOC
			Total Well Depth:	86.40	ft-TOC
			Height of Water Column:	32.51	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	5.3	Gal
3 * Well Volume	15.92	Gal
5 * Well Volume	26.53	Gal

Well Purging Information

	Purge Method:	Bladder Pump	Start Time:	11:25	End Time:	12:15	
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:		psi
	Pump Intake Depth from Top of Casing:		ft-TOC				
	Water Column Above Pump Intake:		feet		Flow Through Cell Vol:	200	mL
	DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	**Comments:**			
	Final Volume Purged:	1.3	Gallons	Used YSI ProQuattro - B22672B			
	Final Volume Purge Rate:	100	mL/min	2100P Turbidimeter - B22918B			
	Well Purged Dry?:		(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	11:25	0.0	---	---	---	---	---	---	---	---	Start Purging
	11:30	0.1	100	53.88	17.5	7.0	1.064	10.8	201	2.42	Clear, no odor
	11:35	0.3	100	53.88	18.4	7.0	1.073	5.9	254	1.78	Clear, no odor
	11:40	0.4	100	53.88	18.6	7.0	1.076	5.3	272	1.21	Clear, no odor
	11:45	0.5	100	53.88	18.5	7.0	1.078	5.4	276	0.67	Clear, no odor
	11:50	0.7	100	53.88	18.8	7.0	1.074	5.1	280	0.57	Clear, no odor
	11:55	0.8	100	53.88	19.0	7.0	1.077	4.9	283	0.65	Clear, no odor
	12:00	0.9	100	53.88	19.4	7.0	1.077	4.8	284	0.39	Clear, no odor
	12:05	1.1	100	53.88	19.6	7.0	1.081	4.8	284	0.47	Clear, no odor
	12:15	1.3	100	53.88	19.6	7.0	1.082	4.8	284	0.45	Clear, no odor
Final:	12:15	1.3	100	53.88	19.6	7.0	1.082	4.8	284	0.5	End of Purging

Sample Method: Bladder Pump Sample Start Time: 12:15 Sample End Time: 13:15

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	September 19, 2023
Source Well:	MW-03S	Purge Time:	45 Minutes
Locked?:	Yes	Sample Date:	September 19, 2023
Sampled By:	JEB/EF	Sample Time:	10:10
Weather:	Sunny; 65	Air Temp:	78F

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				54.57	ft-TOC
Total Well Depth:				68.60	ft-TOC
Height of Water Column:				14.03	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	2.3	Gal
3 * Well Volume	6.87	Gal
5 * Well Volume	11.45	Gal

Well Purging Information

Purge Method:	Bladder Pump		Start Time:	9:25	End Time:	10:10	
(If Used) Bladder Pump Control Settings:	On (sec):	10	Off (sec):	4	Pressure:		psi
Pump Intake Depth from Top of Casing:			ft-TOC				
Water Column Above Pump Intake:			feet		Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:			ft-TOC	**Comments:**			
Final Volume Purged:	1.2		Gallons	Used YSI ProQuattro - B22672B			
Final Volume Purge Rate:	100		mL/min	2100P Turbidimeter - B22918B			
Well Purged Dry?:			(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	09:25	0.0	---	---	---	---	---	---	---	---	Start Purging
	09:30	0.1	100	54.64	17.8	7.0	1.488	2.3	284	1.31	Clear, no odor
	09:35	0.3	100	54.64	17.8	7.2	0.976	8.1	285	0.89	Clear, no odor
	09:40	0.4	100	54.64	17.8	7.0	1.669	4.9	284	0.70	Clear, no odor
	09:45	0.5	100	54.64	17.8	7.0	1.666	3.4	278	0.96	Clear, no odor
	09:50	0.7	100	54.64	17.9	7.0	1.662	2.4	271	1.09	Clear, no odor
	09:55	0.8	100	54.64	18.3	7.0	1.661	1.6	261	1.02	Clear, no odor
	10:00	0.9	100	54.64	18.8	7.0	1.664	1.5	258	0.82	Clear, no odor
	10:05	1.1	100	54.64	19.1	7.0	1.666	1.3	253	1.40	Clear, no odor
	10:10	1.2	100	54.64	18.7	7.0	1.667	1.2	250	1.18	Clear, no odor
Final:	10:10	1.2	100	54.64	18.7	7.0	1.667	1.2	250	1.2	End of Purging

Sample Method: Bladder Pump Sample Start Time: 10:10 Sample End Time:

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	September 20, 2023
Source Well:	MW-07A	Purge Time:	30 Minutes
Locked?:	Yes	Sample Date:	September 20, 2023
Sampled By:	Elisa Flynn	Sample Time:	15:55
Weather:	Sunny	Air Temp:	81f

Water Level & Well Data

			Measuring Point:	Top of Casing	
			Depth to Water:	55.67	ft-TOC
			Total Well Depth:	64.24	ft-TOC
			Height of Water Column:	8.57	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	1.4	Gal
3 * Well Volume	4.20	Gal
5 * Well Volume	6.99	Gal

Well Purging Information

	Purge Method:	Bladder Pump	Start Time:	15:25	End Time:	15:55	
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:		psi
	Pump Intake Depth from Top of Casing:		ft-TOC				
	Water Column Above Pump Intake:		feet		Flow Through Cell Vol:	200	mL
	DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	**Comments:**			
	Final Volume Purged:	1.2	Gallons	Used YSI ProQuattro - B22672B			
	Final Volume Purge Rate:	150	mL/min	2100P Turbidimeter - B22918B. Duplicate			
	Well Purged Dry?:		(Yes/No)	Sample collected (DUP-1).			

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	15:25	0.0	---	---	---	---	---	---	---	---	Start Purging
	15:30	0.2	150	55.70	19.7	6.9	0.929	0.6	145	8.09	Clear, odorless
	15:35	0.4	150	55.70	19.1	6.8	0.897	0.2	152	7.09	Clear, odorless
	15:40	0.6	150	55.70	18.5	6.8	0.838	0.0	158	7.12	Clear, odorless
	15:45	0.8	150	55.70	20.7	6.8	0.843	0.0	161	5.17	Clear, odorless
	15:50	1.0	150	55.70	18.3	6.8	0.865	0.0	161	5.58	Clear, odorless
	15:55	1.2	150	55.70	19.3	6.9	0.863	0.0	160	4.89	Clear, odorless
Final:	15:55	1.2	150	55.70	19.3	6.9	0.863	0.0	160	4.9	End of Purging

Sample Method: Bladder Pump Sample Start Time: 15:55 Sample End Time: 16:30

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	September 20, 2023
Source Well:	MW-08	Purge Time:	40 Minutes
Locked?:	Yes	Sample Date:	September 20, 2023
Sampled By:	Elisa Flynn	Sample Time:	12:40
Weather:	Sunny	Air Temp:	73F

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				55.10	ft-TOC
Total Well Depth:				95.60	ft-TOC
Height of Water Column:				40.50	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	6.6	Gal
3 * Well Volume	19.83	Gal
5 * Well Volume	33.05	Gal

Well Purging Information

Purge Method:		Bladder Pump		Start Time:	11:55	End Time:	12:35
(If Used)	Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:				ft-TOC			
Water Column Above Pump Intake:				feet	Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:				ft-TOC	**Comments:**		
Final Volume Purged:		1.1		Gallons	Used YSI ProQuattro - B22672B		
Final Volume Purge Rate:		100		mL/min	2100P Turbidimeter - B22918B		
Well Purged Dry?:		No		(Yes/No)			

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	11:55	0.0	---	---	---	---	---	---	---	---	Start Purging
	12:00	0.1	100	55.10	15.3	6.9	0.745	6.4	18	2.47	Clear, odorless
	12:05	0.3	100	55.10	15.5	6.9	0.747	6.8	32	1.30	Clear, odorless
	12:10	0.4	100	55.10	15.2	6.9	0.748	7.2	77	1.08	Clear, odorless
	12:15	0.5	100	55.10	16.0	7.0	0.744	5.9	123	0.51	Clear, odorless
	12:20	0.7	100	55.10	16.6	7.0	0.747	6.5	139	1.27	Clear, odorless
	12:25	0.8	100	55.10	16.8	7.0	0.749	6.6	166	0.78	Clear, odorless
	12:30	0.9	100	55.10	16.5	7.0	0.748	6.6	194	0.70	Clear, odorless
	12:35	1.1	100	55.10	15.6	7.0	0.747	6.7	222	1.67	Clear, odorless
Final:	12:35	1.1	100	55.10	15.6	7.0	0.747	6.7	222	1.7	End of Purging

Sample Method: Bladder Pump Sample Start Time: 12:40 Sample End Time: 13:10

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	September 19, 2023
Source Well:	MW-09	Purge Time:	50 Minutes
Locked?:	Yes	Sample Date:	September 19, 2023
Sampled By:	JEB/EF	Sample Time:	13:15
Weather:	Sunny; 75	Air Temp:	

Water Level & Well Data

			Measuring Point:	Top of Casing	
			Depth to Water:	53.95	ft-TOC
			Total Well Depth:	93.50	ft-TOC
			Height of Water Column:	39.55	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	6.5	Gal
3 * Well Volume	19.36	Gal
5 * Well Volume	32.27	Gal

Well Purging Information

	Purge Method:	Bladder Pump	Start Time:	12:20	End Time:	13:10	
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:		psi
	Pump Intake Depth from Top of Casing:		ft-TOC				
	Water Column Above Pump Intake:		feet		Flow Through Cell Vol:	200	mL
	DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	**Comments:**			
	Final Volume Purged:	1.0	Gallons	Used YSI ProQuattro - B22672B			
	Final Volume Purge Rate:	75	mL/min	2100P Turbidimeter - B22918B			
	Well Purged Dry?:		(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	12:20	0.0	---	---	---	---	---	---	---	---	Start Purging
	12:25	0.1	75	53.85	21.5	7.3	1.220	5.7	277	1.89	Clear, no odor
	12:30	0.2	75	53.85	22.2	7.2	1.240	5.6	277	2.16	Clear, no odor
	12:35	0.3	75	53.85	22.3	7.2	1.257	5.2	278	1.43	Clear, no odor
	12:40	0.4	75	53.85	22.3	7.2	1.283	5.7	279	1.36	Clear, no odor
	12:45	0.5	75	53.85	22.3	7.2	1.306	5.8	279	0.81	Clear, no odor
	12:50	0.6	75	53.85	22.1	7.2	1.331	5.6	282	1.28	Clear, no odor
	12:55	0.7	75	53.85	21.8	7.1	1.350	4.4	280	1.50	Clear, no odor
	13:00	0.8	75	53.85	21.4	7.0	1.364	2.9	228	2.00	Clear, no odor
	13:05	0.9	75	53.85	21.1	7.0	1.354	2.0	115	3.23	Clear, no odor
	13:10	1.0	75	53.85	22.9	7.0	1.333	2.1	84	3.30	Clear, no odor
Final:	13:10	1.0	75	53.85	22.9	7.0	1.333	2.1	84	3.3	End of Purging

Sample Method: Bladder Pump Sample Start Time: 13:15 Sample End Time:

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes: Collected sample a little early due to spreadsheet formatting

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	
Source Well:	MW-10	Purge Time:	25 Minutes
Locked?:	Yes	Sample Date:	September 20, 2023
Sampled By:	Elisa Flynn	Sample Time:	14:15
Weather:	Sunny	Air Temp:	81F

Water Level & Well Data

			Measuring Point:	Top of Casing	
			Depth to Water:	55.70	ft-TOC
			Total Well Depth:	63.68	ft-TOC
			Height of Water Column:	7.98	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	1.3	Gal
3 * Well Volume	3.91	Gal
5 * Well Volume	6.51	Gal

Well Purging Information

	Purge Method:	Bladder Pump	Start Time:	13:45	End Time:	14:10	
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:		psi
	Pump Intake Depth from Top of Casing:		ft-TOC				
	Water Column Above Pump Intake:		feet		Flow Through Cell Vol:	200	mL
	DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	**Comments:**			
	Final Volume Purged:	0.7	Gallons	Used YSI ProQuattro - B22672B			
	Final Volume Purge Rate:	100	mL/min	2100P Turbidimeter - B22918B			
	Well Purged Dry?:		(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	13:45	0.0	---	---	---	---	---	---	---	---	Start Purging
	13:50	0.1	100	55.95	18.2	7.0	1.314	0.3	217	8.83	Clear, odorless
	13:55	0.3	100	55.95	17.6	7.0	1.316	0.3	214	6.29	Clear, odorless
	14:00	0.4	100	55.95	18.3	7.0	1.298	0.3	210	4.81	Clear, odorless
	14:05	0.5	100	55.95	20.6	7.0	1.295	0.4	205	3.13	Clear, odorless
	14:10	0.7	100	55.95	19.3	7.0	1.312	0.4	204	2.50	Clear, odorless
Final:	14:10	0.7	100	55.95	19.3	7.0	1.312	0.4	204	2.5	End of Purging

Sample Method: Bladder Pump Sample Start Time: 14:15 Sample End Time: 15:05

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	September 20, 2023
Source Well:	MW-11	Purge Time:	20 Minutes
Locked?:	Yes	Sample Date:	September 20, 2023
Sampled By:	CJH & AKL	Sample Time:	15:35
Weather:	Sunny	Air Temp:	84F

Water Level & Well Data

			Measuring Point:	Top of Casing	
			Depth to Water:	52.50	ft-TOC
			Total Well Depth:	64.31	ft-TOC
			Height of Water Column:	11.81	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	1.9	Gal
3 * Well Volume	5.78	Gal
5 * Well Volume	9.64	Gal

Well Purging Information

	Purge Method:	Bladder Pump	Start Time:	15:10	End Time:	15:30	
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:		psi
	Pump Intake Depth from Top of Casing:		ft-TOC				
	Water Column Above Pump Intake:		feet		Flow Through Cell Vol:	200	mL
	DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	**Comments:**			
	Final Volume Purged:	1.3	Gallons	Duplicate sample collected (DUP-2)			
	Final Volume Purge Rate:	250	mL/min				
	Well Purged Dry?:		(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	15:10	0.0	---	---	---	---	---	---	---	---	Start Purging
	15:15	0.3	250	52.41	15.9	7.0	1.009	0.5	40	5.18	Clear, no odor
	15:20	0.7	250	52.42	15.6	7.0	1.015	0.0	39	2.67	Clear, no odor
	15:25	1.0	250	52.40	16.3	7.0	1.011	-0.1	38	2.67	Clear, no odor
	15:30	1.3	250	52.57	15.5	7.0	1.003	0.0	39	0.51	Clear, no odor
Final:	15:30	1.3	250	52.57	15.5	7.0	1.003	0.0	39	0.5	End of Purging

Sample Method: Bladder Pump Sample Start Time: 15:35 Sample End Time: 15:50

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	September 20, 2023
Source Well:	MW-12	Purge Time:	20 Minutes
Locked?:	Yes	Sample Date:	September 20, 2023
Sampled By:	Elisa Flynn	Sample Time:	9:50
Weather:	Sunny	Air Temp:	60F

Water Level & Well Data

			Measuring Point:	Top of Casing	
			Depth to Water:	54.52	ft-TOC
			Total Well Depth:	62.92	ft-TOC
			Height of Water Column:	8.40	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	1.4	Gal
3 * Well Volume	4.11	Gal
5 * Well Volume	6.85	Gal

Well Purging Information

	Purge Method:	Bladder Pump	Start Time:	9:25	End Time:	9:45	
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:		psi
	Pump Intake Depth from Top of Casing:		ft-TOC				
	Water Column Above Pump Intake:		feet		Flow Through Cell Vol:	200	mL
	DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	**Comments:**			
	Final Volume Purged:	0.3	Gallons	Used YSI ProQuattro - B22672B			
	Final Volume Purge Rate:	65	mL/min	2100P Turbidimeter - B22918B			
	Well Purged Dry?:		(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	09:25	0.0	---	---	---	---	---	---	---	---	Start Purging
	09:30	0.1	65	54.52	16.0	6.8	0.824	7.4	311	1.76	Clear, odorless
	09:35	0.2	65	54.52	16.2	6.9	0.827	7.4	314	1.29	Clear, odorless
	09:40	0.3	65	54.52	16.2	6.9	0.827	7.5	316	0.80	Clear, odorless
	09:45	0.3	65	54.52	16.4	6.9	0.828	7.3	317	1.32	Clear, odorless
Final:	09:45	0.3	65	54.52	16.4	6.9	0.828	7.3	317	1.3	End of Purging

Sample Method: Bladder Pump Sample Start Time: 09:50 Sample End Time: 10:26

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	September 19, 2023
Source Well:	MW-13	Purge Time:	45 Minutes
Locked?:	Yes	Sample Date:	September 19, 2023
Sampled By:	JEB/EF	Sample Time:	15:30
Weather:	Sunny; 75	Air Temp:	

Water Level & Well Data

			Measuring Point:	Top of Casing	
			Depth to Water:	46.57	ft-TOC
			Total Well Depth:	54.31	ft-TOC
			Height of Water Column:	7.74	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	1.3	Gal
3 * Well Volume	3.79	Gal
5 * Well Volume	6.32	Gal

Well Purging Information

		Purge Method:	Bladder Pump	Start Time:	14:40	End Time:	15:25
(If Used)	Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:	psi
	Pump Intake Depth from Top of Casing:			ft-TOC			
	Water Column Above Pump Intake:			feet	Flow Through Cell Vol:	200	mL
	DTW-TOC at 25% Drawdown of WC Above Pump:			ft-TOC	**Comments:**		
	Final Volume Purged:		1.2	Gallons	Used YSI ProQuattro - B22672B		
	Final Volume Purge Rate:		100	mL/min	2100P Turbidimeter - B22918B		
	Well Purged Dry?:			(Yes/No)			

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	14:40	0.0	---	---	---	---	---	---	---	---	Start Purging
	14:45	0.1	100	43.57	20.6	6.9	0.862	2.9	122	127	clear, no odor
	14:50	0.3	100	43.49	17.3	6.9	0.828	0.4	89	36.7	clear, no odor
	14:55	0.4	100	43.49	17.3	6.9	0.825	0.2	76	19.7	clear, no odor
	15:00	0.5	100	43.49	17.2	6.9	0.822	0.2	55	0.91	clear, no odor
	15:05	0.7	100	43.49	17.1	7.0	0.823	1.2	46	2.01	clear, no odor
	15:10	0.8	100	43.49	17.1	7.0	0.823	2.5	41	1.28	clear, no odor
	15:15	0.9	100	43.49	16.9	7.0	0.822	2.4	38	1.01	clear, no odor
	15:20	1.1	100	43.49	16.9	7.0	0.823	2.5	37	1.51	clear, no odor
	15:25	1.2	100	43.49	16.9	7.0	0.822	2.5	36	1.34	clear, no odor
Final:	15:25	1.2	100	43.49	16.9	7.0	0.822	2.5	36	1.3	End of Purging

Sample Method: Bladder Pump Sample Start Time: 15:30 Sample End Time:

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	September 19, 2023
Source Well:	MW-14	Purge Time:	30 Minutes
Locked?:	Yes	Sample Date:	September 19, 2023
Sampled By:	JEB/EF	Sample Time:	16:40
Weather:	Sunny; 75	Air Temp:	

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				48.08	ft-TOC
Total Well Depth:				58.75	ft-TOC
Height of Water Column:				10.67	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	1.7	Gal
3 * Well Volume	5.22	Gal
5 * Well Volume	8.71	Gal

Well Purging Information

Purge Method:	Bladder Pump		Start Time:	16:05	End Time:	16:35	
(If Used) Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:		psi
Pump Intake Depth from Top of Casing:			ft-TOC				
Water Column Above Pump Intake:			feet		Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:			ft-TOC	**Comments:**			
Final Volume Purged:	1.0		Gallons	Used YSI ProQuattro - B22672B			
Final Volume Purge Rate:	125		mL/min	2100P Turbidimeter - B22918B			
Well Purged Dry?:			(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	16:05	0.0	---	---	---	---	---	---	---	---	Start Purging
	16:10	0.2	125	48.30	17.9	6.7	1.161	0.4	107	23.4	Clear, no odor
	16:15	0.3	125	48.30	18.3	6.7	1.154	0.2	101	11.5	Clear, no odor
	16:20	0.5	125	48.30	19.9	6.8	1.149	0.2	94	9.21	Clear, no odor
	16:25	0.7	125	48.30	19.2	6.8	1.168	0.3	89	4.56	Clear, no odor
	16:30	0.8	125	48.30	18.2	6.7	1.153	0.2	86	3.80	Clear, no odor
	16:35	1.0	125	48.30	18.2	6.7	1.153	0.2	85	2.58	Clear, no odor
Final:	16:35	1.0	125	48.30	18.2	6.7	1.153	0.2	85	2.6	End of Purging

Sample Method: Bladder Pump Sample Start Time: 16:40 Sample End Time:

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	September 20, 2023
Source Well:	MW-15	Purge Time:	25 Minutes
Weather:	Sunny	Air Temp:	66F

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				54.59	ft-TOC
Total Well Depth:				61.96	ft-TOC
Height of Water Column:				7.37	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	1.2	Gal
3 * Well Volume	3.61	Gal
5 * Well Volume	6.01	Gal

Well Purging Information

Purge Method:		Bladder Pump		Start Time:	10:45	End Time:	11:10
(If Used)	Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:				ft-TOC			
Water Column Above Pump Intake:				feet	Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:				ft-TOC	**Comments:**		
Final Volume Purged:		0.7		Gallons	Used YSI ProQuattro - B22672B		
Final Volume Purge Rate:		100		mL/min	2100P Turbidimeter - B22918B		
Well Purged Dry?:				(Yes/No)			

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	10:45	0.0	---	---	---	---	---	---	---	---	Start Purging
	10:50	0.1	100	54.59	17.6	6.9	1.560	0.5	158	2.68	Clear, odorless
	10:55	0.3	100	54.59	17.5	6.9	1.560	0.5	158	4.42	Clear, odorless
	11:00	0.4	100	54.59	17.4	6.9	1.562	0.3	157	3.20	Clear, odorless
	11:05	0.5	100	54.59	17.5	6.9	1.560	0.2	148	2.65	Clear, odorless
	11:10	0.7	100	54.59	17.7	6.9	1.562	0.1	144	2.78	Clear, odorless
Final:	11:10	0.7	100	54.59	17.7	6.9	1.562	0.1	144	2.8	End of Purging

Sample Method: Bladder Pump Sample Start Time: 11:15 Sample End Time: 11:41

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes:

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	September 18, 2023
Source Well:	MW-16	Purge Time:	40 Minutes
Locked?:	Yes	Sample Date:	September 18, 2023
Sampled By:	JEB/EF	Sample Time:	14:55
Weather:	Sunny	Air Temp:	

Water Level & Well Data

			Measuring Point:	Top of Casing	
			Depth to Water:	55.92	ft-TOC
			Total Well Depth:	69.78	ft-TOC
			Height of Water Column:	13.86	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	2.3	Gal
3 * Well Volume	6.79	Gal
5 * Well Volume	11.31	Gal

Well Purging Information

	Purge Method:	Bladder Pump	Start Time:	14:15	End Time:	14:55	
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:		psi
	Pump Intake Depth from Top of Casing:		ft-TOC				
	Water Column Above Pump Intake:		feet		Flow Through Cell Vol:	200	mL
	DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	**Comments:**			
	Final Volume Purged:	1.1	Gallons	Used YSI ProQuattro - B22672B			
	Final Volume Purge Rate:	100	mL/min	2100P Turbidimeter - B22918B			
	Well Purged Dry?:	No	(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	14:15	0.0	---	---	---	---	---	---	---	---	Start Purging
	14:25	0.3	100	55.84	19.5	7.0	1.285	2.1	174	1.95	clear, no odor
	14:30	0.4	100	55.86	19.0	7.0	1.283	1.9	194	0.66	clear, no odor
	14:35	0.5	100	55.90	18.8	7.0	1.283	1.7	200	0.71	clear, no odor
	14:40	0.7	100	55.94	18.7	7.0	1.285	1.6	206	1.16	clear, no odor
	14:45	0.8	100	55.95	18.5	7.0	1.283	1.5	211	0.31	clear, no odor
	14:50	0.9	100	55.95	18.6	7.0	1.283	1.5	212	0.25	clear, no odor
	14:55	1.1	100	55.95	18.6	7.0	1.283	1.5	211	0.22	clear, no odor
Final:	14:55	1.1	100	55.95	18.6	7.0	1.283	1.5	211	0.2	End of Purging

Sample Method: Bladder Pump Sample Start Time: 14:55 Sample End Time:

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes: 75 degrees F; sampled at 14:55

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	September 18, 2023
Source Well:	MW-17	Purge Time:	25 Minutes
Locked?:	Yes	Sample Date:	September 18, 2023
Sampled By:	JEB,EF	Sample Time:	16:25
Weather:	sunny;75	Air Temp:	

Water Level & Well Data

Measuring Point:				Top of Casing	
Depth to Water:				55.49	ft-TOC
Total Well Depth:				69.80	ft-TOC
Height of Water Column:				14.31	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	2.3	Gal
3 * Well Volume	7.01	Gal
5 * Well Volume	11.68	Gal

Well Purging Information

Purge Method:	Bladder Pump	Start Time:	15:55	End Time:	16:20		
(If Used) Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:		psi
Pump Intake Depth from Top of Casing:		ft-TOC					
Water Column Above Pump Intake:		feet	Flow Through Cell Vol:		200	mL	
DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	**Comments:**				
Final Volume Purged:	0.7	Gallons	Used YSI ProQuattro - B22672B				
Final Volume Purge Rate:	100	mL/min	2100P Turbidimeter - B22918B				
Well Purged Dry?:		(Yes/No)					

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	15:55	0.0	---	---	---	---	---	---	---	---	Start Purging
	16:00	0.1	100	55.45	18.8	6.9	1.315	3.5	166	2.45	clear, no odor
	16:05	0.3	100	55.45	17.9	7.0	1.330	0.5	180	3.25	clear, no odor
	16:10	0.4	100	55.45	18.3	7.1	1.326	0.5	181	1.93	clear, no odor
	16:15	0.5	100	55.45	18.9	7.1	1.334	0.5	181	1.56	clear, no odor
	16:20	0.7	100	55.45	18.5	7.1	1.331	0.5	182	1.65	clear, no odor
Final:	16:20	0.7	100	55.45	18.5	7.1	1.331	0.5	182	1.7	End of Purging

Sample Method: Bladder Pump Sample Start Time: 16:25 Sample End Time:

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

Notes: Sampled at 1625

Form Revision Date: 2/12/18 16:00

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio		
Project Number:	7217-17-001D	Purge Date:	September 19, 2023
Source Well:	MW-18	Purge Time:	30 Minutes
Locked?:	Yes	Sample Date:	September 19, 2023
Sampled By:	JEB/EF	Sample Time:	11:40
Weather:	Sunny; 70	Air Temp:	

Water Level & Well Data

			Measuring Point:	Top of Casing	
			Depth to Water:	55.90	ft-TOC
			Total Well Depth:	70.20	ft-TOC
			Height of Water Column:	14.30	feet
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	2.3	Gal
3 * Well Volume	7.00	Gal
5 * Well Volume	11.67	Gal

Well Purging Information

	Purge Method:	Bladder Pump	Start Time:	11:05	End Time:	11:35	
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:		psi
	Pump Intake Depth from Top of Casing:		ft-TOC				
	Water Column Above Pump Intake:		feet		Flow Through Cell Vol:	200	mL
	DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	**Comments:**			
	Final Volume Purged:	0.8	Gallons	Used YSI ProQuattro - B22672B			
	Final Volume Purge Rate:	100	mL/min	2100P Turbidimeter - B22918B			
	Well Purged Dry?:		(Yes/No)				

Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

	Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
	11:05	0.0	---	---	---	---	---	---	---	---	Start Purging
	11:15	0.3	100	55.90	18.5	7.0	1.918	3.1	271	0.92	clear, no odor
	11:20	0.4	100	55.90	17.6	7.0	1.926	0.7	261	1.21	clear, no odor
	11:25	0.5	100	55.90	17.7	7.0	1.921	0.7	253	1.37	clear, no odor
	11:30	0.7	100	55.90	18.3	7.0	1.927	0.5	246	0.60	clear, no odor
	11:35	0.8	100	55.90	18.0	7.0	1.927	0.4	243	0.37	clear, no odor
Final:	11:35	0.8	100	55.90	18.0	7.0	1.927	0.4	243	0.4	End of Purging

Sample Method: Bladder Pump Sample Start Time: 11:40 Sample End Time:

Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1)		

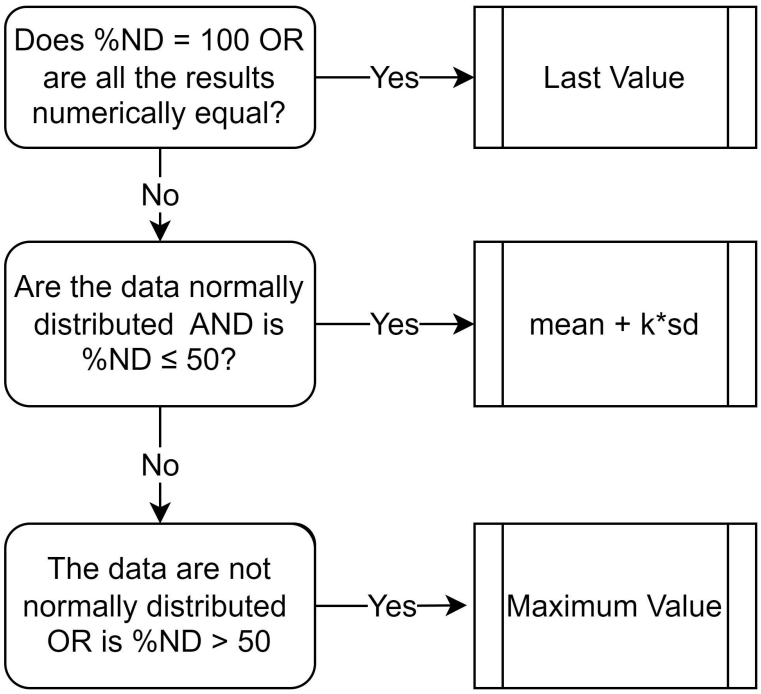
Notes:

Form Revision Date: 2/12/18 16:00

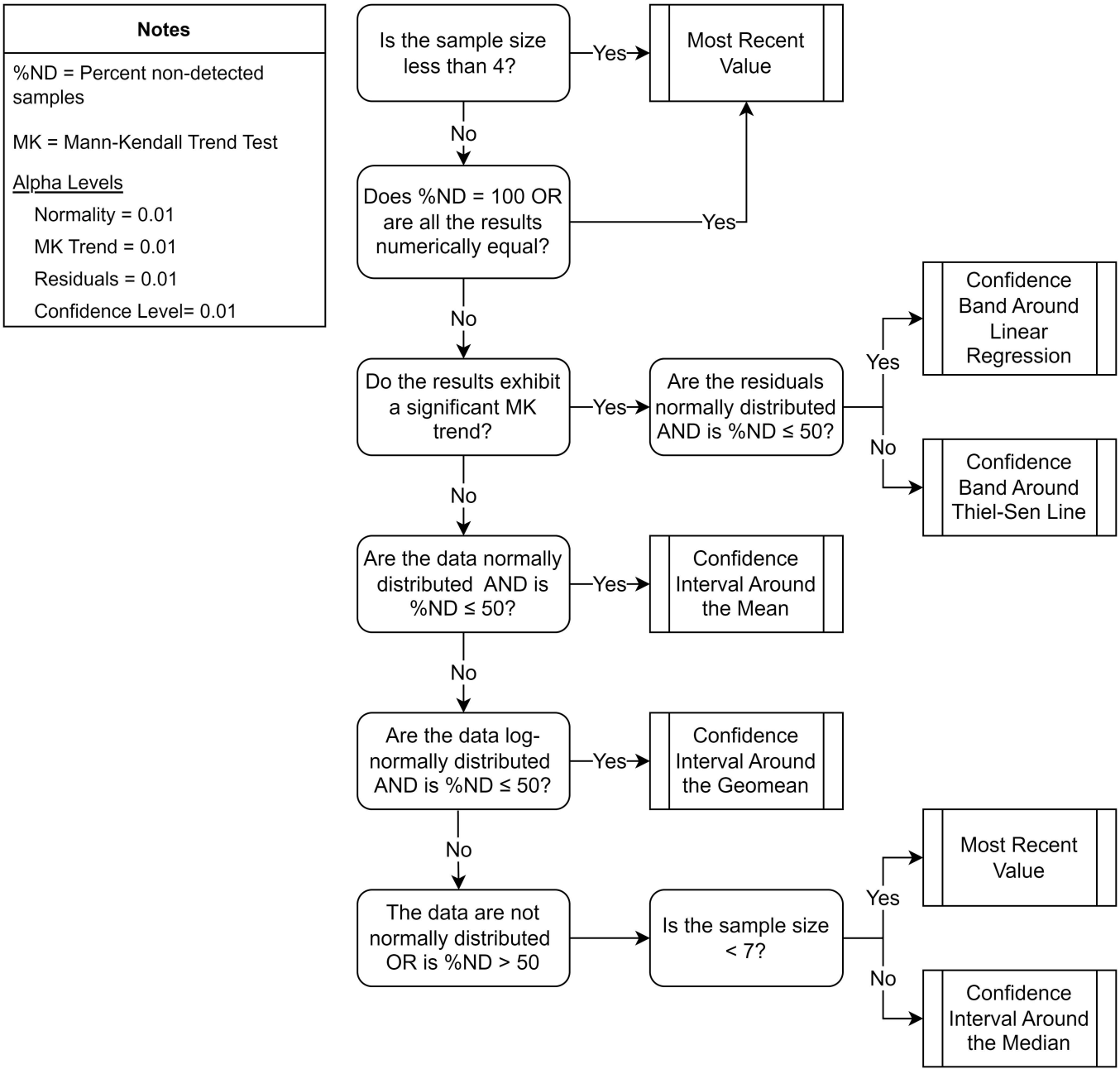
Zimmer Station			
Well ID	**Date**	**Time**	**Depth to Water**
D Basin - Unit 121			
MW-01	9/18/2023	10:47	53.89
MW-08	9/18/2023	8:53	55.03
MW-09	9/18/2023	9:51	53.95
MW-12	9/18/2023	9:00	54.52
MW-13	9/18/2023	9:18	46.57
MW-14	9/18/2023	9:22	48.08
MW-15	9/18/2023	9:27	54.59
Gypsum Recycle Pond - Unit 124			
MW-07A	9/18/2023	8:44	55.67
MW-10	9/18/2023	10:35	55.70
MW-11	9/18/2023	8:39	52.49
Coal Pile Runoff Pond - Unit 125			
MW-03S	9/18/2023	9:24	54.57
MW-16	9/18/2023	9:11	55.92
MW-17	9/18/2023	9:08	55.49
MW-18	9/18/2023	9:18	55.90

APPENDIX B
STATISTICAL METHODOLOGY FOR DETERMINATION OF BACKGROUND VALUES

Notes
%ND = Percent non-detected samples sd = standard deviation k = kappa for tolerance limit (95% confidence/95% coverage)



APPENDIX C
STATISTICAL METHODOLGY FOR DETERMINATION OF STATISTICALLY SIGNIFICANT LEVELS


Notes
%ND = Percent non-detected samples
MK = Mann-Kendall Trend Test
Alpha Levels
Normality = 0.01
MK Trend = 0.01
Residuals = 0.01
Confidence Level= 0.01
Is the sample size less than 4?
Yes
Most Recent Value
No
Does %ND = 100 OR are all the results numerically equal?
Yes
No
Do the results exhibit a significant MK trend?
Yes
Are the residuals normally distributed AND is %ND ≤ 50?
Yes
Confidence Band Around Linear Regression
No
Confidence Band Around Thiel-Sen Line
No
Are the data normally distributed AND is %ND ≤ 50?
Yes
Confidence Interval Around the Mean
No
Are the data log-normally distributed AND is %ND ≤ 50?
Yes
Confidence Interval Around the Geomean
No
The data are not normally distributed OR is %ND > 50
Is the sample size < 7?
Yes
Most Recent Value
No
Confidence Interval Around the Median